

June 11, 2025

St. James Parish Government
Permitting and Planning
5800 Canatella Street
PO Box 106
Convent, LA 70723

**RE: Koch Methanol St. James, LLC (KMe)
KMe Facility
Updates to St. James Parish Land Use Application approved on July 31, 2023
For Remanded Review ("Remand Application")**

Dear Sir or Madam:

Koch Methanol St. James (KMe) is providing this land use permit application to reflect updates and new information to support the preceding application that was approved by the St. James Parish Planning Commission on July 31, 2023.

An application for land use approval for two projects (the KMe Optimization Project and the Oxygen Back Up Supply Project, collectively, the "Project") was originally prepared in accordance with the St. James Parish Code of Ordinances Sec. 82-25 and was submitted to St. James Parish Government Permitting and Planning on July 12, 2023. On July 31, 2023, the St. James Parish Planning Commission adopted a resolution approving the application under Code of Ordinances Sec. 82-25(f) ("Tier 2 Review"). The Planning Commission's approval was appealed to the St. James Parish Council on August 30, 2023. The Council rejected the appeal and upheld the Commission's approval on September 27, 2023. After an additional appeal to the 23rd Judicial District Court, the court also upheld the Commission's approval on June 18, 2024.

A subsequent appeal of the District Court's decision resulted in an opinion by the Louisiana 5th Circuit Court of Appeals (Docket No. 24-CA-557) remanding KMe's application to the Parish for further proceedings consistent with the court of appeals' opinion. Because KMe believes the projects were properly reviewed by the Parish in the first instance, KMe intends to seek review by the Louisiana Supreme Court. In the meantime, consistent with the court of appeals' decision, KMe provides this application with updated and additional information to facilitate additional review under Code of Ordinances Sec. 82-25.

KMe understands the court of appeals' decision to require Section 82-25(e) ("Tier 3 Review") only for the Pipeline Connection portion of the Optimization Project that is located in land designated as Wetlands. However, other parties take the position that Section 82-25(e) ("Tier 3 Review") is required for the entirety of KMe's application.

Therefore, in an abundance of caution, and with due regard to ongoing litigation, KMe is requesting two concurrent land use actions from the Planning Commission. First, KMe asks that the Commission: (A) reaffirm its prior Section 82-25(f) approval of the Oxygen Back Up Supply Project and the portion of the Optimization Project located on designated Industrial use property owned by KMe; and (B) recommend approval under Section 82-25(e) to the Parish Council for the Pipeline Connection portion of the Optimization Project that, due to unique circumstances, is located in a pipeline corridor designated as Wetlands. Second, and concurrently, KMe asks that the Commission reconsider the entire updated

application under Section 82-25(e) and recommend approval to the Parish Council of the Oxygen Back Up Supply Project and the entire Optimization Project, including the Pipeline Connection.¹

Project Information

KMe operates a methanol production facility (the KMe Facility) in St. James, St. James Parish, Louisiana. KMe has proposed changes to the KMe Facility associated with two separate projects: the KMe Optimization Project and the Oxygen Back Up Supply Project. As provided in the original application submittal, the objective of the Optimization Project is to increase the KMe Facility's design production rate of refined methanol, primarily by further optimization of existing plant equipment. The Optimization Project requires adding ethane into the natural gas feed stream through a connection to an existing third party ethane pipeline (the "Pipeline Connection"), improvements to plant cooling capabilities, and other equipment upgrades with the collective primary goal of increasing the utilization of existing KMe Facility assets. The KMe Optimization Project is intended to achieve up to a 25% increase in the refined methanol design production rate from 4,950 metric tons per day (MTPD) to 6,200 MTPD.

Following the original approval of the land use application and having received all applicable permits, KMe proceeded with construction of projects supporting the Optimization Project, including the connection to the existing ethane pipeline ("the Pipeline Connection"). Construction of the Pipeline Connection was completed, and the pipeline began operations in June 2024. KMe has operated this project reliably and safely for approximately 1 year (began June 11, 2024).

The Oxygen Back Up Supply Project is a separate project aimed at providing a backup supply of oxygen (O₂) in the event of loss of O₂ feed from the existing Air Separation Unit. It is primarily a reliability improvement project aimed at reducing plant trips, downtime, and flaring due to loss of O₂ feed. Implementation of the Oxygen Back Up Supply Project remains in progress as KMe pursues optimal process designs. As stated in the application, it is expected to include oxygen storage and equipment to produce oxygen for the facility and such equipment would be located in areas designated as Industrial use.

Part 1A: Project Approval under Section 82-25(f) (Tier 2)

KMe is requesting that the St. James Planning Commission reaffirm its July 31, 2023, resolution approving KMe's prior land use application under Sec. 82-25 (f). The resolution recognized that the scope of the projects (the Optimization Project, including the Pipeline Connection, and the Oxygen Backup Supply) were allowable uses pursuant to Section 82-25(c) and met the criteria for approval pursuant to Section 82-25(f), including consideration of factors under Section 82-25(h). Specifically, the Planning Commission found:

1. That, under Section 82-25(c), the Pipeline Connection is a unique circumstance requiring a location in water.

The Commission should reaffirm this finding because the only feasible option for KMe to obtain ethane for the Optimization Project is to connect to the existing third party ethane supply line that is located in a pipeline corridor on land designated as Wetlands. Recognizing that the Pipeline Connection must therefore occur in Wetlands, the connection was designed to use the most direct and least disruptive path. Following approval of the land use application, the United States Army Corps of Engineers (USACE) and Louisiana Department of Energy and Natural Resources (LDENR) issued wetland/coastal use permits for the Pipeline Connection. LDENR determined that there was a need for the project and that "the least damaging feasible alternative has been selected."² USACE also determined that the pipeline project was "the least damaging, practicable route and construction method."³ Because the only feasible option for KMe to obtain ethane was to connect to the supply line already existing in Wetlands, and the connection was made in the most direct path, the connection is a unique circumstance requiring a location in water.

¹ In requesting Tier 3 Review of the entire application, KMe does not waive any argument regarding the appropriate level of review.

² CUP No. P20230570, Needs/Alternatives Review (March 11, 2024).

³ USACE Authorization, MVN-2023-00751-CR (March 28, 2024).

2. That, under Section 82-25(h)(1), the impacts of the proposed projects (Optimization Project and Oxygen Back Up Supply Project) are not substantially different from the impacts of other allowable uses in the district.

As the Commission previously found, impacts from the Optimization and O2 Backup Supply Project are “common to industrial plants” and would not be substantially different from the impacts from other allowable uses within industrial areas. This remains true. The Projects (with the exception of the Pipeline Connection) are located in areas of the Parish that are specifically designated for Industrial use. This use designation includes, “petrochemical operations; . . . tank farms; materials processing and production; . . . and associated support facilities and offices.” Because the Optimization and O2 Backup Supply Projects are located on land squarely within the designated Industrial use areas shown in the St. James Parish land use development plan, the impacts of the project are substantially similar to other allowable uses in the district.

The proposed, and now completed, Pipeline Connection is also compatible with its surrounding property uses, because it is in and near existing pipeline corridors (Image 1). There are approximately six (6) pipelines, including gas and hazardous liquid transmission pipelines, within the vicinity of the KMe Pipeline Connection (Image 2). These static pipelines are existing, and thus allowable, uses in the Wetlands area, and the Pipeline Connection is substantially similar, with similar impacts to those existing pipelines. There are no human occupied facilities (public or private) near the Pipeline Connection.

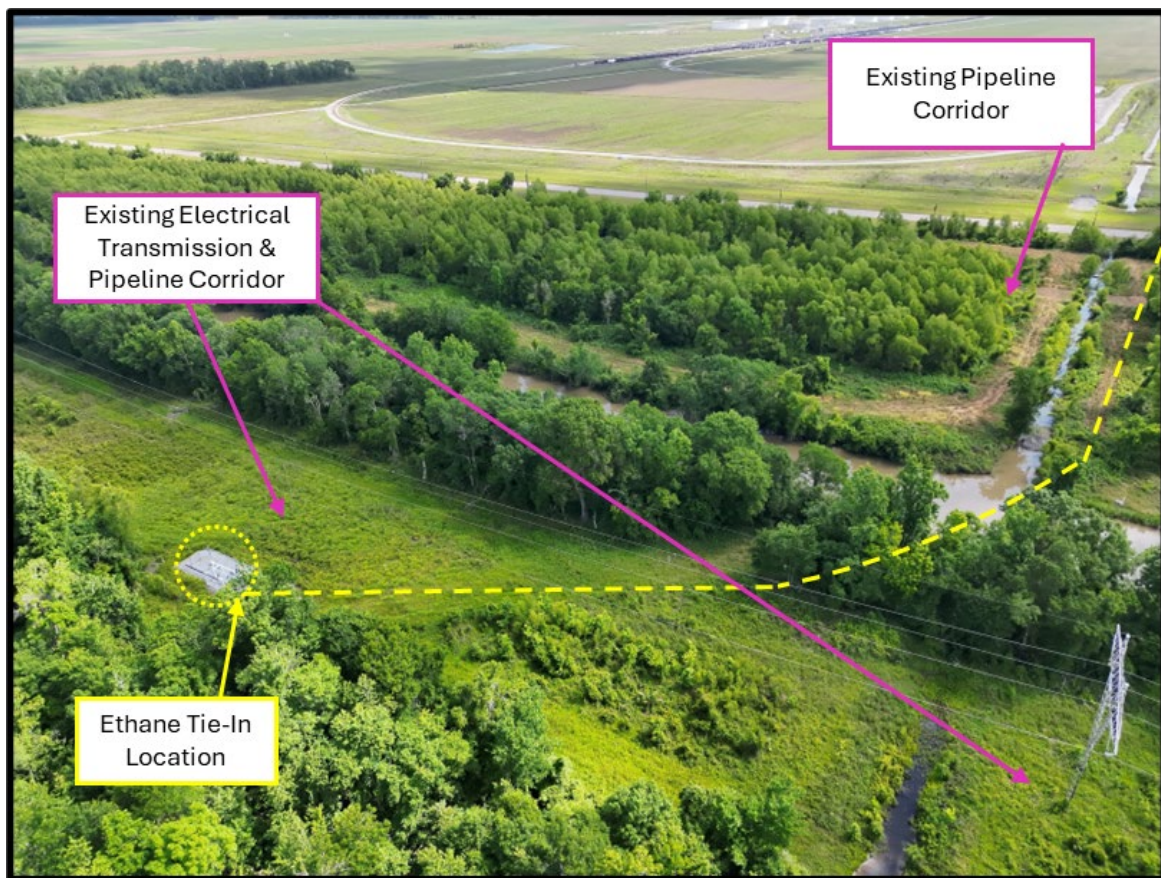


Image 1 – Pipeline Connection in Existing Corridors

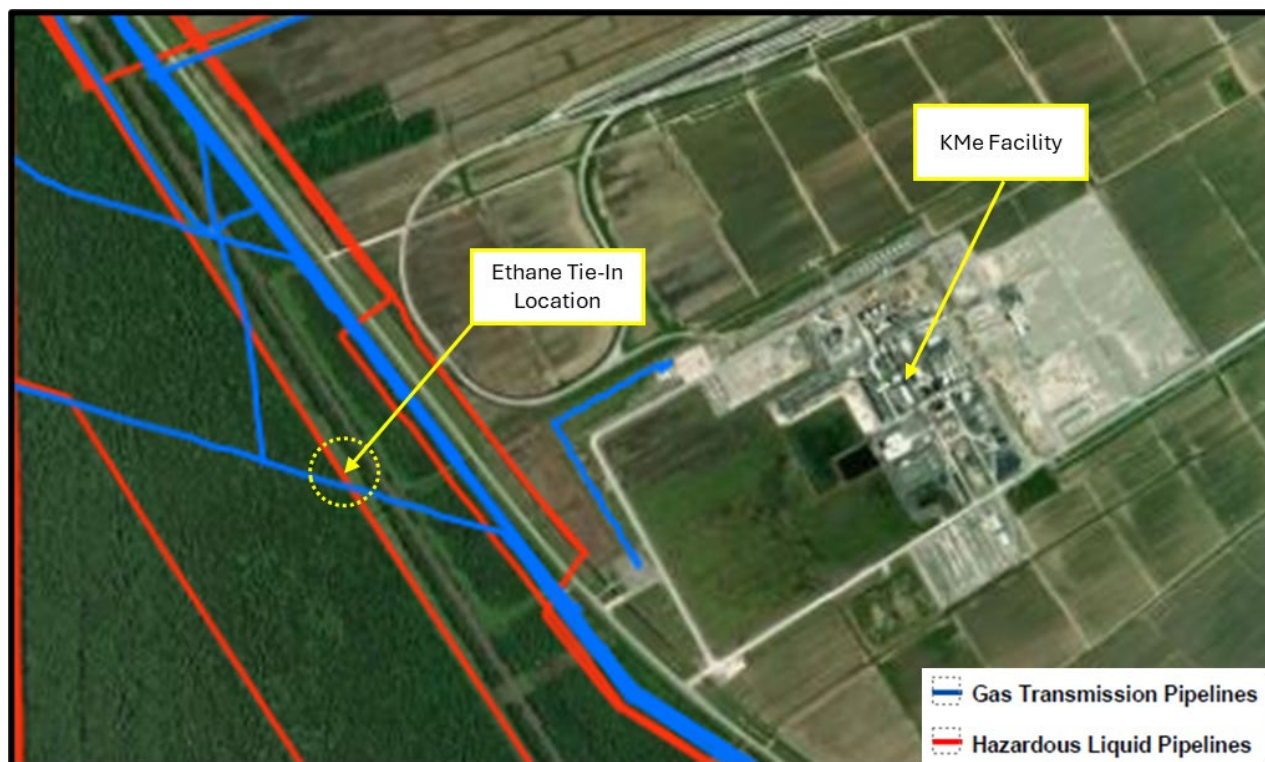


Image 2 - Existing Pipelines in Surrounding Area⁴

3. That, under Section 82-25(h)(2), the public benefits of the proposed projects (Optimization, Oxygen Back Up, and Pipeline Connection) included job creation, expanded tax base, and improved attractiveness of the Parish for future development.

The Commission's previous finding is based, in part, on information provided in the Sections 2.c. and 2.d. of the Land Use Application that identifies temporary and permanent job creation benefits; capital investment resulting in expansion of the tax base and additional tax income for the Parish, and a host of KMe community engagements and philanthropic activities. The prior data provided remains true. In addition to retaining the existing 114 direct jobs at the facility, KMe hired individuals to fill 2 new permanent jobs, Project Manager and Quality Manager, to support the Project and facility. There will be approximately 400 temporary jobs created during construction of the Project. Project-related tax revenue is predicted to be over \$10 million over the next 20 years, \$1.7 million of which has already been realized. Additionally, the Project supports KMe operating competitively in the methanol market leading to continued long-term benefits to the Parish. Long-term operation results in approximately \$165 million in total tax revenue for the Parish over the next 20 years. In addition to employment and tax revenue, KMe supports the Parish through initiatives targeted at Education, Community Enrichment, Entrepreneurship, & the Environment. See Attachment 5 for additional information regarding KMe's support of the community and project investment outcomes.

4. That, under Section 82-25(h)(3), the physical and environmental impacts of the proposed project (Optimization, Oxygen Back Up, and Pipeline Connection) are commensurate with the public benefits conferred, and that the environmental impacts will not impair the ability of the Parish to attract future development.

⁴ Map produced by the Public Viewer application at www.npms.phmsa.dot.gov World Imagery map service data is attributed to Esri, Maxar, Earthstar Geographics, and the GIS User Community. Date Printed: May 20, 2025

The Commission's previous finding was that the above-listed benefits outweigh the relatively modest physical and environmental impacts without impairing the Parish's ability to attract other beneficial development. The Commission's finding was supported by Koch's Environmental Assessment Statement ("EAS") relating to the projects. See Attachment 3, EAS. Specifically, the EAS included an Environmental Justice analysis that analyzed the projects' impacts and concluded:

*While the KMe Facility operations following the Project **will not result in adverse impacts** on the surrounding community and, therefore, will not result in disproportionate impacts, **beneficial social impacts** will be realized through investments by Koch in the areas of education, community enrichment, entrepreneurship, and environment. In addition, **economic benefits to the community will be gained through job creation and labor income** during Project construction and continued operations. Koch's investments are informed, in part, through engagement with the community which has included community outreach specific to this permit application. . . . Future engagement with local advisory groups (e.g., CAP or CAB) will continue to be a priority, informing KMe's long-term community outreach efforts. In conclusion, this analysis demonstrates that the proposed Project will not result in adverse impacts either directly or cumulatively considering existing conditions surrounding the KMe Facility. Accordingly, it also **demonstrates that the proposed Project will not cause disproportionate impacts (adverse impacts borne disproportionately on the base of race, color, or national origin)**.*

Since that time, the Louisiana Department of Environmental Quality ("LDEQ") has agreed with this assessment. In December 2023, LDEQ issued the facility Title V & Prevention of Significant Deterioration (PSD) Air Permits for the Optimization Project. In evaluating the permit application, LDEQ studied the air impacts of the project and concluded that the "*KMe Facility will not cause air quality impacts which could adversely affect human health or the environment.*"⁵ LDEQ reached this conclusion because: (1) Best Available Control Technology will be required for the control of NO_x, CO, PM, PM₁₀, PM_{2.5}, VOC, and GHG emissions; (2) emissions will not cause or contribute to an exceedance of any national ambient air quality standard (NAAQS); and (3) modeling of emissions of air toxics such as hazardous air pollutants, metals, and other chemicals demonstrated that off-property concentrations of such chemicals will be well below Louisiana Ambient Air Quality Standards. LDEQ confirmed compliance with these national and state air quality standards, which are health-protective standards, prior to issuing the permit and concluded there would not be adverse impacts to human health or the environment.

LDEQ went even further to evaluate data dating back to 2000 and determined that St. James Parish has experienced "substantial and continuing declines in actual emissions of pollutants."⁶ Data shows that from 2015-2022, criteria pollutant emissions decreased by 30%, toxic air pollutant emissions decreased by 69%, and toxic release inventory pollutant emissions decreased by 28%. LDEQ further analyzed environmental conditions in the community by taking a closer review of environmental indicators flagged by EPA's EJScreen assessment tool. This review again determined that the issuance of the air permit would not cause adverse impacts to the surrounding community.

⁵ LDEQ's Statement of Basis – XIII. Impacts on Ambient Air for Air Permit No. 2560-00295-V6 & PSD-LA-851.

⁶ LDEQ's Statement of Basis – XVII. Environmental Justice, Additional Considerations for Air Permit No. 2560-00295-V6 & PSD-LA-851

Specifically, LDEQ stated⁸:

*"Based on LDEQ's analysis of the information provided by the EJSscreen assessment and the terms and conditions of the permits, LDEQ concludes that issuance of the permits **will not** result in an adverse disproportionate impact under Title VI of the Civil Rights Act. Further, LDEQ is providing opportunity for all interested parties to be meaningfully involved in the permitting process."*

KMe has also assessed water impacts. Testing since the initiation of project work show that there are no changes to pollutant concentrations in wastewater streams. The annual sample collected last in October 2024, after the ethane pipeline connection was complete, yielded results indicating **no toxicity**, consistent with previous results. In addition, monitoring data shows the Project does not negatively impact discharges to the St. James Canal or the quality of stormwater discharges.

Lastly, as further discussed below, any adverse impacts from the Pipeline Connection are inconsequential. The Pipeline Connection has been authorized by USACE under permitting only available to certain projects with "minimal adverse impacts." Further, the Pipeline Connection has been in place for approximately one year, and photos show that the location has already returned to its natural vegetative state.

LDEQ's finding that the project will not cause adverse air impacts, KMe's confirmation of no water quality impacts, and the return of the Pipeline Connection Wetlands area to its natural vegetation, when considered with the public benefits of the project, support a finding that the public benefits outweigh any environmental impacts associated with the Project.

The Commission did not make prior findings under Section 82-25(h)(4), pertaining to vested property rights or constitutional rights, and (h)(5), pertaining to solar energy farm facilities.

Part 1B: Recommendation for Approval of Pipeline Connection under Section 82-25(e) (Tier 3)

In addition to meeting the Tier 2 Review standards, as demonstrated above and in the enclosed application materials, KMe asserts that it is appropriate for the Planning Commission to recommend that the Parish Council approve the Pipeline Connection under Section 82-25(e) (Tier 3) – namely, because the Pipeline Connection is compatible with surrounding uses and any adverse impacts associated with the Pipeline Connection are inconsequential.

Pipeline Connection – Compatible with Surrounding Area and Uses

The majority of the new pipeline segment is located on the portions of KMe property designated for Industrial use. Only a segment of that pipeline (approx. 1,200 feet) must go through KMe property designated as Wetlands. KMe identified a direct route through the wetlands to minimize disruption and align with the existing pipeline corridor. The selected route utilized existing corridors (i.e., pipeline corridors and electrical transmission corridors) within the wetlands that have been in place since before the KMe facility was built. These corridors are routinely maintained (i.e., mowing & clearing) to ensure accessibility to critical infrastructure that serves both residential and industrial customers. Within the vicinity of the ethane tie-in location, there are multiple existing pipelines present (Image 2), including:

- 3 natural gas pipelines operated by Transcontinental Gas Pipe Line Company;
- 1 natural gas pipeline operated by EnLink Processing Services LLC;
- 1 crude oil pipeline operated by LOOP LLC; and
- 1 ethane pipeline operated by Enterprise Products Operating LLC (i.e., the existing ethane pipeline)

Due to the presence of existing right of way corridors for existing pipelines and electrical transmission lines and specifically, the location of the existing ethane pipeline (Image 3), the installation of this connecting segment of ethane pipeline is **compatible with surrounding uses**.



**Image 3 – Tie-In Location to Existing Ethane Pipeline in Existing Right of Way Corridors
(Google Earth Image)**

Pipeline Connection – Any Adverse Impacts are Inconsequential

Following the original approval of the land use application and having received all applicable permits, KMe proceeded with construction of the KMe Optimization Project, including the construction of the new ethane pipeline segment and the connection to the existing ethane supply pipeline. Construction was completed and the Optimization Project was commissioned in June 2024. KMe has operated this project reliably and safely for approximately 1 year (began June 11, 2024).

The United States Army Corps of Engineers (USACE) and Louisiana Department of Energy and Natural Resources (LDENR) issued wetland/coastal use permits for the ethane pipeline project in March 2024.⁷ LDENR conducted a Needs and Alternative Review of the project and determined that there was a need for the project and that “*the least damaging feasible alternative has been selected.*”⁸ Likewise, USACE determined that the ethane pipeline project was “*the least damaging, practicable route and construction method.*”⁹ Further, USACE authorized the Pipeline Connection under a General Permit, which is only available for projects with “minimal adverse impacts.”¹⁰

The permit application and the agency findings demonstrate that the project was designed to minimize adverse impacts by choosing the most direct route for the pipeline to be installed underground and by designing any above ground features (i.e., the tie-in skid) to be in upland areas. The coastal use permit requires an assessment of impacts to vegetated wetlands after a full growing season (ending on November 1, 2025). If LDENR finds permanent impacts to wetlands, restoration or mitigation of the impacts must be conducted. However, current information shows that **any impacts to the wetlands are inconsequential**. Following the successful construction and commissioning of the project, and operating the system for approximately 1 year, recent drone footage from April 2025 was taken and is provided in Attachment 4, and in Images 4 and 5 below. These photos show the area of the new underground pipeline connection and the ethane tie-in skid. These photos highlight that the area has already restored back to the natural vegetation expected for this area. For reference, Image 6 provides

⁷ Coastal Use Permit Determination, CUP No. P20230570 (March 14, 2024).

⁸ CUP No. P20230570, Needs/Alternatives Review (March 11, 2024); USACE Authorization, MVN-2023-00751-CR (March 28, 2024).

⁹ USACE Authorization, MVN-2023-00751-CR (March 28, 2024), Programmatic General Permit, Category II, Condition 3.

¹⁰ USACE Programmatic General Permit for use in the New Orleans District within the Boundaries of the Louisiana Coastal Zone (June 1, 2022).

a Google Earth image of the area prior to beginning any construction which shows the existing corridors and then-existing vegetation. The Pipeline Connection is a component of the Optimization Project, and air impacts from the Optimization Project have been discussed above.

The agency determinations and the information presented in this application show that any **adverse impacts from the Pipeline Connection are inconsequential.**

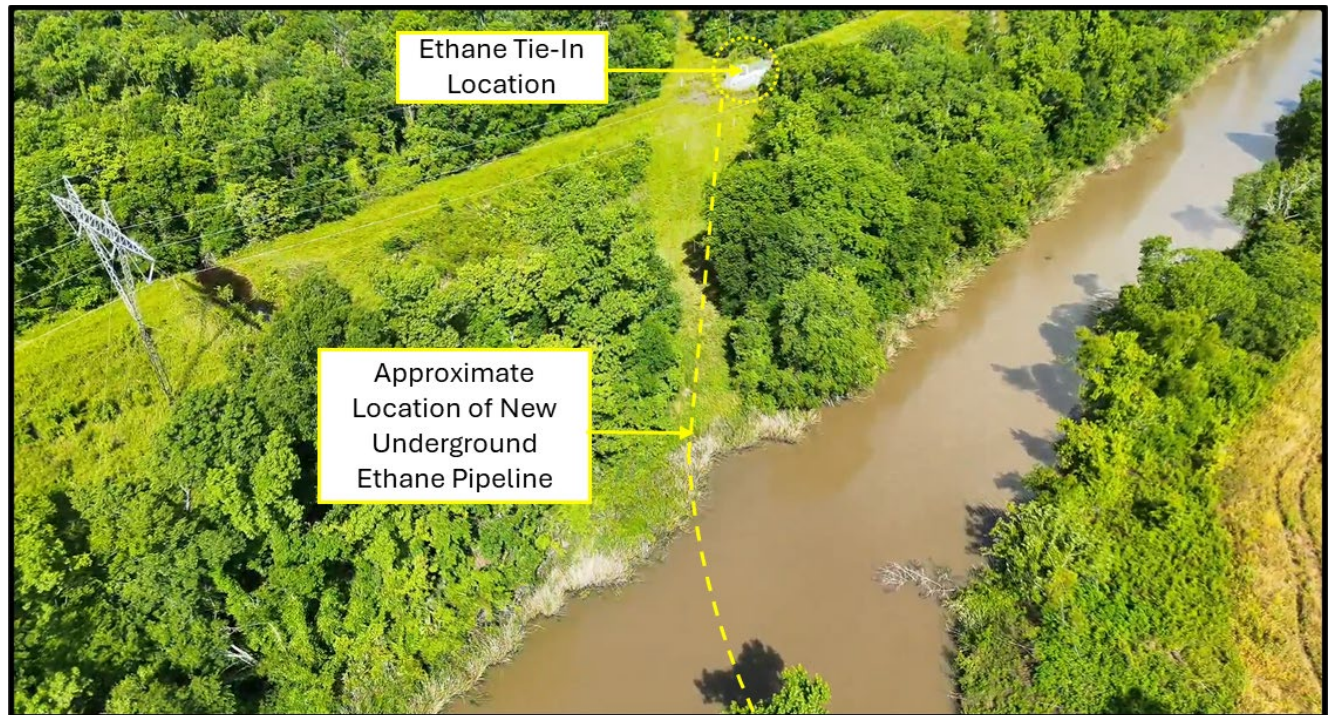


Image 4 – Drone Footage Post-Project (April 2025) Showing Restored Vegetation



Image 5 – Drone Footage Post-Project (April 2025) Showing Restored Vegetation



Image 6 – Pre-Project View of Project Area with Existing Vegetation in Corridors

Part 2: Recommendation for Approval Under Section 82-25(e) (Tier 3) for Optimization Project, including Pipeline Connection, and the Oxygen Back Up Supply Project

KMe is requesting that the Planning Commission recommend for Parish Council approval the Optimization, O2 Backup Supply and Pipeline Connection projects, collectively, “the Project,” under Section 86-25(e) (Tier 3 Review), to address any potential legislative and/or judicial ambiguity regarding implementation of the St. James Parish Land Use Ordinance. In addition to meeting the Tier 2 Review standards, as demonstrated above and in the enclosed application materials, KMe asserts that it is appropriate for the Planning Commission to additionally recommend that the Parish Council approve the entirety of the Project under Section 82-25(e) (Tier 3) – namely because the Project is compatible with surrounding uses and any adverse impacts associated with the Pipeline Connection are inconsequential.

The Project – Compatible with Surrounding Area and Uses

The Project components are compatible with their surrounding uses. Specifically, the Optimization and O2 Backup Supply portions of the Project are located within areas of the Parish that are specifically designated for Industrial use. This use designation includes, “petrochemical operations; . . . tank farms; materials processing and production; . . . and associated support facilities and offices.” As the Optimization and O2 Backup Supply Projects are located squarely within the Industrial use area designations shown in the St. James Parish land use development plan, the Project should be deemed compatible with surrounding property uses. In addition, KMe and LDEQ conducted Environmental Justice analyses to assess the Project’s impacts on the surrounding community. These analyses are available in KMe’s EAS (Attachment 3) and LDEQ’s Statement of Basis (Attachment 6), and they concluded that the Project will not result in adverse impacts on the surrounding community.

The proposed, and now completed, Pipeline Connection is similarly compatible with surrounding property uses, as discussed above. The location and pathway utilized is indicative of the surrounding property use as a pipeline corridor. As discussed above, there are no less than six (6) pipelines within

the vicinity of the KMe Pipeline Connection, thereby demonstrating that the proposed use is compatible with surrounding pipeline corridor uses. There are no human occupied facilities (public or private) near the Pipeline Connection.

The Project – Any Adverse Impacts are Inconsequential

As discussed above, Louisiana State regulators have determined that any adverse impacts associated with the Project are inconsequential. LDEQ has reviewed air emissions associated with the project and confirmed the “KMe Facility **will not** cause air quality impacts which could adversely affect human health or the environment” and “issuance of the permits **will not** result in an adverse disproportionate impact” to the surrounding community. Similarly, USACE and LDENR issued a wetland/coastal use permits for the pipeline construction project in March 2024. LDENR determined that “*the least damaging feasible alternative has been selected.*” Likewise, USACE proceeded under a permit only available to projects with “minimal adverse impacts” and determined that the pipeline project was “*the least damaging, practicable route and construction method.*” As demonstrated above, photos show that the area surrounding the constructed Pipeline Connection is already restored back to its natural vegetation.

In conclusion, through these regulating bodies (LDEQ, LDENR, and USACE) and through the existing stringent permitting processes described above, the projects have met all applicable Clean Air Act, Clean Water Act, and Louisiana State and Local Coastal Resources Management Act requirements. The agency determinations and the information presented in this application show that any **adverse impacts are inconsequential**.

We appreciate the Commission and Council’s review of this project. We are submitting the prior application form, submitted on July 12, 2023 and amended on September 22, 2023, with supplemental information and updates under relevant sections as “2025 Update:”. For more information regarding the progress of the Optimization Project and other KMe Facility activities, including community events, please visit the Koch Methanol website (KochMethanol.com).

If you or your staff have any questions or require additional information, please contact HaLeigh Engler at (225) 264-2065, or haleigh.engler@kochind.com.

Sincerely,



Josh Wiggins

VP of Manufacturing and Plant Manager

Enclosures:

- Revised Land Use Permit Application & Figures
- Attachment 1 – Hazardous Materials Classifications
- Attachment 2 – Additional Safety Data Sheets
- Attachment 3 – Environmental Assessment Statement
- Attachment 4 – April 2025 Drone Photos of Project Area & Pre-Project Images
- Attachment 5 – Community Support & Project Investment
- Attachment 6 – Air Permit No. 2560-00295-V6, PSD-LA-851 Statement of Basis
- Attachment 7 – Air Permit No. 2560-00295-V6, PSD-LA-851 Basis for Decision

APPLICATION FOR

St. James Parish Industrial Land Use



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SUBMITTED BY

Koch Methanol St. James, LLC.

June 2025

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Land Use Permit Application (“Remanded Application”)

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Figure 2 – Facility Property Boundary

Figure 3 – Facility Plot Plan

Figure 4 – Section 82-25(g)(3)a. Sites

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Attachment 1 – Hazardous Materials Classifications

Attachment 2 – Safety Data Sheets

Attachment 3 – Environmental Assessment Statement

Attachment 4 – April 2025 Drone Photos of Project Area & Pre-Project Images

Attachment 5 – Community Support & Project Investment

Attachment 6 – Air Permit No. 2560-00295-V6, PSD-LA-851 Statement of Basis

Attachment 7 – Air Permit No. 2560-00295-V6, PSD-LA-851 Basis for Decision

Land Use Permit Application

("Remanded Application")



St James Parish Industrial Land Use

St James Parish Planning & Permitting Office
P.O. Box 106
Convent La. 70723
Office: 225-562-2500

Name of Corporation: Koch Methanol St. James, LLC (KMe)

Representative: Josh Wiggins

Mailing Address: 5181 Wildcat Street, St. James, LA 70086

Representative email address: Josh.Wiggins@kochind.com

Phone Number: (Office) 713-829-8742 **(Cell)** 713-829-8742 **(Fax)** N/A

1. Attach Preliminary Plat

- a. Location of Site 5181 Wildcat Street, St. James, LA 70086
- b. Section-Township-Range Section 16 - Township 12 South, Range 16 East Louisiana Principal Meridian; Section 16 - Township 13 South, Range 16 East Louisiana Principal Meridian; Section 06 - Township 13 South, Range 16 East Louisiana Principal Meridian
- c. Current use of site The site is currently used primarily for industrial purposes as a methanol production facility (KMe Facility), with portions of the undeveloped land leased for agricultural purposes, specifically for sugar cane farming. The KMe Facility, which was referred to as Phase 1 in prior land use applications, includes the Methanol Plant and associated Methanol Terminal. An administration building associated with the KMe Facility is located on the southeast side of the property. Third-party-owned pipelines, including an existing underground ethane pipeline, run generally north-south along the west side of Hwy 3127, with portions on KMe property.
- d. Total acreage of site 1,277.36 acres
- e. Acreage of development and elevation Prior land use approvals approved the development of portions of the 1,277.36 acres of land (see Figure 3) with an elevation of approximately 7 feet above sea level. KMe is not seeking approval for the development of any additional land, except portions of land separately owned by KMe and Plains Marketing LLP under/on which a pipeline

and access road will be constructed to connect an existing third-party ethane pipeline to the KMe Plant (the pipeline will also be constructed under Hwy 3127). Otherwise, the proposed project work will occur within the existing areas previously approved for development.

- f. Current land use designation by Parish Pursuant to map provided as Exhibit 1 in the St. James Parish Council, Louisiana – Code of Ordinances Sec. 82-25(a)(1), the overall site contains land designated as Industrial, Commercial/Residential Mixed, Residential Growth, and Wetlands. However, the projects will only affect land currently designated for Industrial Use and Wetlands (see Figures 1 and 3). The majority of the development will be constructed on land designated as Industrial. The land where the connection to the existing ethane pipeline and associated access road will be constructed is designated as Wetlands due to a unique situation requiring construction in the area designated as Wetlands. Specifically, there is only one existing ethane pipeline in the vicinity of the KMe Facility and that pipeline is located entirely within the area designated as Wetlands within the vicinity of the KMe Facility. The existing Administration Building is located on the land designated Commercial/Residential Mixed but will not be impacted by the projects. Other pre-existing structures are located on land designated for Residential Growth, but the projects will not impact these structures.

Pursuant to the St. James Parish Council, Louisiana – Code of Ordinances Sec. 82-25(g)(3)a., Figure 4 provides a map showing the location of sites listed in § 82-25(g)(3)a. within 2 miles of the outer extent of the proposed project areas, and a list of these sites is included in the table below.

Section 82-25(g)(3)a. Sites within 2-Mile Radius

Parks	None
Playgrounds	None
Churches	St. Paul Baptist Church
Schools	None
Community or Senior Citizen Centers	None
Nursing Homes	None
Hospitals	None
Other Places of Public Assembly	None
Historic Sites	Sugar Mill Archaeological Site
	Graugnard Farms Plantation House
	Cabahanoce Plantation

A Phase I Cultural Resource Survey was performed prior to original construction of the KMe Facility in August and September 2014. The September 2014 Phase I Cultural Resource Survey included evaluation of cultural resources situated within or immediately adjacent to the site. With respect to cemeteries and historic structures, the survey included a review of the area within 1 mile of the site location. Other than the Graugnard Farms Plantation House, no other historic structures identified met the criteria for listing in the National Register of Historic Places. The State Historic Preservation Office (SHPO) agreed with these findings in a letter dated April 17, 2015.

The Phase I Cultural Resource Survey identified the Graugnard Farms Plantation House, a property listed on the National Register of Historic Places, located on property near the KMe Facility that is not owned by KMe. In a letter dated July 22, 2015, SHPO concurred that the initial construction of the KMe Facility would not adversely impact the plantation home. KMe is not proposing any construction activities near the house in association with the proposed Projects. The Phase I Cultural Resource Survey also identified remnants of a historic sugar mill at the site,

referred to as Site 16SJ82. The survey was reviewed and approved by SHPO in letters dated February 20 and April 17, 2015. Phase II Archeological Testing and Evaluation to further define Site 16SJ82 with respect to its eligibility for nomination to the National Register of Historic Places was conducted in February 2015, under a site investigation plan approved by SHPO. Based on the results of the Phase II Evaluation, an Avoidance Plan was developed to set aside the area of archeological Site 16SJ82 to protect it from any future ground-disturbing activities. The area has been fenced off and secured to prevent entry by unauthorized personnel, and the area has been fallow since completion of the historic resource evaluation. SHPO approved the Avoidance Plan by letter dated July 22, 2015. KMe is not proposing any construction activities near Site 16SJ82 in connection with the proposed Projects. The area will remain protected in accordance with the Avoidance Plan.

A Phase IA Desktop Study of the 240-acre parcel owned by KMe and bordered to the east by Highway 3127 under/upon which a pipeline and access road will be constructed to connect an existing third-party ethane pipeline to the KMe Plant as part of the KMe Optimization Project was performed in July 2023. The study consisted of a review of previously conducted cultural resources surveys, previously recorded archaeological sites, cemeteries, and properties listed on the Nation Register of Historic Places situated within 1 mile of the 240-acre parcel. The Desktop Study concluded that the parcel, which is situated within a freshwater cypress swamp, has a very low to negligible probability of containing undisturbed cultural resources.

Update 2025: The ethane pipeline connection is a unique situation requiring a location in water, because connecting to the existing third party ethane supply line, which is already located in Wetlands, is the only feasible option to obtain ethane for the Optimization Project. The pipeline connection was designed to use the most direct and least disruptive path to the third party ethane supply pipeline and is located in and near existing pipeline corridors. The

United States Army Corps of Engineers (USACE) and Louisiana Department of Energy and Natural Resources (LDENR) issued wetland/coastal use permits for the project in March 2024. LDENR conducted a Needs and Alternative Review of the project and determined that there was a need for the project and that “the least damaging feasible alternative has been selected.” CUP No. P20230570, Needs/Alternatives Review (March 11, 2024). Likewise, USACE determined that the pipeline project was “the least damaging, practicable route and construction method.” USACE Authorization, MVN-2023-00751-CR (March 28, 2024).

- g. Distance between proposed facility and nearest residential properties The existing Administration Building is the structure at the site nearest to residential properties. It is located 0.10 miles from the nearest residential properties. The center of the methanol production area (KMe Plant), where the majority of the project work will be conducted, and the center of the methanol product tanks (KMe Terminal) are located approximately 1.60 and 0.36 miles, respectively, from the nearest residential properties. The proposed projects will not change these distances to the nearest residential properties.

2. Facility Description

- a. Description of facility and proposed operations (attach additional sheets if needed)

The KMe Facility is located along the West Bank of the Mississippi River about 30 miles south of Baton Rouge in St. James Parish. The site is bordered by St. James Co-op Road and is traversed by the Union Pacific Railroad and Highway 3127. See Figure 2 for a property boundary layout.

The KMe Facility produces refined Grade AA methanol using natural gas as a feedstock. Product-grade methanol is sent offsite directly by pipeline for loading and distribution to customers via barge or ocean-going vessel or stored in tanks before loading on-site for

distribution via truck or rail.

Figure 3 includes an updated plot plan that shows the KMe Facility as it was built and delineates the land areas that were approved for development with the prior land use approvals. The previously approved and developed areas include the methanol production plant (KMe Plant), methanol product storage and loading areas (KMe Terminal), methanol and raw material pipelines, supporting utilities/buildings such as retention ponds, warehouses, guard shacks, and the administration building area.

The proposed changes are associated with two separate projects - the KMe Optimization Project and the Oxygen Back Up Supply Project. With the KMe Optimization Project, KMe intends to increase the KMe Plant's design production rate of refined methanol, primarily by further optimizing existing plant equipment. This will be completed via a raw material feed upgrade to add ethane into the natural gas feed stream (includes constructing an underground ethane pipeline and a metering station to connect the KMe Plant to an existing third-party ethane pipeline and vaporizing the ethane for injection into the feed stream), improvements to plant cooling capabilities (such as upgrading air cooled heat exchangers and cooling tower equipment, including adding a cooling tower cell), and other equipment upgrades (such as burner efficiency improvements, upsizing process safety relief valves and other components, improved process monitoring, and adding or modifying piping and process equipment) with the collective primary goal of increasing the utilization of existing assets and methanol production. The KMe Optimization Project is intended to achieve a 25% increase in the refined methanol design production rate from 4,950 metric tons per day (MTPD) to 6,200 MTPD.

Additionally, a separate project is planned for providing a backup supply of oxygen (O₂) in the event of loss of O₂ feed from the existing Air Separation Unit. This project is in the early phases of design and is expected to include oxygen storage tanks and equipment to vaporize oxygen

prior to feeding the KMe Plant. The Oxygen Back Up Supply Project is a reliability improvement project aimed at reducing plant trips and downtime due to loss of O₂ feed; it does not provide additional plant capacity.

- b. Include anticipated future expansions No specific expansion projects are planned other than the KMe Optimization Project described above, although minor changes or improvements within the approved footprint may be undertaken in the future.

- c. Estimated permanent full time employees / part time employees / contract employees
The existing KMe Facility provides approximately 114 direct jobs to operate the facility. With the proposed projects, these existing jobs will be retained. The proposed projects are expected to create 400 temporary jobs and 2 new permanent jobs.

2025 Update: The prior data provided remains true. In addition to retaining the existing 114 direct jobs at the facility, KMe hired individuals to fill 2 new permanent jobs, Project Manager and Quality Manager, to support the Project and facility.

- d. Estimated contractor employees during construction 400 temporary jobs are anticipated during the construction of the projects.

- e. Length of construction The initial KMe Optimization Project construction is planned to occur from November 2023 to July 2024. The remaining KMe Optimization Project scope is expected to be constructed over the next 3 to 5 years, with construction occurring intermittently over that period. Construction of the Oxygen Back Up Supply Project is anticipated to take approximately 13 months starting in February 2024.

2025 Update: The KMe Optimization project construction remains on the same timeline, with initial construction completed and the remaining scope expected to be constructed over the next 3 to 5 years. Implementation of the Oxygen Back Up Supply Project remains in progress as KMe pursues optimal process designs.

- f. Proposed date of construction See response to 2.e. above.
- g. Proposed date of operations The KMe Facility is currently operational. The KMe Facility will be shut down for a planned maintenance turnaround in the first quarter of 2024, during which some of the KMe Optimization Project construction will occur. The KMe Facility will resume operation after the turnaround is complete. Operations of other project components will begin shortly after the construction dates described in 2.e above.

3. Substances Produced and/or Stored

- a. List any and all types of substances the proposed facility is projected to produce and/or store. (attach additional sheets if needed)

The types of materials included in methanol production at the KMe Facility are raw materials, products, catalysts, maintenance products, water treatment chemicals, lab chemicals, fuels, and firefighting foam. This covers the types of substances the facility produces and/or stores. See Attachment 2 for a list of the types of substances produced or stored at the facility, their associated Safety Data Sheets (SDS), and the maximum anticipated quantities onsite. Ethane is the only new substance that will be onsite as a result of the projects, specifically the KMe Optimization Project. Additionally, while oxygen is currently present onsite, the maximum quantity of oxygen stored onsite will increase with the Oxygen Back Up Supply Project. Although the throughput of some other substances will increase as a result of the proposed KMe Optimization Project, with the exception of ethane and oxygen, neither the KMe Optimization Project nor the Oxygen Back Up Supply Project will result in an increase in the maximum quantity of substances on-site.

- b. Attach any pertinent Material Safety Data Sheets (MSDS).

See Attachment 2 for the SDSs for the types of substances produced or stored onsite, including ethane, which is the only new substance that will be onsite as a result of the proposed projects. Note that SDSs are retained onsite and submitted to the LEPC (Local Emergency Planning Commission) and local fire department to meet notification requirements under EPCRA Sections 311 and 312,

and LAC Title 33, Part V, Subpart 2, Chapter 101, §10101.D.

- c. Include National Fire Protection Association (NFPA) 704 reference. See Attachment 1

4. Is the proposed facility projected to produce and/or store any substances related to the *Emergency Planning and Community Right-to-Know Act* (EPCRA)?

- a. Facility Type:

- i. EPCRA Facility Type 302 Yes. The KMe Facility currently produces and/or stores EPCRA

Section 302 substances in excess of the Threshold Inventory Quantity (TQ)¹, which varies

depending on the substance, and will continue to do so following the completion of the

projects. Therefore, the KMe Facility will continue to be subject to EPCRA Section 302.

The facility will not produce or store any new EPCRA 302 substances as a result of the

projects. Table 1 in Section 4.ii indicates substances produced and/or stored onsite that

contain EPCRA Section 302 Substances.

- ii. EPCRA Facility Type 311/312 Yes. The KMe Facility is currently subject to EPCRA

Facility Type 311/312 reporting since the amount of hazardous chemicals present at the

facility exceeds the EPCRA 311/312 threshold planning quantity (TPQ) and the LA

Threshold Inventory Quantity (TQ). Ethane will be the only new substance resulting from

the proposed projects that will exceed TPQ/TQ thresholds, and the quantity of oxygen

stored onsite will increase. Table 1 lists each EPCRA 311/312 substance and indicates

whether they contain an EPCRA 302 substance, the maximum quantity stored onsite,

whether the quantity will change due to the Projects, and the TQ.

¹ The Threshold Inventory Quantity (TQ) values under LAC Title 33, Part V, Subpart 2, Chapter 101, §10109 are equal to or lower than the EPA Threshold Planning Quantity (TPQ) in EPCRA 302. Since the Ordinance references Louisiana's Right-to-Know Law (R.S. 30:2361 et seq.), the TQ is referenced here.

Table 1 – Substances Produced and/or Stored Onsite & Anticipated Maximum Quantities Stored

Substance	Maximum Quantity on Site (lbs) RY2022	Maximum Quantity on Site (lbs) RY2024	Change in Quantity due to Projects?	Contains EPCRA 302 Substance (% of Mixture that contains EPCRA 302 Substance)	Louisiana Threshold Inventory Quantity (lbs)
ETHANE	30,000	30,000	New	--	500
METHANOL	4,466,745	5,583,341	No Change	--	500
TRANSFORMER OIL	20,060	20,060	No Change	--	500
UNIVERSAL GOLD®C6 1%/3% ALCOHOL RESISTANT AQUEOUS	13,581	73,189	No Change	--	500
ACETYLENE	611	122	No Change	--	100
ACTISORB® S2 EXTR 4.5	196,737	596,737	No Change	--	500
ACTIVATED ALUMINA	3,138	3,138	No Change	--	500
AMBERLYST 40 WET RESIN	26,636	26,636	No Change	--	500
AMMONIA HYDROXIDE	47,540	47,540	No Change	Yes (19.9%)	100
AQUACHLOR 12.5% NSF SODIUM HYDROXIDE	101,400	121,695	No Change	--	500
ARGON	11,447,269	11,447,269	No Change	--	100
CHEMTREAT BL124	9,579	5,412	No Change	--	500
CHEMTREAT BL1260	5,564	5,200	No Change	--	500
CHEMTREAT BL1303 (Caustic 5%)	8,570	9,196	No Change	--	500
CHEMTREAT BL1559	5,038	4,746	No Change	Yes (30%)	500
CHEMTREAT BL1744	4,905	0	No Change	--	500
CHEMTREAT BL1746	7,863	5,616	No Change	--	500
CHEMTREAT BL1797	7,863	0	No Change	--	500
CHEMTREAT CL1495	24,021	26,572	No Change	--	500
CHEMTREAT CL2150	6,413	6,876	No Change	--	500

Substance	Maximum Quantity on Site (lbs) RY2022	Maximum Quantity on Site (lbs) RY2024	Change in Quantity due to Projects?	Contains EPCRA 302 Substance (% of Mixture that contains EPCRA 302 Substance)	Louisiana Threshold Inventory Quantity (lbs)
CHEMTREAT CL2840	3,688	551	No Change	--	500
CHEMTREAT CL4132	7,163	8,228	No Change	--	500
CHEMTREAT CT907	2,113	845	No Change	--	500
CHEMTREAT P8281L(N)	55,832	52,984	No Change	--	500
CO2/ARGON SHIELDING MIX	1,057	0	No Change	--	100
DEF	12,007	13,007	No Change	--	500
DIESEL	19,942	19,942	No Change	--	500
UNLEADED GASOLINE	1,853	6,175	No Change	--	100
HDMAX® 200 TRX 2.5	44,420	44,420	No Change	--	500
MEGAMAX® 800 TAB 6X4	675,408	828,876	No Change	--	500
NATURAL GAS (METHANE)	29,330	29,330	No Change	--	500
NITROGEN	22,431	0	No Change	--	100
OXYGEN	7,500,000	7,500,000	Will Increase	--	500
PHOSPHORIC ACID	3,688	6,984	No Change	--	500
PROPANE	1,990	1,990	No Change	--	100
PUROLITE CT252	38,927	38,927	No Change	--	500
QUADRASPERSE CL5859	28,650	22,869	No Change	--	500
REFORMAX® 100 TAB 4.7X4.7	94,915	94,915	No Change	--	500
REFORMAX® 330 LDP 19X16	207,551	117,468	No Change	--	500
REFORMAX® 420 EXTR 30	47,520	75,770	No Change	--	500
CAUSTIC SODA 20%	4,048	4,048	No Change	--	500
CAUSTIC SODA 50%	59,334	58,058	No Change	--	500
SULFURIC ACID	122,400	56,610	No Change	Yes (98%)	500
UMICORE CATALYST DNX	23,346	23,346	No Change	Yes (4%)	500
CALCOAT127	0	585	No Change	--	500
CHEMTREAT BL1794	0	9,399	No Change	--	500

Substance	Maximum Quantity on Site (lbs) RY2022	Maximum Quantity on Site (lbs) RY2024	Change in Quantity due to Projects?	Contains EPCRA 302 Substance (% of Mixture that contains EPCRA 302 Substance)	Louisiana Threshold Inventory Quantity (lbs)
CHEMTREAT PB8045	0	2,712	No Change	--	500
CITRIC ACID 50%	0	4,216	No Change	--	500
COMPRESSED AIR	0	28,646	No Change	--	500
CRUDE GLYCERINE	0	2,712	No Change	--	500
CHEMTREAT FO223 DEFOAMER	0	542	No Change	--	500
DURACLEAR DC-5-F	0	725	No Change	--	500
REFORMAX 330 LDP PLUS 20X17	0	107,870	No Change	--	500
SYNGEAR SH7100	0	1,180	No Change	--	500
SYNGEAR SH-1022	0	826	No Change	--	500

2025 Update: The maximum quantity values provided in the previous application were from the RY2022 Tier II Report and information available at the time. The Table 1 above has been updated to also reflect values from the RY2024 Tier II Report and updated information at this time. Any additional chemicals that were added to the Tier II inventory have been incorporated into Table 1 above.

- iii. EPCRA Facility Type 313 Yes. The facility is currently subject to EPCRA 313 reporting. Methanol and ammonia exceed their respective EPCRA 313 reporting thresholds. Methanol is the main product produced at the facility, and ammonia (aqueous) is used as a reagent to control nitrogen oxide emissions prior to being emitted to the atmosphere. For future EPCRA 313 reporting, the site may also exceed the reporting threshold for zinc, copper, and nickel compounds, which are EPCRA 313-reportable components of catalysts contained in process vessels used in the methanol production process – the catalysts are changed out over time, and the catalysts that are removed are accounted for in the relevant reports. Due to the KMe Optimization Project, the amount of methanol and ammonia produced/used and their related emissions are anticipated to increase. However, the only new substance or substance

with increased inventory resulting from the projects, ethane and oxygen, are not EPCRA 313-reportable chemicals.

- iv. EPCRA RMP Site Yes, the KMe Facility is currently subject to the Risk Management Program (RMP) due to Flammable Mixture, which includes methane in natural gas which is onsite above the Threshold Quantity and is subject to RMP for Flammable Materials. This will continue to be the case after the proposed projects are completed. Ethane will also be added to the RMP as a part of the KMe Optimization Project, as it will be stored above the Threshold Quantity. A summary of the results of the RMP worst-case scenarios is included in item #5 below.

2025 Update: Note that with the operation of the ethane pipeline, the KMe Facility remains subject to the Risk Management Program (RMP) due to Flammable Mixture, based on both methane in natural gas and ethane which are onsite above the threshold quantity and are both subject to RMP for Flammable Materials.

5. What is the facility's average, most probable worst case scenario for both RMP and non-RMP facilities?

The KMe Facility's current RMP includes the worst-case scenario for methane, a flammable material. The worst-case scenario is the loss of containment of methane from the main natural gas line in the KMe Plant, leading to a vapor cloud explosion. This worst-case scenario has the largest hazardous impact radius compared to other alternative scenarios.

An analysis of the worst-case scenario impacts for methane was conducted using the Environmental Protection Agency's (EPA's) RMP*Comp™ modeling software, which determined the maximum distance impacted originating from three representative areas, as shown in Figure 5. This impact radius extends 813 feet beyond the KME Facility's property boundary on the northwest side. However, the potentially impacted area outside the property boundary is designated as Industrial and only contains a railway track and a small section of above-ground piping. Therefore, this scenario

would not impact any public receptors, such as residences, schools, churches, hospitals, etc., or any sensitive environmental receptors, such as National or State Parks, Forests, Monuments, Federal Wilderness Areas, or Officially Designated Wildlife Sanctuaries, Preserves, or Refuges.

Ethane is the only new substance due to the projects subject to RMP. A preliminary worst-case scenario for ethane was evaluated using EPA's RMP*Comp™ modeling software based on the planned project ethane-containing process and piping components. The worst-case scenario for ethane is a vapor cloud explosion since it also is a flammable material. The modeling of this scenario for ethane determined the maximum distance impacted originating from three representative areas, as shown in Figure 5. The potentially impacted areas extend 1,347 feet beyond the KMe Facility's property boundary on the northwest side and 90 feet on the southeast side. However, the potentially impacted areas outside the property boundary are designated as Industrial, and they too only contain a railway track and a small section of above-ground piping. Therefore, none of the public or sensitive environmental receptor types listed above would be impacted by this scenario.

2025 Update: When the ethane pipeline connection became operational, KMe was required to update its EPA RMP*Comp™ evaluation to determine the site's WCS after introducing ethane. This resulted in updating the worst case scenario to be a loss of containment of ethane from the ethane pipeline leading to a vapor cloud explosion. This update reduces the maximum distance from what was indicated in the previous application (distance reduced from 0.3 miles to 0.2 miles) as reflected in the updated Figure 5 – “Worst-Case Scenario”.

- 6. What is the proposed facility's Emergency Operation Plan for the prevention, preparation, response, mitigation, and recovery of the following:**
- Fire- to include manpower, fire water, cooling water, and appropriate fire suppression agent, i.e., foam, dry chemical.

The KMe Facility is staffed 24 hours per day, 365 days per year. KMe Facility operations staff and a 3rd party emergency response team (ERT) currently handle any emergency events. The

facility has a fire brigade and HAZMAT capability and facility operations staff is First Aid and CPR trained. The 3rd Party ERT can also provide on-site rescue services and trained EMR/EMTs on shift.

Two underground fire water distribution networks are provided, one at the KMe Plant and the other at the KMe Terminal tank farm. One distribution network supplies fire water to hydrants, fixed monitors, water/foam spray systems, and automatic sprinkler systems located around the KMe Plant, and the second system supplies the KMe Terminal tank farm.

The KMe Plant contains 4 fire water pumps, 3 of which are diesel driven to ensure capability is maintained in the event of a power loss. These pumps supply fire water to the KMe Plant from the fire water tank. The fire water tank has a storage capacity sufficient to provide the maximum fire water demand for a minimum of four hours. If additional firewater is needed, the firewater tank can be bypassed, and water from the Mississippi River can be directly routed to supply the plant firewater system. Foam deluge systems are in place for the KMe Plant methanol intermediate tanks and truck and rail loading racks.

The KMe Terminal has 3 electrically driven fire water pumps, two of which are supported by diesel generator backup to ensure capability is maintained in the event of a power loss. These pumps pull fire water directly from the Mississippi River and supply the water to the KMe Terminal tank farm. The KMe Terminal area has a foam deluge system for all four methanol storage tanks, fire water manifolds, and monitors.

In addition to fixed fire water capabilities, the plant fire brigade operates an industrial foam pumper truck with a 6,000-gallon per minute (gpm) rated fire pump and a 1,000-gallon foam tank.

Fire extinguishers are provided throughout the process areas and within buildings in accordance

with National Fire Protection Association (NFPA) 10 standards for portable fire extinguishers and the International Building Code (IBC).

The KMe Plant and KMe Terminal have a sophisticated fire and gas detection system. These systems are intended to rapidly and reliably detect a hazardous situation due to flammable vapors/gases, low oxygen levels, toxic gases/vapors, and fires.

- i. Is the facility's water supply designed for twice the water supply needed?

Yes. The KMe Plant's firewater pumps pull from treated firewater tanks but also have a bypass intake in the Mississippi River, providing the KMe Plant with a continuous water supply. For the KMe Terminal, two of the fire water pumps are provided with backup power by diesel-fired generators that can be utilized even during a power loss event. This ensures that twice the water supply demand can be met. The third pump is available solely for additional capacity in the case of an emergency.

- ii. Does the facility have twice the needed fire suppression agent, i.e., foam, dry chemical?

The KMe Facility has approximately 15,000 pounds of firefighting foam, more than twice the amount required for the facility.

- b. Releases- to include manpower and resources, i.e., water, foam, dry chemical.

The KMe Facility is designed with operating controls that safely handle releases. This includes but is not limited to routing process safety valves to equipment that mitigates the release of process fluids that would otherwise vent to the atmosphere. Also, staff at the facility are HAZMAT trained to respond to hazardous material releases. Emergency spill kits are located throughout the KMe Facility to aid in response. Additionally, KMe has a 3rd party environmental spill response company available on stand-by for response in case of an emergency.

- c. Spills- to include manpower and resources, i.e., water, foam, dry chemical.

The KMe Facility's activities are performed in accordance with applicable state requirements of LAC Title 33, Part IX, Chapter 9 for Spill Prevention and Control (SPC) and federal Spill Prevention, Control, and Countermeasure (SPCC) requirements of 40 CFR Part 112. In tandem, these regulations cover all liquids and solids listed under LAC Title 33, Part I, § 3931, as well as oils that could be immediately transported to the waters of the state in the event of a release. Such rules apply to any container storing 55 gallons or more of subject fluids that may be present on site either permanently or temporarily. The rules require routine inspection of containers of stored oils and chemicals to ensure that all are in working order with no signs of maintenance needs or imminent failure. The KMe Facility's existing SPCC/SPC Plan will be amended to include any additional subject containers brought on-site as a result of the proposed projects.

The facility has a stormwater pollution prevention plan (SWPPP) for managing and monitoring stormwater, incorporating Best Management Practices (BMP). The SWPPP also ensures that the potential adverse environmental effects associated with generating solid and/or hazardous wastes from spills of oil or hazardous substances are minimized to the maximum extent possible. The specific BMPs and/or good housekeeping measures in the SWPPP include, but are not limited to:

- Containment dikes provided for chemical storage tanks, with visual inspections prior to the release of accumulated stormwater;
- Minimization of exposed bare soils;
- Wastes and chemicals are stored in covered containers or designated storage areas under roofing to prevent contact with stormwater;
- Immediate cleanup of spills prior to next storm event; and,
- Maintenance operations conducted under roof where practicable and maintenance-related fluids stored indoors or within covered containers.

The containment areas in the KMe Plant and KMe Terminal truck and rail area have a higher potential for contamination compared to other areas of the KMe Facility. Therefore, in the areas, KMe utilizes a "first-flush" protocol to protect against potentially contaminated stormwater being

sent directly to offsite waters. This protocol requires stormwater that is generated within these areas from the first inch of rainfall to be collected in a separate, segregated sewer system (the Potentially Contaminated Sewer System, or PCSS) and to be routed to the onsite wastewater treatment plant (WWTP) for treatment prior to discharge to the Mississippi River. After the first inch of rainfall, to prevent overwhelming the wastewater treatment plant, the PCSS is diverted to a lined pond that can discharge to the Mississippi River (this stream is not discharged to the St. James Canal). Note that after the first inch of rainfall, the potential for contamination is low; therefore, treatment at the WWTP is unnecessary.

KMe does not anticipate significant changes to the footprint of current tanks or building new equipment for chemical storage as a result of the proposed projects.

d. Weather events.

The facility has a Standalone Hurricane Plan and a Severe Weather Policy. A 3rd party service also monitors the weather for excessive heat, severe weather, lightning, and other weather-related events and provides real-time updates.

e. Air monitoring at the facility's perimeter (fence line) to assure public safety.

If there were to be a release or spill at the KMe Facility, trained facility personnel are available 24/7 to respond with portable monitors within the plant and along fence line areas as needed to determine if there are detectable levels of materials and to take other appropriate actions based on the monitor readings. Additionally, based on feedback KMe proactively requested from community members, prior to the start-up of the raw material feed upgrade portion of the KMe Optimization Project, KMe will install a fence line monitoring system that will monitor volatile organic compounds (VOC) or methanol along the KMe Facility property boundary or other facility perimeter. KMe anticipates that the Louisiana Department of Environmental Quality will include this voluntary commitment to install the fence line monitoring system as a requirement in the air permit for the KMe Optimization Project.

2025 Update: Following the issuance of the site's new air permits, a Fenceline Monitoring program is now required for the KMe Facility². The KMe Optimization Project supported the \$1.2 million installation of a new fenceline monitoring network around the KMe Facility. Data from the monitoring program has been collected since May 2024 and was shared with the community at a Town Hall event held in October 2024.

- f. Does the proposed facility agree to provide Emergency Response Plan(s) to, at a minimum, the respective fire department and Parish Office of Emergency Preparedness for proper public safety planning?

Yes, the KMe Facility has previously provided, and agrees to continue to provide, the Fire Department and Parish Office of Emergency Preparedness annual or more frequent updates as changes are made to the Emergency Response Plan.

- g. The proposed facility projected operating schedule other than normal downtime for routine maintenance?

The KMe Facility currently operates and will continue to operate 24 hours per day, 7 days per week, and 365 days per year, except for routine maintenance, following the proposed projects.

7. **Will the proposed facility be manned 24/7/365?** Yes, the KMe Facility is currently and will continue to be manned at all times following the proposed projects. Guards are stationed in the building located at Hwy 3127. Cameras allow the guards to continuously monitor the facility gates, process areas, truck loadout, administration, and warehouse buildings. Rounds are conducted every two hours during the overnight shift starting at 4 pm each night.

- a. If not, what procedures are proposed for emergency notifications for the duration of unmanned hours? N/A

8. **Does the proposed facility have a Facility Security Plan?** Yes, the KMe Facility has a Facility Security Plan.

- a. Does the Facility Security Plan incorporate prevention, preparation, response, mitigation, and recovery from chemical, biological, radiological, and inclement weather threats?

² LDEQ's Basis for Decision – VI. Mitigating Measures, Ambient Air Monitoring for Air Permit No. 2560-00295-V6 & PSD-LA-851

The Facility Security Plan addresses anticipated security threats in a variety of ways. It incorporates perimeter barriers, restricted areas, security devices, control of access and entry, and authorization for product loading. The facility has a camera system to monitor the facility during the day and night. Security guards are staffed 24 hours per day, 7 days per week, and 365 days per year. Rounds are made routinely during the overnight shift.

- b. Does the Facility Security Plan incorporate remote sites, i.e., docks, off-site locations, rail service, marine services, or pipelines?

Yes, rounds on the dock are made routinely, by security, during the overnight shift. Operations conduct routine rounds, at minimum, twice per shift.

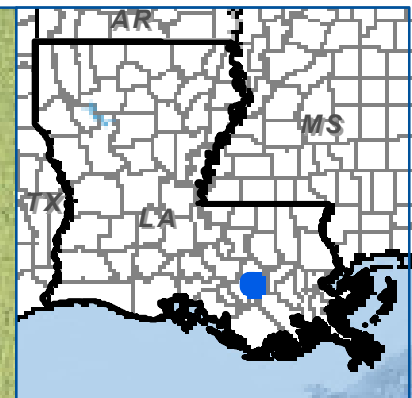
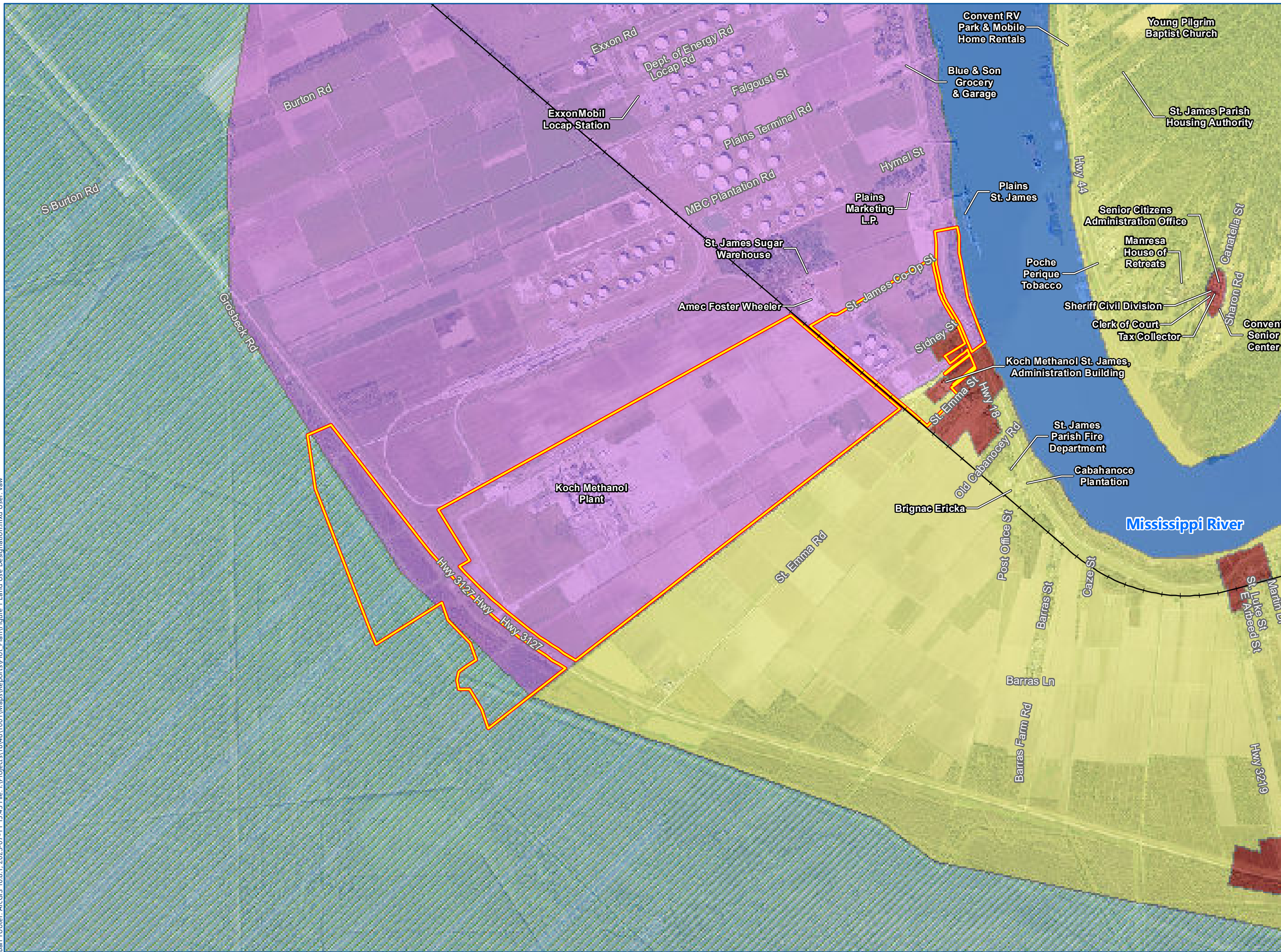
Please note: This application, one electronic copy, and payment to St. James Parish Government for Planning Commission review shall be presented to the St. James Parish Planning Office at least thirty (30) days prior to a regular meeting of the Planning Commission. Include letters indicating the availability of service and adequate capacities from affected utilities, including water/sewerage, electricity, gas, telephone and cable television. In areas lacking sewerage, letters indicating the alternate disposal method has been approved by the state office of public health. The St. James Parish Planning Commission reserves the right to request additional information and may include hard copies of voluminous materials.

Additional permits may be required by St. James Parish Permitting Office, Louisiana Department of Health and Hospitals, Louisiana State Fire Marshal and other Federal, State and Local regulating bodies.

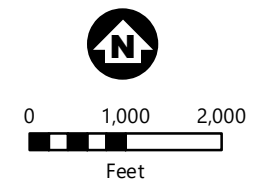
Figure 1

Land Use Designation

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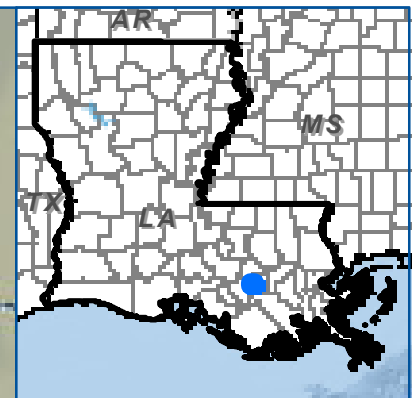
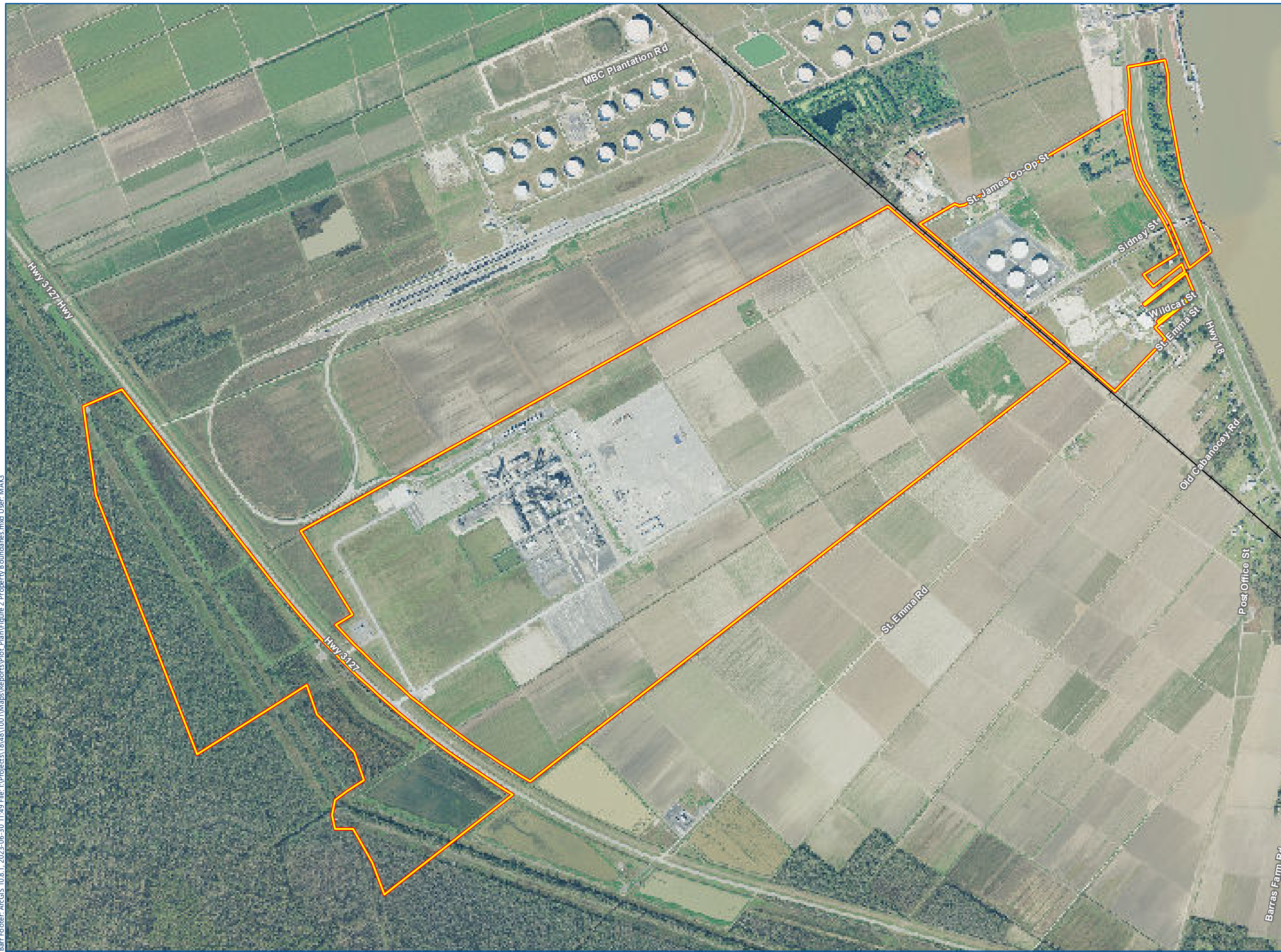
- Property Boundary
- Railroad
- St. James Parish Land Use**
- Commercial / Residential Mixed
 - Industrial
 - Residential Growth
 - Water
 - Wetlands



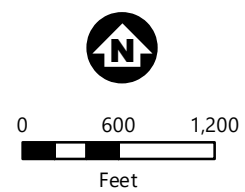
Land Use Designation
St. James Parish
Koch Methanol St. James, LLC
FIGURE 1

Figure 2

Facility Property Boundary



- Property Boundary
- Railroad



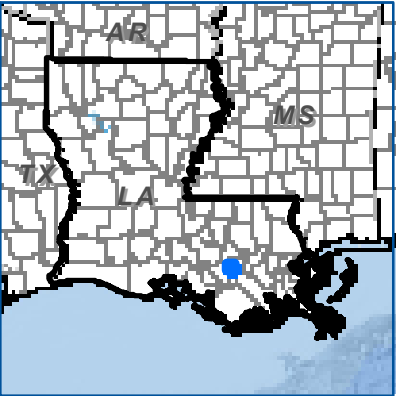
Facility Property Boundary
Koch Methanol St. James, LLC
FIGURE 2

Figure 3

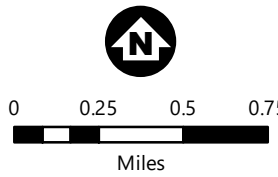
Facility Plot Plan

Figure 4

Section 82-25(g)(3)a. Sites



- Site
- +— Railroad
- Project Work Area
- Property Boundary
- 2-Mile Radius

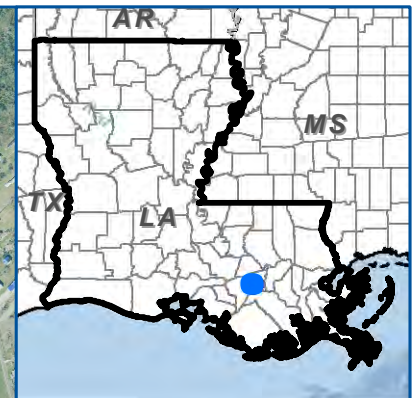
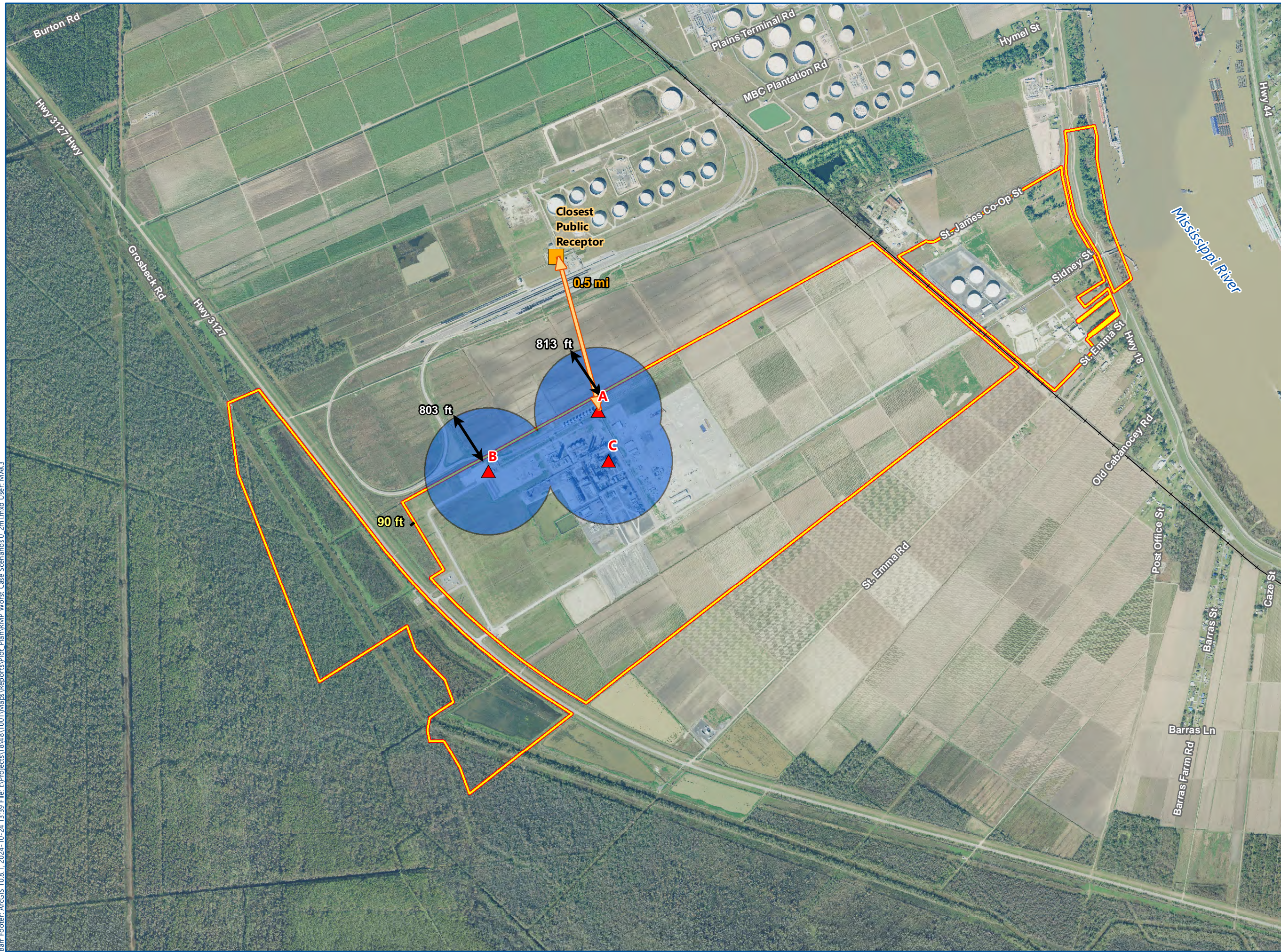


Section 82-25(g)(3)a. Sites
Koch Methanol St. James, LLC
FIGURE 4

Figure 5

RMP Worst-Case Scenarios

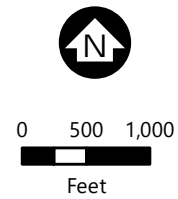
Barr Footer: ArcGIS 10.8.1, 2024-10-24 13:39 File: I:\Projects\1848\1001\Maps\Reports\Plot_Plan\RMP Worst Case Scenarios 0 2mi.mxd User: MAK3



- ↔ Offsite Distance
- ⇨ Closest Public Receptor Distance
- ▲ Release Location
- Closest Public Receptor
- +— Railroad
- Impact Area (0.2mi)
- Property Boundary

Closest Public Receptor Distance: 0.5 mi

Maximum Impact Distance to Outside Property Boundary: 813 feet



RMP
WORST-CASE SCENARIOS
Koch Methanol St. James, LLC

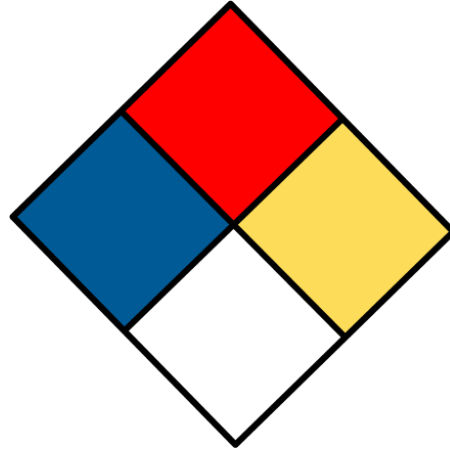
Attachment 1

Hazardous Materials Classifications

HAZARDOUS MATERIALS CLASSIFICATION

BLUE Diamond Health Hazard

- 4 Deadly
- 3 Extreme Danger
- 2 Hazardous
- 1 Slightly Hazardous
- 0 Normal Material



RED Diamond Fire Hazard (Flash Point)

- 4 Below 73°F
- 3 Below 100°F
- 2 Above 100°F, Not Exceeding 200°F
- 1 Above 200°F
- 0 Will Not Burn

YELLOW Diamond Reactivity

- 4 May Detonate
- 3 Shock and Heat; May Detonate
- 2 Violent Chemical Change
- 1 Unstable if Heated
- 0 Stable

WHITE Diamond Special Hazard

- ACID Acid
- ALK Alkali
- COR Corrosive
- OXY Oxidizer
- ☢ Radioactive
- W Use No Water

MATERIAL	CAS NUMBER	HEALTH HAZARD	FIRE HAZARD	REACTIVITY	SPECIAL HAZARD
Methanol	67-56-1	3	3	0	
Ethane	74-84-0 74-98-6 74-82-8	3	2	3	
Natural Gas, Dry	68410-63-9	1	4	0	
Aqua Ammonia (5-19.9%)	1336-21-6, 7732-18-5, 7664-41-7	3	0	0	
DNX	13463-67-7, 7631-86-9, 65997-17-3, 1314-35-8, 1314-62-1	3	0	0	
Purolite® CT252	69011-20-7, 7732-18-5	0	0	0	
ActiSorb® S2 Extr 4.5 0230	1314-13-2	2	0	0	
Oxygen, MediPure Oxygen (Praxair)	7782-44-7	0	0	0	
HDMax® 200 TRX 2.5 (aka Secondary Reformer 103-D)	1313-27-5, 1307-96-6, 1344-28-1	2	0	0	
Activated Alumina	1344-28-1	1	0	1	
MEGAMAX® 800 Tab 6x4	1317-38-0, 1314-13-2, 1344-28-1, 7782-42-5	2	0	0	
ReforMax® 100 Tab 4.7x4.7	1313-99-1, 1344-28-1, 1309-48-4, 7631-86-9, 1305-78-8, 68188-83-0	2	0	0	
ReforMax® 330 LDP 19x12	1344-28-1, 1313-99-1, 1305-78-8	2	0	0	
ReforMax® 330 LDP Plus 20x17	1344-28-1 65997-16-2 1313-99-1	2	0	0	
Acetylene	74-86-2	1	4	3	
AMBERLYST™ 40 WET Resin	39389-20-3, 7732-18-5	3	1	0	

AQUACHLOR 12.5% NSF SODIUM HYPOCHLORITE	7681-52-9, 1310-73-2	3	0	0	
Acrylic Bonding Agent J40	7732-18-5, 4719-04-4	1	0	0	
Calcoat 127	65997-15-1, 1344-95-2, 14808-60-7	1	0	0	0
Carbon Steel Electrodes and Rods for Gas Shielded Arc Welding	7439-89-6, 7440-39-3, 13463-67-7, 1317-95-9, 7439-93-2, 7429-90-5, 7439-95-4, 7440-02-0, 7440-21-3, 1309-48-4, 1344-28-1, 7439-98-7, 7440-50-8, 7440-67-7, 7631-86-9, 7440-32-6	3	0	0	
CAULK 100XT COMPONENT A	67-64-1, 108-10-1	2	3	0	
CAULK 100XT COMPONENT B	25707-70-4, 64-17-5, 67-56-1	2	3	1	
CO2/Argon Shielding Mix	7440-37-1, 124-38-9	CO2 - 2 Argon - 0	0	0	
Foremost 3345 Concrete Surface Retarder	1310-73-2	1	0	0	
Victory Blue Diesel Exhaust Fluid	7732-18-5, 57-13-6	1	0	0	
Marathon Petroleum No. 2 Ultra Low Sulfur Diesel Dyed 15 ppm Sulfur Max	68476-34-6, 8008-20-6, 1159170-26-9, 928771-01-1, 91-20-3	1	2	0	
Universal Gold^{®C6} 1%/3% Alcohol Resistant Aqueous Film Forming Foam	142-87-0, 132778-08-6, 34590-94-6	0	0	0	

Concentrate (AR-AFFF)					
Hand Sanitizer Isopropyl - 75%	67-63-0	2	3	0	
Hydrochloric Acid,ACS	7647-01-0, 7732018-5	3	0	1	
Nitrogen	7727-37-9	0	0	0	
Nitrogen Liquid	7727-37-9	3	0	0	
Propane	74-98-6	2	4	0	
GASOLINE, UNLEADED AUTOMOTIVE	64-17-5, 71-43-2, 100-41-4, 110-54-3, 91-20-3, 95-63-6, 108-88-3, 25551-13-7, 1330-20-7	1	3	0	
CL2840	7632-00-0, 64665-57-2, 12179-04-3	3	0	0	
CL2904	64665-57-2	2	0	0	
P8281L(N)	7705-08-0, 7647-01-0	3	0	4	
SODIUM HYDROXIDE 60% MEM NSF	1310-73-2	3	0	1	
PB809	N/A	0	2	0	
Sulfuric Acid, All Grades	7664-93-9	3	0	2	
ChemTreat P8315E	N/A	0	1	0	
ChemTreat BL1303	1310-73-2	3	0	1	
ChemTreatFO180	N/A	1	0	0	
ChemTreat FO223	N/A	1	0	0	
SODIUM HYDROXIDE 20% MEM 1-WAY	1310-73-2	3	0	1	
ChemTreat PB8045	7783-20-2, 57-13-6, 68333-79-9, 6484-52-2	1	0	0	
ChemTreat P873L	N/A	0	0	0	
ChemTreat P880L	N/A	0	0	0	
ChemTreat P824L	N/A	0	0	0	
ChemTreat P893L	12042-91-0	1	0	0	

ChemTreat OC9103	107-22-2, 107-21-1	2	0	0	
CD24	7664-93-9	3	0	0	
ChemTreat CL25D	7758-19-2	3	1	0	
CL4520	7783-20-2	1	0	0	
PurDOX™ BCD	7775-09-9, 7722-84-1	4	0	1	
Sulfuric Acid Solution 78%	7664-93-9	3	0	2	
ChemTreat CT775	7664-38-2	3	0	0	
ChemTreat P817E	N/A	0	1	0	
ChemTreat P835E	N/A	0	1	0	
BL124	7631-90-5	2	0	0	
Chemical Treatment CL2150	26172-55-4, 2682-20-4	3	0	0	
ChemTreat CL4132	202420-04-0, 64665-57-2, 1310-73-2	3	1	0	
Quadrasperse® CL5859	37971-36-1	2	0	0	
ChemTreat CL1495	7778-53-2, 7320-34-5	1	0	0	
BL1746	1310-73-2	3	0	0	
BL1744	1310-73-2	3	0	0	
ChemTreat BL1794	7601-54-9	1	0	0	
ChemTreat BL1260	497-18-7	1	0	0	
ChemTreat BL1559	108-91-8, 5332-73-0	2	2	0	
ChemTreat BL1797	10124-56-8, 1310-73-2	3	0	1	
CT907	9036-19-5, 26172-55-4	1	0	0	
CL5680	1310-73-2	3	0	0	
Chemical Treatment CL206	10222-01-2	3	1	1	
ChemTreat BL1302	1310-73-2	3	0	1	
Green Magic® GM1000	N/A	0	0	0	
Dissolvine E-39	64-02-8, 1310-73-2, 5064-31-3	2	0	0	
Duraclear DS	68649-11-6	2	0	0	
Syngear SH7100	68411-46-1	1	0	0	
Syngear SH1022	68937-96-2	1	0	0	
ChemTreat CL240	N/A	0	0	0	

CN202	N/A	0	0	0	
DryTec Calcium Hypochlorite Granular	7778-54-3, 7647-14-5, 10137-74-3, 10043-52-4, 1305-62-0, 471-34-1, 7732-18-5	3	0	1	
DPD Free Chlorine Reagent	7558-79-4, 139-33-3	2	0	0	
DPD Total Chlorine Reagent	7558-79-4, 7681-11-0	1	1	0	
PhosVer® 3 Phosphate Reagent	7790-62-7, 50-81-7, 7631-95-0, 10378-23-1, 28300-74-5	3	0	0	
NitriVer® 2 Nitrite Reagent	63589-59-3, 7790-62-7	3	0	0	
Buffer Solution pH 4.01 ± 0.02	50-00-0, 67-56-1	0	0	0	
Buffer Solution pH 7.00 ± 0.02	7558-79-4, 10377-60-3, 26172-55-4, 2682-20-4	0	0	0	
pH Storage Solution	7558-79-4, 111-30-8	0	0	0	
DEHA 2 Reagent	7697-37-2, 10421-48-4	3	0	0	
Molybdate 3 Reagent for Silica	7664-93-9, 7681-38-1, 7782-91-4	3	1	0	
Liquid Caustic Soda 50% Membrane Grade	1310-73-2	3	0	1	
ChemTreat CN220	6834-92-0, 64-02-8, 107-98-2	3	0	1	
ZEP-O-CLEAN_12CS QTS	7647-01-0	3	0	0	
Citric Acid	77-92-9	2	0	0	
FerroVer® (25 mL) Iron Reagent Foil Packs	10102-17-7, 92798-16-8, 775-14-6, 68-04-2, 7681-57-4	2	0	1	

2301-49 FerroZine Iron Regent	5421-46-5, 7732-18-5, 68-11-1, 69898-45-9	2	0	0	
Chlorophosphonazo Indicator Solution	10191-18-1, 10424-65-4	3	0	0	
Buffer Solution pH 10.01 ± 0.02	N/A	0	0	0	
Crude Glycerine 78%	56-81-5, 7732-18-5, 67-56-1	1	0	0	

Attachment 2

Safety Data Sheets

Types of Substances Produced / Stored

MATERIAL	CAS #
Products	
Methanol	67-56-1
Raw Materials	
Compressed Air	7727-37-9, 7782-44-7
Ethane	74-84-0
Natural Gas, Dry	68410-63-9
Aqua Ammonia (5-19.9%)	1336-21-6, 7732-18-5, 7664-41-7
Oxygen, MediPure Oxygen (Praxair)	7782-44-7
Catalyst	
DNX	13463-67-7, 7631-86-9, 65997-17-3, 1314-35-8, 1314-62-1
Purolite® CT252	69011-20-7, 7732-18-5
ActiSorb® S2 Extr 4.5 0230	1314-13-2
HDMax® 200 TRX 2.5 (aka Secondary Reformer 103-D)	1313-27-5, 1307-96-6, 1344-28-1
Activated Alumina	1344-28-1
MEGAMAX® 800 Tab 6x4	1317-38-0, 1314-13-2, 1344-28-1, 7782-42-5
ReforMax® 100 Tab 4.7x4.7	1313-99-1, 1344-28-1, 1309-48-4, 7631-86-9, 1305-78-8, 68188-83-0
ReforMax® 330 LDP 19x12	1344-28-1, 1313-99-1, 1305-78-8
ReforMax® 330 LDP 20x17	1344-28-1, 65997-16-2, 1313-99-1
AMBERLYST™ 40 WET Resin	39389-20-3, 7732-18-5
Maintenance Products	
Acetylene	74-86-2
Acrylic Bonding Agent J40	7732-18-5, 4719-04-4
CalCoat 127	65997-15-1, 1344-95-2, 14808-60-7
Carbon Steel Electrodes and Rods for Gas Shielded Arc Welding	7439-89-6, 7440-39-3, 13463-67-7, 1317-95-9, 7439-93-2, 7429-90-5, 7439-95-4, 7440-02-0, 7440-21-3, 1309-48-4, 1344-28-1, 7439-98-7, 7440-50-8, 7440-67-7, 7631-86-9, 7440-32-6
CAULK 100XT COMPONENT A	67-64-1, 108-10-1
CAULK 100XT COMPONENT B	25707-70-4, 64-17-5, 67-56-1
CO2/Argon Shielding Mix	7440-37-1, 124-38-9
CONCRETE SURFACE RETARDER S	1310-73-2
Duraclear Lubricant	68649-11-6
Nitrogen	7727-37-9
Nitrogen Liquid	7727-37-9
SynGear SH1022	68937-96-2
Syngear SH7100	68411-46-1
ZEP-O-CLEAN_12CS QTS	7647-01-0
Fuels	
Victory Blue Diesel Exhaust Fluid	7732-18-5, 57-13-6
Marathon Petroleum No. 2 Ultra Low Sulfur Diesel Dyed 15 ppm Sulfur Max	68476-34-6, 8008-20-6, 1159170-26-9, 928771-01-1, 91-20-3
GASOLINE, UNLEADED AUTOMOTIVE	64-17-5, 71-43-2, 100-41-4, 110-54-3, 91-20-3, 95-63-6, 108-88-3, 25551-13-7, 1330-20-7
Propane	74-98-6

Materials and their suppliers may be subject to change. Products similar in nature may be used. Any new chemicals will meet site review procedures and required agency notifications will be provided.

Fire Fighting Foam	
Universal Gold [®] C6 1%/3% Alcohol Resistant Aqueous Film Forming Foam Concentrate (AR-AFFF)	142-87-0, 132778-08-6, 34590-94-6
Water Treatment Chemicals	
Hydrochloric Acid,ACS	7647-01-0, 7732018-5
AQUACHLOR 12.5% NSF SODIUM HYPOCHLORITE	7681-52-9, 1310-73-2
CL2840	7632-00-0, 64665-57-2, 12179-04-3
CL2904	64665-57-2
P8281L(N)	7705-08-0, 7647-01-0
SODIUM HYDROXIDE 60% MEM NSF	1310-73-2
PB809	N/A
Sulfuric Acid, All Grades	7664-93-9
Crude Glycerine 78%	56-81-5, 7732-18-5, 67-56-1
ChemTreat P8315E	N/A
ChemTreat BL1303	1310-73-2
ChemTreatFO180	N/A
SODIUM HYDROXIDE 20% MEM 1-WAY	1310-73-2
ChemTreat PB8045	7783-20-2, 57-13-6, 68333-79-9, 6484-52-2
ChemTreat P873L	N/A
ChemTreat P880L	N/A
ChemTreat P824L	N/A
ChemTreat P893L	12042-91-0
ChemTreat OC9103	107-22-2, 107-21-1
CD24	7664-93-9
ChemTreat CL25D	7758-19-2
CL4520	7783-20-2
FO223	1310-73-2, 50-00-0
PurDOX [™] BCD	7775-09-9, 7722-84-1
Sulfuric Acid Solution 78%	7664-93-9
ChemTreat CT775	7664-38-2
ChemTreat P817E	N/A
ChemTreat P835E	N/A
BL124	7631-90-5
Chemical Treatment CL2150	26172-55-4, 2682-20-4
ChemTreat CL4132	202420-04-0, 64665-57-2, 1310-73-2
Quadrasperse [®] CL5859	37971-36-1
ChemTreat CL1495	7778-53-2, 7320-34-5
BL1746	1310-73-2
BL1744	1310-73-2
ChemTreat BL1794	7601-54-9
ChemTreat BL1260	497-18-7
ChemTreat BL1559	108-91-8, 5332-73-0
ChemTreat BL1797	10124-56-8, 1310-73-2
CT907	9036-19-5, 26172-55-4
CL5680	1310-73-2
Chemical Treatment CL206	10222-01-2
ChemTreat BL1302	1310-73-2
Green Magic [®] GM1000	N/A
Dissolvine E-39	64-02-8, 1310-73-2, 5064-31-3
ChemTreat CL240	N/A
CN202	N/A


Materials and their suppliers may be subject to change. Products similar in nature may be used. Any new chemicals will meet site review procedures and required agency notifications will be provided.

DryTec Calcium Hypochlorite Granular	7778-54-3, 7647-14-5, 10137-74-3, 10043-52-4, 1305-62-0, 471-34-1, 7732-18-5
Liquid Caustic Soda 50% Membrane Grade	1310-73-2
ChemTreat CN220	6834-92-0, 64-02-8, 107-98-2
Citric Acid	77-92-9
Lab Chemicals	
Chlorophosphonazo Indicator Solution	10191-18-1, 10424-65-4
Buffer Solution pH 10.01 ± 0.02	N/A
Buffer Solution pH 4.01 ± 0.02	50-00-0, 67-56-1
Buffer Solution pH 7.00 ± 0.02	7558-79-4, 10377-60-3, 26172-55-4, 2682-20-4
pH Storage Solution	7558-79-4, 111-30-8
Molybdate 3 Reagent for Silica	7664-93-9, 7681-38-1, 7782-91-4
DPD Free Chlorine Reagent	7558-79-4, 139-33-3
DPD Total Chlorine Reagent	7558-79-4, 7681-11-0
PhosVer® 3 Phosphate Reagent	7790-62-7, 50-81-7, 7631-95-0, 10378-23-1, 28300-74-5
NitriVer® 2 Nitrite Reagent	63589-59-3, 7790-62-7
DEHA 2 Reagent	7697-37-2, 10421-48-4
FerroVer® (25 mL) Iron Reagent Foil Packs	10102-17-7, 92798-16-8, 775-14-6, 68-04-2, 7681-57-4
2301-49 FerroZine Iron Regent	5421-46-5, 7732-18-5, 68-11-1, 69898-45-9

Materials and their suppliers may be subject to change. Products similar in nature may be used. Any new chemicals will meet site review procedures and required agency notifications will be provided.



SAFETY DATA SHEET

1. Identification		
Product identifier	CL2840	
Other means of identification		
Product code	CL2840	
Recommended use	Closed System Treatment	
Recommended restrictions	None known.	
Manufacturer/Importer/Supplier/Distributor information		
Manufacturer		
Company name	ChemTreat	
Address	5640 Cox Road Glen Allen, VA 23060 United States 800-648-4579 Not available.	
Telephone		
E-mail		
Emergency phone number	800-424-9300	
2. Hazard(s) Identification		
Physical hazards	Not classified.	
Health hazards	Acute toxicity, oral Category 3 Skin corrosion/irritation Category 1B Serious eye damage/eye irritation Category 1 Reproductive toxicity Category 2	
Environmental hazards	Hazardous to the aquatic environment, acute hazard Category 3	
OSHA defined hazards	Not classified.	
Label elements		
Signal word	Danger	
Hazard statement	Toxic if swallowed. Causes severe skin burns and eye damage. Causes serious eye damage. Suspected of damaging fertility or the unborn child. Harmful to aquatic life.	
Precautionary statement		
Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe mist/vapors. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.	
Response	If swallowed: Immediately call a poison center/doctor. Rinse mouth. If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. Wash contaminated clothing before reuse.	
Storage	Store locked up.	
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.	
Hazard(s) not otherwise classified (HNOC)	None known.	
Supplemental information	None.	

Material name: CL2840 SDS US
CL2840 Version #: 01 Issue date: 09-29-2022 1 / 8

Environmental precautions Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage	
Precautions for safe handling	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe mist/vapors. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Avoid prolonged exposure. When using, do not eat, drink or smoke. Pregnant or breastfeeding women must not handle this product. Should be handled in closed systems, if possible. Provide adequate ventilation. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid release to the environment. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store locked up. Store in tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection			
Occupational exposure limits			
The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.			
US. ACGIH Threshold Limit Values			
Components	Type	Value	Form
Disodium tetraborate pentahydrate (CAS 12179-04-3)	STEL	6 mg/m3	Inhalable fraction.
	TWA	2 mg/m3	Inhalable fraction.
US. NIOSH: Pocket Guide to Chemical Hazards			
Components	Type	Value	
Disodium tetraborate pentahydrate (CAS 12179-04-3)	TWA	1 mg/m3	
Biological limit values	No biological exposure limits noted for the ingredient(s).		
Appropriate engineering controls	Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.		
Individual protection measures, such as personal protective equipment			
Eye/face protection	Wear safety glasses with side shields (or goggles). Wear a full-face respirator, if needed.		
Skin protection			
Hand protection	Wear appropriate chemical resistant gloves.		
Other	Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.		
Respiratory protection	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.		
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.		
General hygiene considerations	Observe any medical surveillance requirements. Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.		

9. Physical and chemical properties	
Appearance	
Physical state	Liquid.
Form	Liquid.
Color	Yellow
Odor	Mild
Odor threshold	Not available.
pH	12 - 14

Material name: CL2840 SDS US
CL2840 Version #: 01 Issue date: 09-29-2022 3 / 8

3. Composition/information on ingredients			
Mixtures			
Chemical name	Common name and synonyms	CAS number	%
Sodium nitrite		7632-00-0	15 - < 40
Sodium tolyltriazole		64665-57-2	1 - < 3
Disodium tetraborate pentahydrate		12179-04-3	0.1 - < 0.5
Other components below reportable levels			60 - < 70

4. First-aid measures	
Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
Most important symptoms/effects, acute and delayed	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
General information	IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures	
Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures	
Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist/vapors. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Prevent product from entering drains. Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

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Melting point/freezing point	-9.40 °F (-23.00 °C)
Initial boiling point and boiling range	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	0 - 200 cps
Other information	
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Pounds per gallon	11.02
Specific gravity	1.3 - 1.32 @ 20C
VOC	0 %w/w

10. Stability and reactivity	
Reactivity	Reacts violently with strong acids. This product may react with oxidizing agents.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Contact with incompatible materials. Do not mix with other chemicals.
Incompatible materials	Acids. Oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information	
Information on likely routes of exposure	
Inhalation	May cause irritation to the respiratory system. Prolonged inhalation may be harmful.
Skin contact	Causes severe skin burns.
Eye contact	Causes serious eye damage.
Ingestion	Toxic if swallowed. Causes digestive tract burns.
Symptoms related to the physical, chemical and toxicological characteristics	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.
Information on toxicological effects	
Acute toxicity	Toxic if swallowed.

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Components	Species	Test Results
Disodium tetraborate pentahydrate (CAS 12179-04-3)		
Acute		
Dermal		
LD50	Rabbit	> 1055 mg/kg
Oral		
LD50	Rat	2660 mg/kg
Sodium nitrite (CAS 7632-00-0)		
Acute		
Oral		
LD50	Rat	85 mg/kg
Skin corrosion/irritation	Causes severe skin burns and eye damage.	
Serious eye damage/eye irritation	Causes serious eye damage.	
Respiratory or skin sensitization		
Respiratory sensitization	Not a respiratory sensitizer.	
Skin sensitization	This product is not expected to cause skin sensitization.	
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.	
Carcinogenicity	Risk of cancer cannot be excluded with prolonged exposure.	
IARC Monographs. Overall Evaluation of Carcinogenicity		
Sodium nitrite (CAS 7632-00-0) 2A Probably carcinogenic to humans.		
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)		
Not regulated.		
US. National Toxicology Program (NTP) Report on Carcinogens		
Not listed.		
Reproductive toxicity	Suspected of damaging fertility or the unborn child.	
Specific target organ toxicity - single exposure	Not classified.	
Specific target organ toxicity - repeated exposure	Not classified.	
Aspiration hazard	Not an aspiration hazard.	
Chronic effects	Prolonged inhalation may be harmful. Prolonged exposure may cause chronic effects.	

12. Ecological information

Ecotoxicity		Harmful to aquatic life.	
Product		Species	Test Results
CL2840			
Aquatic			
Crustacea	LC50	Ceriodaphnia dubia	6.43 mg/l, 48 hours
		Daphnia pulex	27 mg/l, 48 hours
Fish	LC50	Fathead minnow (Pimephales promelas)	76.6 mg/l, 96 hours
			65 mg/l, 48 hours
Components		Species	Test Results
Sodium tolyltriazole (CAS 64665-57-2)			
Aquatic			
Crustacea	LC50	Water flea (Ceriodaphnia dubia)	141.789 mg/l, 48 h
Fish	LC50	Fathead minnow (Pimephales promelas)	70 - 154 mg/l, 96 h
Persistence and degradability	No data is available on the degradability of any ingredients in the mixture.		
Bioaccumulative potential	No data available.		

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Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not established.

DOT



IATA; IMDG



15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Toxic Substances Control Act (TSCA)

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Sodium nitrite (CAS 7632-00-0) 0.1 % One-Time Export Notification only.

CERCLA Hazardous Substance List (40 CFR 302.4)

Sodium nitrite (CAS 7632-00-0) Listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical

Yes

Classified hazard categories

Acute toxicity (any route of exposure)
Skin corrosion or irritation
Serious eye damage or eye irritation
Reproductive toxicity

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Sodium nitrite	7632-00-0	15 - < 40

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

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Mobility in soil No data available.
Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Incinerate the material under controlled conditions in an approved incinerator. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	D002: Waste Corrosive material [pH <=2 or >=12.5, or corrosive to steel] The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT	
UN number	UN3266
UN proper shipping name	Corrosive liquid, basic, inorganic, n.o.s. (Sodium nitrite RQ = 260 LBS, Sodium hydroxide RQ = 133333 LBS)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Label(s)	8
Packing group	II
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	B2, IB2, T11, TP2, TP27
Packaging exceptions	154
Packaging non bulk	202
Packaging bulk	242
IATA	
UN number	UN3266
UN proper shipping name	Corrosive liquid, basic, inorganic, n.o.s. (Sodium nitrite and Sodium hydroxide)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Environmental hazards	No.
ERG Code	8L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed with restrictions.
Cargo aircraft only	Allowed with restrictions.
IMDG	
UN number	UN3266
UN proper shipping name	CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S. (Sodium nitrite and Sodium hydroxide)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Environmental hazards	No.
Marine pollutant	No.
EmS	F-A, S-B
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

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US state regulations

California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to www.P65Warnings.ca.gov.

US, California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

Disodium tetraborate pentahydrate (CAS 12179-04-3)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	09-29-2022
Version #	01
HMIS® ratings	Health: 3* Flammability: 0 Physical hazard: 0
Disclaimer	ChemTreat cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available. Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, ChemTreat, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ChemTreat, Inc. be responsible for damages of any nature whatsoever resulting from the use or reliance upon information. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.
Other information	Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

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SAFETY DATA SHEET

1. Identification

Product identifier	CL2904
Other means of identification	
Product code	CL2904
Recommended use	Cooling Water Treatment
Recommended restrictions	None known.
Manufacturer/Importer/Supplier/Distributor information	
Manufacturer	
Company name	ChemTreat
Address	5640 Cox Road Glen Allen, VA 23060 United States 800-648-4579
Telephone	Not available.
E-mail	800-424-9300
Emergency phone number	

2. Hazard(s) identification

Physical hazards	Not classified.	
Health hazards	Skin corrosion/irritation Serious eye damage/eye irritation	Category 2 Category 2
Environmental hazards	Not classified.	
OSHA defined hazards	Not classified.	
Label elements		
Signal word	Warning	
Hazard statement	Causes skin irritation. Causes serious eye irritation.	
Precautionary statement		
Prevention	Wash thoroughly after handling. Wear eye protection/face protection. Wear protective gloves.	
Response	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If skin irritation occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.	
Storage	Store away from incompatible materials.	
Disposal	Dispose of waste and residues in accordance with local authority requirements.	
Hazard(s) not otherwise classified (HNOC)	None known.	
Supplemental information	None.	

3. Composition/information on ingredients

Mixtures			
Chemical name	Common name and synonyms	CAS number	%
Sodium tolyltriazole		64665-57-2	1 - < 3
Other components below reportable levels			90 - 100

4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
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US. ACGIH Threshold Limit Values			
Components	Type	Value	Form
Disodium Molybdate (CAS 7631-95-0)	TWA	0.5 mg/m3	Respirable fraction.

Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station and safety shower.
Individual protection measures, such as personal protective equipment	
Eye/face protection	Wear safety glasses with side shields (or goggles).
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves.
Other	Wear appropriate chemical resistant clothing.
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	
Physical state	Liquid.
Form	Liquid.
Color	Straw
Odor	Mild
Odor threshold	Not available.
pH	13 @ 20C
Melting point/freezing point	25.30 °F (-3.72 °C)
Initial boiling point and boiling range	211.95 °F (99.97 °C) estimated
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	0.00001 hPa estimated
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	0 - 200 cps

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Skin contact	Remove contaminated clothing. Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists. Rinse mouth. Get medical attention if symptoms occur.
Ingestion	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain.
Most important symptoms/effects, acute and delayed	
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS. Avoid discharge into drains, water courses or onto the ground.

Environmental precautions

Environmental precautions	Avoid discharge into drains, water courses or onto the ground.
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7. Handling and storage

Precautions for safe handling	Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store in tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits		
The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.		
US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)		
Components	Type	Value
Disodium Molybdate (CAS 7631-95-0)	PEL	5 mg/m3

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Other information	
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Pounds per gallon	10.26
Specific gravity	1.22 - 1.24 @ 20C
VOC	0 %w/w

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure	
Inhalation	Prolonged inhalation may be harmful.
Skin contact	Causes skin irritation.
Eye contact	Causes serious eye irritation.
Ingestion	Expected to be a low ingestion hazard.
Symptoms related to the physical, chemical and toxicological characteristics	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain.

Information on toxicological effects		
Acute toxicity	Not known.	
Components	Species	Test Results

Disodium Molybdate (CAS 7631-95-0)		
Acute		
Oral		
Liquid		
LD50	Rat	2810 mg/kg

Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/eye irritation	Causes serious eye irritation.

Respiratory or skin sensitization	
Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity	
IARC Monographs. Overall Evaluation of Carcinogenicity	
Not listed.	
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)	
Not regulated.	
US. National Toxicology Program (NTP) Report on Carcinogens	
Not listed.	
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.

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Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.
Chronic effects	Prolonged inhalation may be harmful.

12. Ecological information			
Ecotoxicity			
The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.			
Product	Species	Test Results	
CL2904			
Aquatic			
Crustacea	LC50	Ceriodaphnia dubia	2333 mg/l, 48 hours
Fish	LC50	Fathead minnow (Pimephales promelas)	1387 mg/l, 96 hours
Persistence and degradability			
No data is available on the degradability of any ingredients in the mixture.			
Bioaccumulative potential			
No data available.			
Mobility in soil			
No data available.			
Other adverse effects			
No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.			

13. Disposal considerations	
Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Incinerate the material under controlled conditions in an approved incinerator. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	D002: Waste Corrosive material [pH <=2 or >=12.5, or corrosive to steel] The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information	
DOT	Not regulated as dangerous goods.
IATA	Not regulated as dangerous goods.
IMDG	Not regulated as dangerous goods.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not established.

15. Regulatory information	
US federal regulations	This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
Toxic Substances Control Act (TSCA)	
TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)	Not regulated.
CERCLA Hazardous Substance List (40 CFR 302.4)	Not listed.
SARA 304 Emergency release notification	Not regulated.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)	Not regulated.

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Disclaimer	ChemTreat cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available. Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, ChemTreat, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ChemTreat, Inc. be responsible for damages of any nature whatsoever resulting from the use or reliance upon information. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which this information refers.
Revision information	This document has undergone significant changes and should be reviewed in its entirety.
Other information	Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

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Superfund Amendments and Reauthorization Act of 1986 (SARA)	
SARA 302 Extremely hazardous substance	
Not listed.	
SARA 311/312 Hazardous chemical	Yes
Classified hazard categories	Skin corrosion or irritation Serious eye damage or eye irritation
SARA 313 (TRI reporting)	Not regulated.
Other federal regulations	
Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List	
Not regulated.	
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)	
Not regulated.	
Safe Drinking Water Act (SDWA)	Contains component(s) regulated under the Safe Drinking Water Act.
US state regulations	
California Proposition 65	
California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to www.P65Warnings.ca.gov .	


International Inventories		
Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes
*A "yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s) A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).		

16. Other information, including date of preparation or last revision	
Issue date	02-08-2021
Revision date	01-13-2022
Version #	02
HMIS® ratings	Health: 2 Flammability: 0 Physical hazard: 0 Personal protection: X

Material name: CL2904	SDS US
CL2904 Version #: 02 Revision date: 01-13-2022 Issue date: 02-08-2021	6 / 7



SAFETY DATA SHEET

1. Identification		
Product identifier	P8281L(N)	
Other means of identification		
Product code	P8281L(N)	
Recommended use	Water Clarification Agent	
Recommended restrictions	None known.	
Manufacturer/Importer/Supplier/Distributor information		
Manufacturer		
Company name	ChemTreat, Inc.	
Address	5640 Cox Road Glen Allen, VA 23060 United States	
Telephone	800-648-4579	
Website	chemtreat.com	
E-mail	productcompliance@chemtreat.com	
Emergency phone number	800-424-9300	
2. Hazard(s) identification		
Physical hazards	Corrosive to metals	Category 1
Health hazards	Acute toxicity, oral	Category 2
	Skin corrosion/irritation	Category 1
	Serious eye damage/eye irritation	Category 1
Environmental hazards	Not classified.	
OSHA defined hazards	Not classified.	
Label elements		
		
Signal word	Danger	
Hazard statement	May be corrosive to metals. Fatal if swallowed. Causes severe skin burns and eye damage. Causes serious eye damage.	
Precautionary statement		
Prevention	Keep only in original container. Do not breathe mist/vapors. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection.	
Response	If swallowed: Immediately call a poison center/doctor. If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. Wash contaminated clothing before reuse. Absorb spillage to prevent material damage.	
Storage	Store locked up. Store in corrosive resistant container with a resistant inner liner.	
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.	
Hazard(s) not otherwise classified (HNOC)	None known.	
Supplemental information	41.5% of the mixture consists of component(s) of unknown acute dermal toxicity. 1.5, 1.5% of the mixture consists of component(s) of unknown long-term hazards to the aquatic environment.	

Material name: P8281L(N)	SDS US
P8281L(N) Version #: 03 Revision date: 02-28-2023 Issue date: 09-15-2020	1 / 8

3. Composition/information on ingredients			
Mixtures			
Chemical name	Common name and synonyms	CAS number	%
Ferric chloride		7705-08-0	40 - < 50
Hydrochloric acid		7647-01-0	1 - < 3
Other components below reportable levels			50 - < 60
Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.			
4. First-aid measures			
Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.		
Skin contact	Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.		
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.		
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.		
Most important symptoms/effects, acute and delayed	Nausea, vomiting. Abdominal pain. Diarrhea. Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.		
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim warm. Keep victim under observation. Symptoms may be delayed.		
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.		
5. Fire-fighting measures			
Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).		
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.		
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.		
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.		
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.		
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.		
6. Accidental release measures			
Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist/vapors. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.		
Methods and materials for containment and cleaning up	Should not be released into the environment. Prevent entry into waterways, sewer, basements or confined areas. Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb spillage to prevent material damage. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.		
Environmental precautions	Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.		
Material name: P8281L(N)			
P8281L(N) Version #: 03 Revision date: 02-28-2023 Issue date: 09-15-2020			

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pH	< 2
Melting point/freezing point	-14.80 °F (-26.00 °C)
Initial boiling point and boiling range	600.8 °F (316 °C) estimated
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	0.00001 hPa estimated
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	11.93 lbs/gal
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Specific gravity	1.43

10. Stability and reactivity	
Reactivity	Reacts violently with strong alkaline substances. This product may react with reducing agents. May be corrosive to metals.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. Contact with incompatible materials. Do not mix with other chemicals.
Incompatible materials	Bases. Strong oxidizing agents. Reducing agents. Metals.
Hazardous decomposition products	No hazardous decomposition products are known.
11. Toxicological information	
Information on likely routes of exposure	
Inhalation	May cause irritation to the respiratory system. Prolonged inhalation may be harmful.
Skin contact	Causes severe skin burns.
Eye contact	Causes serious eye damage.
Ingestion	Fatal if swallowed. Causes digestive tract burns.
Symptoms related to the physical, chemical and toxicological characteristics	Nausea, vomiting. Abdominal pain. Diarrhea. Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.
Information on toxicological effects	
Acute toxicity	Fatal if swallowed.

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P8281L(N) Version #: 03 Revision date: 02-28-2023 Issue date: 09-15-2020	4 / 8		

7. Handling and storage		
Precautions for safe handling	Do not breathe mist/vapors. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Avoid prolonged exposure. When using, do not eat, drink or smoke. Provide adequate ventilation. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Observe good industrial hygiene practices.	
Conditions for safe storage, including any incompatibilities	Store locked up. Store in a cool, dry place out of direct sunlight. Store in corrosive resistant container with a resistant inner liner. Store in tightly closed container. Keep only in the original container. Store away from incompatible materials (see Section 10 of the SDS).	
8. Exposure controls/personal protection		
Occupational exposure limits		
The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.		
US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)		
Components	Type	Value
Hydrochloric acid (CAS 7647-01-0)	Ceiling	7 mg/m3
		5 ppm
US. ACGIH Threshold Limit Values		
Components	Type	Value
Ferric chloride (CAS 7705-08-0)	TWA	1 mg/m3
Hydrochloric acid (CAS 7647-01-0)	Ceiling	2 ppm
US. NIOSH: Pocket Guide to Chemical Hazards		
Components	Type	Value
Ferric chloride (CAS 7705-08-0)	TWA	1 mg/m3
Hydrochloric acid (CAS 7647-01-0)	Ceiling	7 mg/m3
		5 ppm
Biological limit values	No biological exposure limits noted for the ingredient(s).	
Appropriate engineering controls	Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.	
Individual protection measures, such as personal protective equipment		
Eyeface protection	Wear safety glasses with side shields (or goggles) and a face shield.	
Skin protection		
Hand protection	Wear appropriate chemical resistant gloves.	
Other	Wear appropriate chemical resistant clothing.	
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment.	
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.	
General hygiene considerations	Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.	
9. Physical and chemical properties		
Appearance	Clear	
Physical state	Liquid.	
Form	Liquid, Liquid	
Color	Amber	
Odor	Mild	
Odor threshold	Not available.	
Material name: P8281L(N)		
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Components	Species	Test Results
Ferric chloride (CAS 7705-08-0)		
<u>Acute</u>		
Oral		
LD50	Rat	28 mg/kg
Hydrochloric acid (CAS 7647-01-0)		
<u>Acute</u>		
Oral		
LD50	Rabbit	900 mg/kg
Skin corrosion/irritation	Causes severe skin burns and eye damage.	
Serious eye damage/eye irritation	Causes serious eye damage.	
Respiratory or skin sensitization		
Respiratory sensitization	Not a respiratory sensitizer.	
Skin sensitization	This product is not expected to cause skin sensitization.	
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.	
Carcinogenicity	Not classifiable as to carcinogenicity to humans.	
IARC Monographs. Overall Evaluation of Carcinogenicity		
Hydrochloric acid (CAS 7647-01-0)	3 Not classifiable as to carcinogenicity to humans.	
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)		
Not regulated.		
US. National Toxicology Program (NTP) Report on Carcinogens		
Not listed.		
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.	
Specific target organ toxicity - single exposure	Not classified.	
Specific target organ toxicity - repeated exposure	Not classified.	
Aspiration hazard	Not an aspiration hazard.	
Chronic effects	Prolonged inhalation may be harmful.	

12. Ecological information			
Ecotoxicity	Because of the low pH of this product, it would be expected to produce significant ecotoxicity upon exposure to aquatic organisms and aquatic systems.		
Product	Species	Test Results	
P8281L(N)			
Aquatic			
Acute			
Crustacea	LC50	Water flea (Ceriodaphnia dubia)	1000 mg/l, 48 h
Fish	LC50	Fathead minnow (Pimephales promelas)	7937 mg/l, 96 h
Persistence and degradability	No data is available on the degradability of any ingredients in the mixture.		
Bioaccumulative potential	No data available.		
Mobility in soil	No data available.		
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.		

13. Disposal considerations	
Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Incinerate the material under controlled conditions in an approved incinerator. Do not allow this material to drain into sewers/water supplies. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.

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Hazardous waste code	D002: Waste Corrosive material [pH <=2 or >=12.5, or corrosive to steel] The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

UN number	UN2582
UN proper shipping name	FERRIC CHLORIDE SOLUTION
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Label(s)	8
Packing group	III
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	B15, IB5, T4 TP1
Packaging exceptions	154
Packaging non bulk	203
Packaging bulk	241
Reportable quantity (RQ lbs)	1000

IATA

UN number	UN2582
UN proper shipping name	FERRIC CHLORIDE SOLUTION
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	III
Environmental hazards	No.
ERG Code	8L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed with restrictions.
Cargo aircraft only	Allowed with restrictions.

IMDG

UN number	UN2582
UN proper shipping name	FERRIC CHLORIDE SOLUTION
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	III
Environmental hazards	No.
Marine pollutant	No.
EmS	F-A, S-B
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not established.

Material name: P8281L(N)	SDS US
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Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number	
Hydrochloric acid (CAS 7647-01-0)	6545
Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))	
Hydrochloric acid (CAS 7647-01-0)	20 %WV
DEA Exempt Chemical Mixtures Code Number	
Hydrochloric acid (CAS 7647-01-0)	6545

US state regulations

California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to www.P65Warnings.ca.gov.

US, California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

Hydrochloric acid (CAS 7647-01-0)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes
*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s). A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).		

Compliance Information: NSF Whitebook

Compliance Information: NSF Standard 60

This product is certified to NSF/ANSI Standard 60 for the following approved function:Coagulation & Flocculation. Maximum use rate for potable water - 250 mg/L. This product ships as NSF from:
#42 USA



16. Other information, including date of preparation or last revision

Issue date	09-15-2020
Revision date	02-28-2023
Version #	03
HMIS® ratings	Health: 3 Flammability: 0 Physical hazard: 4 Personal protection: B
Disclaimer	ChemTreat, Inc. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available. Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, ChemTreat, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ChemTreat, Inc. be responsible for damages of any nature whatsoever resulting from the use or reliance upon information. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.
Revision information	Transport Information: Material Transportation Information
Other information	Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

Material name: P8281L(N)	SDS US
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DOT



IATA; IMDG



15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Toxic Substances Control Act (TSCA)

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Ferric chloride (CAS 7705-08-0) Listed.
Hydrochloric acid (CAS 7647-01-0) Listed.

SARA 304 Emergency release notification

Hydrogen chloride (CAS 7647-01-0) 5000 LBS
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)
Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Chemical name	CAS number	Reportable quantity (pounds)	Threshold planning quantity (pounds)	Threshold planning quantity, lower value (pounds)	Threshold planning quantity, upper value (pounds)
Hydrochloric acid	7647-01-0	5000	500		
SARA 311/312 Hazardous chemical	Yes				
Classified hazard categories	Corrosive to metal Acute toxicity (any route of exposure) Skin corrosion or irritation Serious eye damage or eye irritation				

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Hydrochloric acid	7647-01-0	1 - < 3

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Hydrochloric acid (CAS 7647-01-0)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Hydrochloric acid (CAS 7647-01-0)

Safe Drinking Water Act (SDWA)

Not regulated.

Material name: P8281L(N)	SDS US
P8281L(N) Version #: 03 Revision date: 02-28-2023 Issue date: 09-15-2020	7 / 8



SAFETY DATA SHEET

1. Identification

Other means of identification	None known.
Product identifier	SODIUM HYDROXIDE 50% MEM NSF
Recommended use	ALL PROPER AND LEGAL PURPOSES
Recommended restrictions	None known.
Manufacturer/Importer/Supplier/Distributor information	
Manufacturer	
Company name	Brenntag Pacific Inc.
Address	10747 Patterson Place Santa Fe Springs, CA 90870
Telephone	562-903-9626
E mail	Not available.
Emergency phone number	800-424-9300 CHEMTREC

2. Hazard(s) identification

Physical hazards	Not classified.
Health hazards	Skin corrosion/irritation Category 1 Serious eye damage/eye irritation Category 1 Specific target organ toxicity, single exposure Category 3 respiratory tract irritation
Environmental hazards	Not classified.
OSHA defined hazards	Not classified.
Label elements	



Signal word	Danger
Hazard statement	Causes severe skin burns and eye damage. Causes serious eye damage. May cause respiratory irritation.
Precautionary statement	
Prevention	Do not breathe mist/vapors. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.
Response	If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. Wash contaminated clothing before reuse.
Storage	Store in a well-ventilated place. Keep container tightly closed. Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	50% of the mixture consists of component(s) of unknown acute oral toxicity. 50% of the mixture consists of component(s) of unknown acute inhalation toxicity.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
SODIUM HYDROXIDE (NaOH)		1310-73-2	50
Other components below reportable levels			50

Material name: SODIUM HYDROXIDE 50% MEM NSF	SDS US
772282 Version #: D1 Issue date: 02-19-2022	1 / 7

4. First-aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a poison center or doctor/physician if you feel unwell.
Skin contact	Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Most important symptoms/effects, acute and delayed	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause respiratory irritation.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim under observation. Symptoms may be delayed.
General information	If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist/vapors. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS. Avoid discharge into drains, water courses or onto the ground.
Environmental precautions	

7. Handling and storage

Precautions for safe handling	Do not breathe mist/vapors. Do not get in eyes, on skin, or on clothing. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store locked up. Store in tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits			
US, OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)			
Components	Type	Value	
SODIUM HYDROXIDE (NA(OH)) (CAS 1310-73-2)	PEL	2 mg/m3	
US, ACGIH Threshold Limit Values			
Components	Type	Value	
SODIUM HYDROXIDE (NA(OH)) (CAS 1310-73-2)	Ceiling	2 mg/m3	
US, NIOSH: Pocket Guide to Chemical Hazards			
Components	Type	Value	
SODIUM HYDROXIDE (NA(OH)) (CAS 1310-73-2)	Ceiling	2 mg/m3	
<hr/>			
Biological limit values	No biological exposure limits noted for the ingredient(s).		
Appropriate engineering controls	Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product		
Individual protection measures, such as personal protective equipment			
The following are recommendations for Personal Protective Equipment (PPE). The employer/user of this product must perform a Hazard Assessment of the workplace according to OSHA regulations 29 CFR 1910.132 to determine the appropriate PPE for use while performing any task involving potential exposure to this product.			
Eye/face protection	Chemical respirator with organic vapor cartridge and full facepiece.		
Skin protection			
Hand protection	Wear appropriate chemical resistant gloves.		
Other	Wear appropriate chemical resistant clothing.		
Respiratory protection	Chemical respirator with organic vapor cartridge and full facepiece.		
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.		
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants		

9. Physical and chemical properties

Appearance	
Physical state	Liquid.
Form	Liquid.
Color	CLEAR
Odor	METAL ODOR
Odor threshold	Not available
pH	14
Melting point/freezing point	58 °F (14-44 °C)
Initial boiling point and boiling range	293 °F (145 °C) estimated
Flash point	Not available
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.

Carcinogenicity	Due to partial or complete lack of data the classification is not possible.
IARC Monographs. Overall Evaluation of Carcinogenicity	
Not listed.	
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)	
Not listed.	
US, National Toxicology Program (NTP) Report on Carcinogens	
Not listed.	
Reproductive toxicity	Due to partial or complete lack of data the classification is not possible.
Specific target organ toxicity - single exposure	May cause respiratory irritation.
Specific target organ toxicity - repeated exposure	Due to partial or complete lack of data the classification is not possible.
Aspiration hazard	Due to partial or complete lack of data the classification is not possible.
Chronic effects	Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.		
Components	Species	Test Results	
SODIUM HYDROXIDE (NA(OH)) (CAS 1310-73-2)			
Aquatic			
Crustacea	EC50	Water flea (Ceriodaphnia dubia)	34 59 - 47.13 mg/l, 48 hours
Fish	LC50	Western mosquitofish (Gambusia affinis)	125 mg/l, 96 hours
Persistence and degradability	No data is available on the degradability of this product.		
Bioaccumulative potential	No data available.		
Mobility in soil	No data available.		
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.		

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Incinerate the material under controlled conditions in an approved incinerator. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	D002: Waste Corrosive material [pH <=2 or >=12.5, or corrosive to steel] The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT	
UN number	UN1624
UN proper shipping name	SODIUM HYDROXIDE SOLUTION
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling. Transport information on packaging may be different from that listed. DOT information on packaging may be different from that listed. Transportation information on packaging may be different from that listed.

Explosive limit - lower (%)	Not available
Explosive limit - upper (%)	Not available
Vapor pressure	Not available.
Vapor density	Not available
Relative density	Not available
Solubility(ies)	
Solubility (water)	Not available
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available
Decomposition temperature	Not available.
Viscosity	Not available
Other information	
Density	12.76 lbs/gal 1.53 g/ml
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Percent volatile	50 % estimated
Specific gravity	1.53

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Strong acids.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure		
Inhalation	May cause irritation to the respiratory system. Prolonged inhalation may be harmful.	
Skin contact	Causes severe skin burns.	
Eye contact	Causes serious eye damage.	
Ingestion	Causes digestive tract burns	
Symptoms related to the physical, chemical and toxicological characteristics		
Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause respiratory irritation.		
Information on toxicological effects		
Acute toxicity	Not known.	
Product	Species	Test Results
SODIUM HYDROXIDE 50% MEM NSF		
<hr/>		
Acute		
Dermal		
ATEmik		2200 mg/kg
Skin corrosion/irritation	Causes severe skin burns and eye damage.	
Serious eye damage/eye irritation	Causes serious eye damage.	
Respiratory or skin sensitization		
Respiratory sensitization	Due to partial or complete lack of data the classification is not possible.	
Skin sensitization	Due to partial or complete lack of data the classification is not possible.	
Germ cell mutagenicity	Due to partial or complete lack of data the classification is not possible.	

**15. Regulatory information**

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Toxic Substances Control Act (TSCA)

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

SODIUM HYDROXIDE (Na(OH)) (CAS 1310-73-2) Listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1005)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)**SARA 302 Extremely hazardous substance**

Not listed.

SARA 311/312 Hazardous chemical Yes

Classified hazard categories Skin corrosion or irritation
Serious eye damage or eye irritation
Specific target organ toxicity (single or repeated exposure)

SARA 313 (TRI) reporting

Not regulated.

Other federal regulations**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations**California Proposition 65**

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to www.P65Warnings.ca.gov.

US, California, Candidate Chemicals List, Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

SODIUM HYDROXIDE (Na(OH)) (CAS 1310-73-2)

International inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European inventory of Existing Commercial Chemical Substances (EINECS)	Yes

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Country(s) or region	Inventory name	On inventory (yes/no)*
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 02-19-2022

Version # 01

HMIS® ratings Health: 3
Flammability: 0
Physical hazard: 0

NFPA ratings Health: 3
Flammability: 0
Instability: 1

Disclaimer While Brenntag believes the information contained herein to be accurate, Brenntag makes no representation or warranty, express or implied, regarding, and assumes no liability for, the accuracy or completeness of the information. The Buyer assumes all responsibility for handling, using and/or reselling the Product in accordance with applicable federal, state, and local law. This SDS shall not in any way limit or preclude the operation and effect of any of the provisions of Brenntag's terms and conditions of sale.

Revision information Physical & Chemical Properties: Multiple Properties
Physical and chemical properties: Color
Physical and chemical properties: Odor

Material name: SODIUM HYDROXIDE 50% MEM NSF
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**SAFETY DATA SHEET****1. Identification**

Product identifier	PB809
Other means of identification	None.
Recommended use	Biological Wastewater Treatment Aid
Recommended restrictions	None known.
Manufacturer/Importer/Supplier/Distributor information	
Manufacturer	
Company name	ChemTreat, Inc.
Address	5640 Cox Road Glen Allen, VA 23060 United States 800-648-4579 chemtreat.com productcompliance@chemtreat.com
Telephone	
Website	
E-mail	
Emergency phone number	800-424-9300

2. Hazard(s) identification

Physical hazards	Not classified.
Health hazards	Not classified.
Environmental hazards	Not classified.
OSHA defined hazards	Combustible dust
Label elements	
Hazard symbol	None.
Signal word	Warning
Hazard statement	May form combustible dust concentrations in air.
Precautionary statement	
Prevention	Prevent dust accumulation to minimize explosion hazard. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Observe good industrial hygiene practices.
Response	Take off contaminated clothing and wash it before reuse. In case of fire: Use appropriate media to extinguish.
Storage	Not available.
Disposal	Not available.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	None.

3. Composition/information on ingredients**Mixtures**

The manufacturer lists no ingredients as hazardous to health according to OSHA 29 CFR 1910.1200.

4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Wash off with soap and water. Get medical attention if irritation develops and persists.
Eye contact	Do not rub eyes. Rinse with water. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Dusts may irritate the respiratory tract, skin and eyes.

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Indication of immediate medical attention and special treatment needed Treat symptomatically.

General information Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Avoid high pressure media which could cause the formation of a potentially explosible dust-air mixture. Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2). Apply extinguishing media carefully to avoid creating airborne dust.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	Explosion hazard: Avoid generating dust; fine dust dispersed in air in sufficient concentrations and in the presence of an ignition source is a potential dust explosion hazard. During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	May form combustible dust concentrations in air.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Use only non-sparking tools. Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Wear appropriate protective equipment and clothing during clean-up. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Take precautionary measures against static discharge. Use only non-sparking tools. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Stop the flow of material, if this is without risk. Large Spills: Wet down with water and dike for later disposal. Shovel the material into waste container. Following product recovery, flush area with water. Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions

Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling	Minimize dust generation and accumulation. Avoid significant deposits of material, especially on horizontal surfaces, which may become airborne and form combustible dust clouds and may contribute to secondary explosions. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Combustible dust clouds may be created where operations produce fine material (dust). Handling and processing operations should be conducted in accordance with 'best practices' (e.g. NFPA-654). Explosion-proof general and local exhaust ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
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Conditions for safe storage, including any incompatibilities Keep containers tightly closed in a dry, cool and well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits	This mixture has no ingredients that have PEL, TLV, or other recommended exposure limit.
Biological limit values	No biological exposure limits noted for the ingredient(s).

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Appropriate engineering controls	Explosion-proof general and local exhaust ventilation. Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen-deficient environment. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment). Use only appropriately classified electrical equipment and powered industrial trucks.
Individual protection measures, such as personal protective equipment	
Eye/face protection	Wear safety glasses with side shields (or goggles).
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves.
Other	Wear suitable protective clothing.
Respiratory protection	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties	
Appearance	
Physical state	Solid.
Form	Powder.
Color	Brown.
Odor	Strong
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	32.00 °F (0 °C)
Initial boiling point and boiling range	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Dispersible
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Pounds per gallon	0

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13. Disposal considerations	
Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information	
DOT	Not regulated as dangerous goods.
IATA	Not regulated as dangerous goods.
IMDG	Not regulated as dangerous goods.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.

15. Regulatory information	
US federal regulations	This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
Toxic Substances Control Act (TSCA)	
TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)	Not regulated.
CERCLA Hazardous Substance List (40 CFR 302.4)	Not listed.
SARA 304 Emergency release notification	Not regulated.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)	Not regulated.
Superfund Amendments and Reauthorization Act of 1986 (SARA)	
SARA 302 Extremely hazardous substance	Not listed.
SARA 311/312 Hazardous chemical	Yes
Classified hazard categories	Combustible dust
SARA 313 (TRI reporting)	Not regulated.
Other federal regulations	
Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List	Not regulated.
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)	Not regulated.
Safe Drinking Water Act (SDWA)	Not regulated.

10. Stability and reactivity	
Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Keep away from heat, sparks and open flame. Contact with incompatible materials. Minimize dust generation and accumulation.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information	
Information on likely routes of exposure	
Inhalation	No adverse effects due to inhalation are expected.
Skin contact	No adverse effects due to skin contact are expected.
Eye contact	Direct contact with eyes may cause temporary irritation.
Ingestion	Expected to be a low ingestion hazard.
Symptoms related to the physical, chemical and toxicological characteristics	Dusts may irritate the respiratory tract, skin and eyes.
Information on toxicological effects	
Acute toxicity	Not known.
Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation	Direct contact with eyes may cause temporary irritation.
Respiratory or skin sensitization	
Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	Not classifiable as to carcinogenicity to humans.
IARC Monographs. Overall Evaluation of Carcinogenicity	Not listed.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)	Not regulated.
US. National Toxicology Program (NTP) Report on Carcinogens	Not listed.
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.

12. Ecological information	
Ecotoxicity	Minimal impact under normal conditions of use and storage. The bacterial cultures are naturally occurring soil type organisms. The carriers are naturally occurring materials.
Persistence and degradability	Contents are biodegradable.
Bioaccumulative potential	No data available.
Mobility in soil	No data available.
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

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US state regulations		
California Proposition 65		
California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to www.P65Warnings.ca.gov .		
International Inventories		
Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes
*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s). A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).		
16. Other information, including date of preparation or last revision		
Issue date	05-15-2023	
Version #	01	
Further information	Refer to: OSHA 3371-08 2009, Hazard Communication Guidance for Combustible Dusts NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids	
HMIS® ratings	Health: 0 Flammability: 2 Physical hazard: 0 Personal protection: B	
Disclaimer	ChemTreat, Inc. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available. Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, ChemTreat, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ChemTreat, Inc. be responsible for damages of any nature whatsoever resulting from the use or reliance upon information. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.	
Other information	Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com	



SAFETY DATA SHEET


Sulfuric Acid, All Grades

ACCORDING TO US CFR 1910.1200

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1	Product identifier Product Name Chemical Formula Molecular weight CAS No.	Sulfuric Acid, All Grades H_2SO_4 98.08 7664-93-9
1.2	Relevant identified uses of the substance or mixture and uses advised against Identified Use(s)	<ul style="list-style-type: none">Used in manufacturing processes.Used for processing mineral ores, metal refining, petrochemical processing and water treatment. None known.
1.3	Uses Advised Against Details of the supplier of the safety data sheet Company Identification	Cornerstone Chemical Company 10800 River Road, Waggaman, Louisiana 70094, USA. 1-504-431-9511 info@cornerstonechemco.com
1.4	Emergency telephone number CHEMTREC (USA and Canada) CHEMTREC (Outside of USA and Canada)	1-800-424-9300 (24h) +1-703-527-3887 (24h)

SECTION 2: HAZARDS IDENTIFICATION

2.1	Classification of the substance or mixture US CFR 1910.1200	Skin Corr. 1A: Causes severe skin burns and eye damage.
2.2	Label elements Product Name Hazard pictogram(s) Signal word(s) Hazard statement(s) Precautionary Statement(s)	Sulfuric Acid, All Grades  GHS05 Danger. H314: Causes severe skin burns and eye damage. P260: Do not breathe mist/vapors. P264: Wash hands and exposed skin thoroughly after handling. P280: Wear protective gloves/protective clothing/eye protection/face protection. P303+P361+P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

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Sulfuric Acid, All Grades

SECTION 5: FIRE-FIGHTING MEASURES

Non-combustible.		
5.1	Extinguishing Media Suitable Extinguishing Media Unsuitable Extinguishing Media	Extinguish preferably with foam, carbon dioxide or dry chemical. Water.
5.2	Special hazards arising from the substance or mixture	Risk of fire and explosion on contact with base(s), combustible substances, oxidants, reducing agents or water. Thermal decomposition will evolve toxic and corrosive vapors. (Sulfur oxides)
5.3	Advice for fire-fighters	Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Keep containers cool by spraying with water if exposed to fire. Avoid direct contact with water.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1	Personal precautions, protective equipment and emergency procedures	In event of a spill, evacuate danger area. Stop leak if safe to do so. Ensure adequate ventilation. Do not breathe mist/vapors. Avoid contact with skin and eyes. Ensure suitable personal protection (including respiratory protection) during removal of spillages. Wash hands thoroughly after handling.
6.2	Environmental precautions	Do not allow to enter drains, sewers or waterways.
6.3	Methods and material for containment and cleaning up	Small spillages: Contain spillages with sand, earth or any suitable adsorbent material. Do NOT absorb in saw-dust or other combustible adsorbents. Wash the spillage area with water. Large spillages: Cautiously neutralize spilled liquid. Neutralize with: Lime, Soda Ash, Sodium hydroxide, Sodium Bicarbonate. Wash the spillage area with water. Contaminated adsorbent must be removed in sealed, plastic lined drums and disposed of via an authorized waste disposal contractor. See Also Section 8, 13.
6.4	Reference to other sections	

SECTION 7: HANDLING AND STORAGE

7.1	Precautions for safe handling	Provide adequate ventilation. Do not breathe mist/vapors. Avoid contact with skin and eyes. Wear protective gloves/protective clothing/eye protection/face protection. Wash hands and exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product.
7.2	Conditions for safe storage, including any incompatibilities	Keep/store away from: Incompatible materials. Keep away from food, drink and animal feedings. Keep away from any possible contact with water, because of violent reaction and possible flesh fire. Store in corrosive resistant container with a resistant inner liner.
	Storage Temperature	Stable at ambient temperatures.

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Sulfuric Acid, All Grades

2.3	Other hazards	P310: Immediately call a POISON CENTER/doctor.
2.4	Additional information	Reacts violently with water. For full text of H/P Statements see section 16.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Hazardous ingredient(s)	CAS No.	%W/W	Hazard Statement(s)	Hazard Pictogram(s)
Sulfuric acid	7664-93-9	93-96	Skin Corr. 1A, H314	GHS05

3.2 Mixtures

Not applicable.

3.3 Additional information

For full text of H/P Statements see section 16.

SECTION 4: FIRST AID MEASURES



Speed is essential. Get medical attention immediately. Guarantee that the eye flushing systems and safety showers are located close to the working place.

4.1 Description of first aid measures

4.1	First aid measures	
	Inhalation	Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.
	Skin Contact	Take off immediately all contaminated clothing. Rinse skin with water. Wash contaminated clothing before reuse. Immediately call a POISON CENTER/doctor.
	Eye Contact	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
	Ingestion	Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER/doctor.
4.2	Most important symptoms and effects, both acute and delayed	Inhalation: Corrosive, Burns, Sore throat, Cough. Skin Contact: Corrosive, Redness, Pain, Blisters, Causes severe skin burns. Eye Contact: Corrosive, Redness, Pain, Causes severe burns. Ingestion: Corrosive, Abdominal pain, Burns, Shock, Collapse.
4.3	Indication of any immediate medical attention	Treat symptomatically.

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Sulfuric Acid, All Grades

	Storage Life	Stable under normal conditions.
	Incompatible materials	Water, Metals, Combustible materials, Oxidizing agents, Reducing agent, Alkalis, Acrylonitrile, Chlorates, Finely powdered metals, Nitrates, Perchlorates, Permanganates, Epichlorohydrin, Aniline, Carbides, Fulminates, Picrates, Organic materials, Flammable liquid.
7.3	Specific end use(s)	<ul style="list-style-type: none">• Used in manufacturing processes.• Used for processing mineral ores, metal refining, petrochemical processing and water treatment.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

8.1.1 Occupational Exposure Limits

SUBSTANCE	CAS No.	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m ³)	STEL (ppm)	STEL (mg/m ³)	Note
Sulfuric acid	7664-93-9		1			OSHA PEL Z-1
			0.1		3	OSHA PEL
			1			NIOSH REL Z-1
			0.2			ACGIH TLV, T, A2, M

OSHA PEL Z-1 Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) from 29 CFR 1910.1000 Z-1 Table, 2021

OSHA PEL Occupational Safety and Health (Cal/OSHA) Permissible Exposure Limits (PELs), 2019
NIOSH REL Z-1 National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limits (RELs) from the NIOSH Pocket Guide to Chemical Hazards table Z-1: Up to 10-hour time weighted average (TWA) during a 40-hour work week, 2021

ACGIH TLV The American Conference of Governmental Industrial Hygienists (ACGIH®) Threshold Limit Values (TLVs®), 2021

T Measured as thoracic fraction of the aerosol
A2 Suspected Human Carcinogen
M Classification refers to sulfuric acid contained in strong inorganic acid mists.

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Recommended: Use in closed systems.
Provide adequate ventilation. Use with local exhaust ventilation. A washing facility/water for eye and skin cleaning purposes should be present.

8.2.2 Personal protection equipment

Eye/face protection



Wear protective eye glasses for protection against liquid splashes. Wear close fitting goggles or full face shield.

Skin protection (Hand protection/ Other)



Wear suitable protective clothing and gloves.
Wear: Impervious gloves. Gloves should be changed regularly to avoid permeation problems.

Unsuitable gloves materials: Natural rubber, Polychloroprene, Nitrile rubber, PVC.

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Sulfuric Acid, All Grades

Respiratory protection



Thermal hazards

Normally no personal respiratory protection is necessary. Wear suitable respiratory protective equipment if exposure to levels above the occupational exposure limit is likely.

Not applicable.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Liquid.
Color	Clear.
Odor	Odorless.
Odor Threshold	Not established.
pH	0.01 (N = 1.2)
	1.0 (N = 0.3)
Melting Point/Freezing Point	Sulfuric acid, 98%: 34°F
	Sulfuric acid, 96%: 14°F
	Sulfuric acid, 93%: -22°F
	Sulfuric acid, 98%: 613.4°F
Initial boiling point and boiling range	Not applicable.
Flash point	< Ether.
Evaporation rate	Non-flammable.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	<0.001mm Hg @ 68°F
Vapor pressure	1615 – 1841kg/m ³ (OECD 109)
Vapor density	Not available.
Relative density	Soluble in water.
Density	Not applicable.
Solubility(ies)	Not applicable.
Partition coefficient: n-octanol/water	Not applicable.
Auto-ignition temperature	644°F (340°C)
Decomposition Temperature	Sulfuric acid, 98%: 22.5 cP
Viscosity	Not explosive.
Explosive properties	Not oxidizing.
Oxidizing properties	

9.2 Other information

Percent Volatile by volume (%)	0 – 20 (Water)
Dissociation constant	pKa = 1.92 (OECD 112)

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity	Reacts violently with - Water, Organic materials, Inorganic materials.
10.2 Chemical stability	Stable at ambient temperatures.
10.3 Possibility of hazardous reactions	Risk of fire and explosion on contact with base(s), combustible substances, oxidants, reducing agents or water.
10.4 Conditions to avoid	Keep away from any possible contact with water, because of violent reaction and possible flash fire. Keep/store away from: Incompatible materials.
10.5 Incompatible materials	Water, Metals, Combustible materials, Oxidizing agents, Reducing agent, Alkalis, Acrylonitrile, Chlorates, Finely powdered metals, Nitrates, Perchlorates, Permanganates, Epichlorohydrin, Aniline, Carbides, Fulminates, Picrates,

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US RCRA Hazard Class

Not listed. May be a RCRA D002 characteristically corrosive waste if not neutralized.

SECTION 14: TRANSPORT INFORMATION

14.1 UN number	1830
UN No.	
14.2 UN proper shipping name	SULFURIC ACID
UN proper shipping name	
14.3 Transport hazard class(es)	
ADR/RID	
ADR/RID Class	8
ADR Classification Code	C1
Limited Quantities	1 L
Excepted Quantities	E2
Emergency Action Code	2P
Mixed Packing Instructions for Packages P001 IBC02	
Mixed Packing Instructions for Packages MP15	
Packing Instructions for Portable Tanks	T8
Special Provisions for Portable Tanks	TP2
Tank Code for Tanks	L4BN
Special Provisions for Tanks	TU42
Vehicle for Tank Carriage	AT
ADR Transport Category	2
Tunnel Restriction Code	E
ADR HIN	80
IMDG	
IMDG Class	8
Limited Quantities	1 L
Excepted Quantities	E2
Mixed Packing Instructions for Packages P001 IBC02	
Packing Instructions for Portable Tanks	T8
Special Provisions for Portable Tanks	TP2
IMDG EMS	F-A, S-B
Stowage and Handling	Category C SW15
Segregation	SGG1a SG36 SG49
ICAO/IATA	
IATA Proper Shipping Name	SULFURIC ACID
Excepted Quantities	E2
Passenger and Cargo Aircraft Limited Quantities Packing Instructions	Y840
Passenger and Cargo Aircraft Limited Quantities Max net Qty	0.5L
Passenger and Cargo Aircraft Packing Instructions	851
Passenger and Cargo Aircraft Max net Qty	1L
Qty	
Cargo Aircraft Packing Instructions	855
Cargo Aircraft Max net Qty	30L
Emergency Response Guidebook (ERG) Code	8L

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10.6 Hazardous Decomposition Product(s)

Organic materials, Flammable liquid. No hazardous decomposition products known.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

Ingestion

Inhalation

Skin corrosion/irritation

Serious eye damage/irritation

Respiratory or skin sensitization

Germ cell mutagenicity

Carcinogenicity

Reproductive toxicity

STOT - single exposure

STOT - repeated exposure

Aspiration hazard

11.2 Other information

An acute toxicity test does not generally need to be conducted if the substance is classified as corrosive to the skin.
Low oral toxicity, but ingestion may cause irritation of the gastrointestinal tract.
LD50 (rat) = 2140 mg/kg
Low acute toxicity.
OECD 403: LC50 (rat) = 375 mg/m³
Causes severe skin burns.
Causes serious eye damage.
It is not a skin sensitizer.
There is no evidence of mutagenic potential.
No evidence of carcinogenicity.
No evidence of reproductive effects.
OECD 414: NOAEC (mouse), (rabbit) = 19.3 mg/m³
Mist is severely irritant to the respiratory tract. Effect may vary from irritation of the nasal mucous membrane to severe lung irritation.
Repeated exposure to high levels produces adverse effects on the Respiratory tract.
None anticipated.
None.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity	Low toxicity to aquatic organisms. OECD201: ErC50 (Desmodesmus subspicatus) (72 hour) >100 mg/l ErC50 (Desmodesmus subspicatus) (72 hour) >100 mg/l OECD 202: EC50 (Daphnia magna) (48 hour) >100 mg/l The product is likely to persist in the environment. The product is not biodegradable.
12.2 Persistence and degradability	The product has no potential for bioaccumulation.
12.3 Bioaccumulative potential	The product is soluble in water. The product is predicted to have high mobility in soil.
12.4 Mobility in soil	Large discharges may contribute to the acidification of water and soil and will injure aquatic life and soil micro-organisms.
12.5 Other adverse effects	

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods	Neutralize with: Lime, Soda Ash, Sodium hydroxide, Sodium Bicarbonate. Contaminated solids from neutralization activities should be recovered and containerized for proper disposal at a permitted facility.
13.2 Additional Information	Disposal should be in accordance with local, state or national legislation. Spillages or uncontrolled discharges into waterways must be reported to the appropriate regulatory body.

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Sulfuric Acid, All Grades

Labels

Labels



14.4 Packing group

Packing group

II

14.5 Environmental hazards

Environmental hazards

Not classified as a Marine Pollutant.

14.6 Special precautions for user

Special precautions for user

Not known.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

No information available

SECTION 15: REGULATORY INFORMATION

15.1 US Federal Regulations

Toxic and hazardous substances (29 CFR 1910; Subpart Z)	Listed : Sulfuric acid (CAS No. 7664-93-9)
National emission standards for hazardous air pollutants (40 CFR 61.01)	Not listed
SARA Title III Section 313	Not listed
TSCA (Toxic Substance Control Act)	Listed : Sulfuric acid (CAS No. 7664-93-9)
CAA 602 - Ozone Depleting Substances (ODS)	Not listed

15.2 US State Regulations

State Right to Know Lists	Not listed
Proposition 65 (California)	Listed : Sulfuric acid (CAS No. 7664-93-9)
Minnesota	Listed : Sulfuric acid (CAS No. 7664-93-9)
New Jersey	Listed : Sulfuric acid (CAS No. 7664-93-9)
Pennsylvania	Listed : Sulfuric acid (CAS No. 7664-93-9)
Rhode Island	Listed : Sulfuric acid (CAS No. 7664-93-9)

15.3 Other

OSPAR List of Chemicals for Priority Action	Not listed
OSHA (List of Highly Hazardous Chemicals, Toxics and Reactives)	Not listed
NTP (National Toxicology Program)	Listed : Sulfuric acid (CAS No. 7664-93-9)
IARC (International Agency for Research on Cancer)	Listed : Sulfuric acid (CAS No. 7664-93-9)

SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: 8, 9, 14, 15

NFPA		HMIS	
Health	3	Health	3
Fire	0	Flammability	0
Instability	2	Physical hazards	2
Special Hazards	W		

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SAFETY DATA SHEET

LEGEND

Hazard Pictogram(s)



GHS05

Hazard Statement(s)

H314: Causes severe skin burns and eye damage.

Precautionary Statement(s)

P260: Do not breathe mist/vapors.
P264: Wash hands and exposed skin thoroughly after handling.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310: Immediately call a POISON CENTER/doctor.
P363: Wash contaminated clothing before reuse.
P501: Dispose of contents in accordance with local, state or national legislation.

Acronyms

ADN : European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR : European Agreement concerning the International Carriage of Dangerous Goods by Road
CAS : Chemical Abstracts Service
IATA : International Air Transport Association
IBC : Intermediate Bulk Container
ICAO : International Civil Aviation Organization
IMDG : International Maritime Dangerous Goods
LTEL : Long term exposure limit
RID : Regulations concerning the International Carriage of Dangerous Goods by Rail
STEL : Short term exposure limit
STOT : Specific Target Organ Toxicity
UN : United Nations

Disclaimers

Information contained in this publication or as otherwise supplied to Users is believed to be accurate and is given in good faith, but it is for the Users to satisfy themselves of the suitability of the product for their own particular purpose. Cornerstone Chemical Company gives no warranty as to the fitness of the product for any particular purpose and any implied warranty or condition (statutory or otherwise) is excluded except to the extent that exclusion is prevented by law. Cornerstone Chemical Company accepts no liability for loss or damage (other than that arising from death or personal injury caused by defective product, if proved), resulting from reliance on this information. Freedom under Patents, Copyright and Designs cannot be assumed.

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Section 1. Chemical Product and Company Identification

Product Name: ChemTreat P8315E
Product Use: Water Clarification/Solids Conditioning Agent
Supplier's Name: ChemTreat, Inc.
Emergency Telephone Number: (800)424-9300 (Toll Free)
Address (Corporate Headquarters): 5640 Cox Road
Glen Allen, VA 23060
(800)648-4579
Telephone Number for Information: February 7, 2019
Date of SDS: February 7, 2019
Revision Date: February 7, 2019
Revision Number: 19020701AN

Section 2. Hazard(s) Identification

Signal Word: None
GHS Classification(s): Non-Hazardous Substance
Hazard Statement(s): Non-Hazardous Substance
Precautionary Statement(s): No significant health risks are expected from exposures under normal conditions of use.
Prevention: None.
Response: None.
Storage: None.
Disposal: None.
System of Classification Used: Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).
Hazards Not Otherwise Classified: None.

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Section 3. Composition/Hazardous Ingredients

Component	CAS Registry #	Wt. %
Components not listed are either non hazardous or in concentration of less than 1%	N/A	N/A

Comments If chemical identity and/or exact percentage of composition has been withheld, this information is considered to be a trade secret.

Section 4. First Aid Measures

Inhalation: Call a POISON CENTER or doctor/physician if you feel unwell.
Eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.
Skin: Call a poison center or doctor/physician if you feel unwell.
Ingestion: Rinse mouth. Call a poison center or doctor/physician if you feel unwell.
Most Important Symptoms: N/D
Indication of Immediate Medical Attention and Special Treatment Needed, if Necessary: N/A

Section 5. Fire Fighting Measures

Flammability of the Product: Not flammable.
Suitable Extinguishing Media: Use extinguishing media suitable to surrounding fire.
Specific Hazards Arising from the Chemical: None known.
Protective Equipment: If product is involved in a fire, wear full protective clothing including a positive-pressure, NIOSH approved, self-contained breathing apparatus.

Section 6. Accidental Release Measures

Personal Precautions: Use appropriate Personal Protective Equipment (PPE).
Environmental Precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.
Methods for Cleaning up: Contain and recover liquid when possible. Flush spill area with water spray. Material is very slippery if spilled.
Other Statements: None.

Section 7. Handling and Storage

Handling: Wear appropriate Personal Protective Equipment (PPE) when handling this product. Do not get in eyes, or on skin and clothing. Wash thoroughly after handling. Do not ingest. Avoid breathing vapors, mist or dust.
Storage: Store away from incompatible materials (see Section 10). Store at ambient temperatures. Keep container securely closed when not in use. Label precautions also apply to empty container. Recondition or dispose of empty containers in accordance with government regulations. For Industrial use only. Protect from heat and sources of ignition. Store above Freeze Point.

Section 8. Exposure Controls/Personal Protection

Exposure Limits

Component	Source	Exposure Limits
Components not listed are either non hazardous or in concentration of less than 1%	N/E	N/E

Engineering Controls: Use only with adequate ventilation. The use of local ventilation is recommended to control emission near the source.



Personal Protection

Eyes: Safety glasses are recommended if risk of eye contact.

Skin: Wear butyl rubber or neoprene gloves. Wash them after each use and replace as necessary. If conditions warrant, wear protective clothing such as boots, aprons, and coveralls to prevent skin contact.

Respiratory: If misting occurs, use NIOSH approved organic vapor/acid gas dual cartridge respirator with a dust/mist prefilter in accordance with 29 CFR 1910.134.

Section 9. Physical and Chemical Properties

Physical State and Appearance: Liquid Emulsion, White, Slightly Hazy
Specific Gravity: 1.040 @ 20°C
pH: 5.0 @ 20°C, 0.5%
Freezing Point: -13°F
Flash Point: N/A
Odor: Mild
Melting Point: N/A
Initial Boiling Point and Boiling Range: N/D
Solubility in Water: N/D
Evaporation Rate: N/A
Vapor Density: N/D
Molecular Weight: N/D
Viscosity: N/D
Flammability (solid, gas): N/D
Flammable Limits: N/A
Autoignition Temperature: N/A
Density: 8.76 LB/GA
Vapor Pressure: N/A
% VOC: N/D
Odor Threshold N/D
n-octanol Partition Coefficient N/D
Decomposition Temperature N/D

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Section 10. Stability and Reactivity

Chemical Stability: Stable at normal temperatures and pressures.

Incompatibility with Various Substances: Strong oxidizers.

Hazardous Decomposition Products: Oxides of carbon, Oxides of nitrogen.

Possibility of Hazardous Reactions: None known.

Reactivity: N/D

Conditions To Avoid: N/D

Section 11. Toxicological Information

Acute Toxicity

Chemical Name	Exposure	Type of Effect	Concentration	Species
ChemTreat P8315E	Oral	LD50	>5000 MG/KG	Rat

Carcinogenicity Category

Component	Source	Code	Brief Description
Components not listed are either non hazardous or in concentration of less than 1%	N/E	N/E	N/E

Likely Routes of Exposure: N/D

Symptoms

Inhalation: N/D

Eye Contact: N/D

Skin Contact: N/D

Ingestion: N/D

Skin Corrosion/Irritation: N/D

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Serious Eye Damage/Eye Irritation: N/D

Sensitization: N/D

Germ Cell Mutagenicity: N/D

Reproductive/Developmental Toxicity: N/D

Specific Target Organ Toxicity

Single Exposure: N/D

Repeated Exposure: N/D

Aspiration Hazard: N/D

Comments: None.

Section 12. Ecological Information

Ecotoxicity

Species	Duration	Type of Effect	Test Results
Fathead Minnow	96h	LC50	>10 mg/l
Daphnia magna	48h	EC50	>50 mg/l

Persistence and Biodegradability: N/D

Bioaccumulative Potential: N/D

Mobility In Soil: N/D

Other Adverse Effects: N/D

Comments: Water clarification polymers function by multipoint adsorption and charge neutralization with suspended solids. Polymers inherently migrate with solids in the separation process and with the exception of uneconomic overdose do not remain in the clarified waters. Aquatic toxicity determinations in test method protocol waters without suspended solids overestimate the toxicity compared to natural receiving waters.

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Section 13. Disposal Considerations

Dispose of in accordance with local, state and federal regulations. Not a RCRA-regulated hazardous waste when disposed in the original product form.

Section 14. Transport Information

Controlling Regulation	UN/NA#:	Proper Shipping Name:	Technical Name:	Hazard Class:	Packing Group:
DOT	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
IMDG	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
TDG	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
ICAO	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A

Note: N/A

Section 15. Regulatory Information

Inventory Status

United States (TSCA): All ingredients listed.
Canada (DSL/NDL): All ingredients listed.

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Federal Regulations

SARA Title III Rules

Sections 311/312 Hazard Classes

Fire Hazard:	No
Reactive Hazard:	No
Release of Pressure:	No
Acute Health Hazard:	No
Chronic Health Hazard:	No

Other Sections

Component	Section 313 Toxic Chemical	Section 302 EHS TPQ	CERCLA RQ
Components not listed are either non hazardous or in concentration of less than 1%	N/A	N/A	N/A

Comments: None.

State Regulations

California Proposition 65: This product contains chemical(s) known to the State of California to cause cancer and/or to cause birth defects or other reproductive harm: residual acrylamide.

Special Regulations

Component	States
Components not listed are either non hazardous or in concentration of less than 1%	None.

Compliance Information

NSF: N/A

Food Regulations: FDA: GRAS, 21 CFR 570.30 – Generally Recognized as Safe by experts in accordance with the Federal Food, Drug and Cosmetic Act (Section 201s) for their intended use as flocculants and dewatering aids for food processing waste destined for recycling as animal feed, and is subject to the limitations therein.

KOSHER: This product has not been evaluated for Kosher approval.

Halal: This product has not been evaluated for Halal approval.

FIFRA: N/A



Other: None

Comments: None.

Section 16. Other Information

HMIS Hazard Rating

Health:	0
Flammability:	0
Physical Hazard:	0
PPE:	X

Notes:

The PPE rating depends on circumstances of use. See Section 8 for recommended PPE. The Hazardous Material Information System (HMIS) is a voluntary, subjective alpha-numeric symbolic system for recommending hazard risk and personal protection equipment information. It is a subjective rating system based on the evaluator's understanding of the chemical associated risks. The end-user must determine if the code is appropriate for their use.

Abbreviations

Abbreviation	Definition
<	Less Than
>	Greater Than
ACGIH	American Conference of Governmental Industrial Hygienists
EHS	Environmental Health and Safety Dept
N/A	Not Applicable
N/D	Not Determined
N/E	Not Established
OSHA	Occupational Health and Safety Dept
PEL	Personal Exposure Limit
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weight Average
UNK	Unknown

Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

Revision Date: February 7, 2019



Disclaimer

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SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name:	ChemTreat BL1303
Product Use:	Boiler Water Treatment
Supplier's Name:	ChemTreat, Inc.
Emergency Telephone Number:	(800)424-9300 (Toll Free)
Address (Corporate Headquarters):	5640 Cox Road Glen Allen, VA 23060
Telephone Number for Information:	(800)648-4579
Date of SDS:	April 30, 2020
Revision Date:	April 30, 2020
Revision Number:	20043001AN

Section 2. Hazard(s) Identification

Signal Word: DANGER

GHS Classification(s): Skin corrosion/irritation – Category 1b
Eye damage/irritation – Category 1
Acute Toxicity Dermal – Category 4
Acute Toxicity Inhalation – Category 4
Acute Toxicity Oral – Category 4

Hazard Statement(s): H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.
H312 Harmful in contact with skin.
H332 Harmful if inhaled.
H302 Harmful if swallowed.

Precautionary Statement(s):

Prevention: P260 Do not breathe dust/fume/gas/mist/vapors/spray.
P264 Wash thoroughly after handling.
P270 Do not eat, drink, or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.





Response: P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER/doctor.
P363 Wash contaminated clothing before reuse.

Storage: P405 Store locked up.

Disposal: P501 Dispose of contents and container in accordance with applicable local, regional, national, and/or international regulations.

System of Classification Used: Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Hazards Not Otherwise Classified: None.

Section 3. Composition/Hazardous Ingredients

Component	CAS Registry #	Wt.%
Sodium hydroxide	1310-73-2	1 - 5

Comments If chemical identity and/or exact percentage of composition has been withheld, this information is considered to be a trade secret.

Section 4. First Aid Measures

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a poison center or doctor/physician.

Eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor/physician.

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Skin: Immediately remove/take off all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before re-use. Immediately call a poison center or doctor/physician.

Ingestion: DO NOT INDUCE VOMITING. Rinse mouth. Call a POISON CENTER or doctor/physician.

Most Important Symptoms: N/D

Indication of Immediate Medical Attention and Special Treatment Needed, if Necessary: N/A

Section 5. Fire Fighting Measures

Flammability of the Product: Not flammable.

Suitable Extinguishing Media: Use extinguishing media suitable to surrounding fire.

Specific Hazards Arising from the Chemical: Use water spray to keep containers cool.

Protective Equipment: If product is involved in a fire, wear full protective clothing including a positive-pressure, NIOSH approved, self-contained breathing apparatus.

Section 6. Accidental Release Measures

Personal Precautions: Use appropriate Personal Protective Equipment (PPE).

Environmental Precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.

Methods for Cleaning up: Contain and recover liquid when possible. Flush spill area with water spray.

Other Statements: If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

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Section 7. Handling and Storage

Handling: Wear appropriate Personal Protective Equipment (PPE) when handling this product. Do not get in eyes, or on skin and clothing. Wash thoroughly after handling. Do not ingest. Avoid breathing vapors, mist or dust.

Storage: Store away from incompatible materials (see Section 10). Store at ambient temperatures. Keep container securely closed when not in use. Label precautions also apply to empty container. Recondition or dispose of empty containers in accordance with government regulations. For Industrial use only.
Store above Freeze Point.

Section 8. Exposure Controls/Personal Protection

Exposure Limits

Component	Source	Exposure Limits
Sodium hydroxide	ACGIH TLV	2 mg/m ³ Ceiling
	OSHA PEL	2 mg/m ³ TWA

Engineering Controls: Use only with adequate ventilation. The use of local ventilation is recommended to control emission near the source.

Personal Protection

Eyes: Wear chemical splash goggles or safety glasses with full-face shield. Maintain eyewash fountain in work area.

Skin: Maintain quick-drench facilities in work area. Wear butyl rubber or neoprene gloves. Wash them after each use and replace as necessary. If conditions warrant, wear protective clothing such as boots, aprons, and coveralls to prevent skin contact.

Respiratory: If misting occurs, use NIOSH approved organic vapor/acid gas dual cartridge respirator with a dust/mist prefilter in accordance with 29 CFR 1910.134.

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Section 9. Physical and Chemical Properties

Physical State and Appearance: Liquid, Colorless, Clear

Specific Gravity: 1.027 @ 20°C

pH: 13.5 @ 20°C, 100.0%

Freezing Point: 34°F

Flash Point: N/D

Odor: Odorless

Melting Point: N/A

Initial Boiling Point and Boiling Range: 212°F

Solubility in Water: Complete

Evaporation Rate: N/A

Vapor Density: As Water

Molecular Weight: N/D

Viscosity: N/A

Flammability (solid, gas): N/D

Flammable Limits: N/A

Autoignition Temperature: N/A

Density: 8.57 LB/GA

Vapor Pressure: As Water

% VOC: 0

Odor Threshold: N/D

n-octanol Partition Coefficient: N/D

Decomposition Temperature: N/D

Section 10. Stability and Reactivity

Chemical Stability: Stable at normal temperatures and pressures.

Incompatibility with Various Substances: Strong oxidizers, Acids, Tin, Zinc.

Hazardous Decomposition Products: Oxides of carbon, Oxides of sulfur.

Possibility of Hazardous Reactions: None known.

Reactivity: N/D

Conditions To Avoid: N/D

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Section 11. Toxicological Information

Acute Toxicity

Chemical Name	Exposure	Type of Effect	Concentration	Species
Sodium hydroxide	Oral	LD50	300 MG/KG	Rat
	Dermal	LD50	1350 MG/KG	Rabbit

Carcinogenicity Category

Component	Source	Code	Brief Description
Sodium hydroxide	N/E	N/E	N/E

Likely Routes of Exposure: N/D

Symptoms

Inhalation: N/D

Eye Contact: N/D

Skin Contact: N/D

Ingestion: N/D

Skin Corrosion/Irritation: N/D

Serious Eye Damage/Eye Irritation: N/D

Sensitization: N/D

Germ Cell Mutagenicity: N/D

Reproductive/Developmental Toxicity: N/D

Specific Target Organ Toxicity

Single Exposure: N/D

Repeated Exposure: N/D

Aspiration Hazard: N/D

Comments: None.

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Section 12. Ecological Information

Ecotoxicity

Species	Duration	Type of Effect	Test Results
Fathead Minnow	96h	LC50	>10000 mg/l
Ceriodaphnia dubia	48h	LC50	>10000 mg/l

Persistence and Biodegradability: N/D

Bioaccumulative Potential: N/D

Mobility In Soil: N/D

Other Adverse Effects: N/D

Comments: None.

Section 13. Disposal Considerations

Dispose of in accordance with local, state and federal regulations.
EPA corrosivity characteristic hazardous waste D002 when disposed of in the original product form.

Section 14. Transport Information

Controlling Regulation	UN/NA#	Proper Shipping Name:	Technical Name:	Hazard Class:	Packing Group:
DOT	UN1824	SODIUM HYDROXIDE SOLUTION	N/A	8	PGII
IMDG	UN1824	SODIUM HYDROXIDE SOLUTION	N/A	8	PGII
TDG	UN1824	SODIUM HYDROXIDE SOLUTION	N/A	8	PGII
ICAO	UN1824	SODIUM HYDROXIDE SOLUTION	N/A	8	PGII

Note: N/A

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Section 15. Regulatory Information

Inventory Status

United States (TSCA): All ingredients listed.
Canada (DSL/NDL): All ingredients listed.

Federal Regulations

SARA Title III Rules

Sections 311/312 Hazard Classes

Fire Hazard: No
Reactive Hazard: No
Release of Pressure: No
Acute Health Hazard: Yes
Chronic Health Hazard: No

Other Sections

Component	Section 313 Toxic Chemical	Section 302 EHS TPD	CERCLA RQ
Sodium hydroxide	N/A	N/A	1000

Comments: None.

State Regulations

California Proposition 65: None known.

Special Regulations

Component	States
Sodium hydroxide	MA, MN, NY, PA, WA

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Compliance Information

NSF: N/A

Food Regulations: FDA: All ingredients in this product are authorized in 21 CFR 173.310 for use as "Boiler Water Additives" where the steam may contact food.

KOSHER: This product has not been evaluated for Kosher approval.

Halal: This product has not been evaluated for Halal approval.

FIFRA: N/A

Other: None

Comments: None.

Section 16. Other Information

HMIS Hazard Rating

Health: 3
Flammability: 0
Physical Hazard: 1
PPE: X

Notes:

The PPE rating depends on circumstances of use. See Section 8 for recommended PPE.
The Hazardous Material Information System (HMIS) is a voluntary, subjective alpha-numeric symbolic system for recommending hazard risk and personal protection equipment information. It is a subjective rating system based on the evaluator's understanding of the chemical associated risks. The end-user must determine if the code is appropriate for their use.

Abbreviations

Abbreviation	Definition
<	Less Than
>	Greater Than
ACGIH	American Conference of Governmental Industrial Hygienists
EHS	Environmental Health and Safety Dept
N/A	Not Applicable
N/D	Not Determined
N/E	Not Established
OSHA	Occupational Health and Safety Dept
PEL	Personal Exposure Limit

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Abbreviation	Definition
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weight Average
UNK	Unknown

Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

Revision Date: April 30, 2020

Disclaimer

Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, ChemTreat, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ChemTreat, Inc. be responsible for damages of any nature whatsoever resulting from the use or reliance upon information. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.



SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name: ChemTreat FO180
Product Use: Defoamer
Supplier's Name: ChemTreat, Inc.
Emergency Telephone Number: (800)424-9300 (Toll Free)
Address (Corporate Headquarters): 5640 Cox Road
Glen Allen, VA 23060
(800)648-4579
Telephone Number for Information: February 7, 2019
Date of SDS: February 7, 2019
Revision Date: February 7, 2019
Revision Number: 19020701AN

Section 2. Hazard(s) Identification

Signal Word: None
GHS Classification(s): Non-Hazardous Substance
Hazard Statement(s): Non-Hazardous Substance
Precautionary Statement(s): No significant health risks are expected from exposures under normal conditions of use.
Prevention: None.
Response: None.
Storage: None.
Disposal: None.
System of Classification Used: Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).
Hazards Not Otherwise Classified: None.

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Section 3. Composition/Hazardous Ingredients

Component	CAS Registry #	Wt. %
Components not listed are either non-hazardous or in concentration of less than 1%.	N/A	N/A

Comments: If chemical identity and/or exact percentage of composition has been withheld, this information is considered to be a trade secret.

Section 4. First Aid Measures

Inhalation: Call a POISON CENTER or doctor/physician if you feel unwell.
Eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.
Skin: Call a poison center or doctor/physician if you feel unwell.
Ingestion: Rinse mouth. Call a poison center or doctor/physician if you feel unwell.
Most Important Symptoms: N/D
Indication of Immediate Medical Attention and Special Treatment Needed, if Necessary: N/A

Section 5. Fire Fighting Measures

Flammability of the Product: Not flammable.
Suitable Extinguishing Media: Use extinguishing media suitable to surrounding fire.
Specific Hazards Arising from the Chemical: Use water spray to keep containers cool.
Protective Equipment: If product is involved in a fire, wear full protective clothing including a positive-pressure, NIOSH approved, self-contained breathing apparatus.

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Section 6. Accidental Release Measures

Personal Precautions: Use appropriate Personal Protective Equipment (PPE).
Environmental Precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.
Methods for Cleaning up: Contain and recover liquid when possible. Flush spill area with water spray.
Other Statements: None.

Section 7. Handling and Storage

Handling: Wear appropriate Personal Protective Equipment (PPE) when handling this product. Do not get in eyes, on skin and clothing. Wash thoroughly after handling. Do not ingest. Avoid breathing vapors, mist or dust.
Storage: Store away from incompatible materials (see Section 10). Store at ambient temperatures. Keep container securely closed when not in use. Label precautions also apply to empty container. Recondition or dispose of empty containers in accordance with government regulations. For industrial use only. Do not freeze. Store above Freezing Point. If freezes, then product is unusable.

Section 8. Exposure Controls/Personal Protection

Exposure Limits

Component	Source	Exposure Limits
Components not listed are either non-hazardous or in concentration of less than 1%.	N/A	N/A

Engineering Controls: Use only with adequate ventilation. The use of local ventilation is recommended to control emission near the source.

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Personal Protection

Eyes: Safety glasses are recommended if risk of eye contact.

Skin: Wear butyl rubber or neoprene gloves. Wash them after each use and replace as necessary. If conditions warrant, wear protective clothing such as boots, aprons, and coveralls to prevent skin contact.

Respiratory: None needed under normal conditions of use.

Section 9. Physical and Chemical Properties

Physical State and Appearance: Liquid Emulsion, White, Opaque
Specific Gravity: 0.981 @ 20°C
pH: 7.5 @ 20°C, 100.0%
Freezing Point: 32°F
Flash Point: N/D
Odor: Mild
Melting Point: N/A
Initial Boiling Point and Boiling Range: N/D
Solubility in Water: Appreciable
Evaporation Rate: N/D
Vapor Density: N/D
Molecular Weight: 150 - 500 CPS @ 20°C
Viscosity: N/D
Flammability (solid, gas): N/A
Flammable Limits: N/A
Autoignition Temperature: N/A
Density: 8.18 LB/GA
Vapor Pressure: N/D
% VOC: 0
Odor Threshold: N/D
n-octanol Partition Coefficient: N/D
Decomposition Temperature: N/D

Section 10. Stability and Reactivity

Chemical Stability: Stable at normal temperatures and pressures.

Incompatibility with Various Substances: Acids, Halogens, Bases.

Hazardous Decomposition Products: Oxides of carbon.

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Possibility of Hazardous Reactions: None known.

Reactivity: N/D

Conditions To Avoid: N/D

Section 11. Toxicological Information

Acute Toxicity

Chemical Name	Exposure	Type of Effect	Concentration	Species
N/D	N/D	N/D	N/D	N/D

Carcinogenicity Category

Component	Source	Code	Brief Description
Components not listed are either non hazardous or in concentration of less than 1%	N/E	N/E	N/E

Likely Routes of Exposure: N/D

Symptoms

Inhalation: N/D

Eye Contact: N/D

Skin Contact: N/D

Ingestion: N/D

Skin Corrosion/Irritation: N/D

Serious Eye Damage/Eye Irritation: N/D

Sensitization: N/D

Germ Cell Mutagenicity: N/D

Reproductive/Developmental Toxicity: N/D

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Specific Target Organ Toxicity

Single Exposure: N/D

Repeated Exposure: N/D

Aspiration Hazard: N/D

Comments: None.

Section 12. Ecological Information

Ecotoxicity

Species	Duration	Type of Effect	Test Results
Fathead Minnow	96h	LC50	1,400.0 mg/L
Coriophila dubia	7d	EC25	4.42 mg/L
	7d	NOEC	2.5 mg/L
	48h	LC50	1,788 mg/L
	7d	LOEC	3 mg/L

Persistence and Biodegradability: N/D

Bioaccumulative Potential: N/D

Mobility in Soil: N/D

Other Adverse Effects: N/D

Comments: None.

Section 13. Disposal Considerations

Dispose of in accordance with local, state and federal regulations.

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Section 14. Transport Information

Controlling Regulation	UN/NA#	Proper Shipping Name	Technical Name	Hazard Class	Packing Group
DOT	NA	COMPOUND, INDUSTRIAL WATER TREATMENT LIQUID	NA	NA	NA
IMDG	NA	COMPOUND, INDUSTRIAL WATER TREATMENT LIQUID	NA	NA	NA
ICAO	NA	COMPOUND, INDUSTRIAL WATER TREATMENT LIQUID	NA	NA	NA
TDG	NA	COMPOUND, INDUSTRIAL WATER TREATMENT LIQUID	NA	NA	NA

Note: N/A

Section 15. Regulatory Information

Inventory Status

United States (TSCA): All ingredients listed.

Canada (DSL/NDSL): All ingredients listed.

Federal Regulations

SARA Title III Rules

Sections 311/312 Hazard Classes

Fire Hazard: No

Reactive Hazard: No

Release of Pressure: No

Acute Health Hazard: No

Chronic Health Hazard: No

Other Sections

Component	Section 313 Toxic Chemical	Section 302 EHS TPQ	CERCLA RG
Components not listed are either non hazardous or in concentration of less than 1%	NA	NA	NA

Comments: None.

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SAFETY DATA SHEET

State Regulations

California Proposition 65:

This product contains chemical(s) known to the State of California to cause cancer and/or to cause birth defects or other reproductive harm: Ethylene Oxide, CAS #75-21-8, <20,0ppm. This product contains chemical(s) known to the State of California to cause cancer and/or to cause birth defects or other reproductive harm: Propylene oxide, CAS #75-56-9.

Special Regulations

Component	Status
Components not listed are either not hazardous or in concentrations of less than 1%.	None.

Compliance Information

NSF:	N/A
Food Regulations:	FDA: Complies with 21 CFR 176.170 and 21 CFR 176.180 for use in paper and paperboard which contacts food. FDA: All Ingredients in this product are authorized in 21 CFR 176.210.
KOSHER:	This product has not been evaluated for Kosher approval.
Halal:	This product has not been evaluated for Halal approval.
FIFRA:	N/A
Other:	None

Comments: None.

Section 16. Other Information

HMS Hazard Rating

Health:	1
Flammability:	0
Physical Hazard:	0
PPE:	X

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4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Most important symptoms/effects, acute and delayed	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim under observation. Symptoms may be delayed.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Water fog, Foam, Dry chemical powder, Carbon dioxide (CO2)
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling	Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store locked up. Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS). Store away from incompatible materials (see Section 10 of the SDS).

1. Identification

Product identifier	SODIUM HYDROXIDE 20% MEM 1-WAY
Other means of identification	None.
Recommended use	ALL PROPER AND LEGAL PURPOSES
Recommended restrictions	None known.
Manufacturer/Importer/Supplier/Distributor information	
Manufacturer	
Company name	Brenntag Southwest, Inc.
Address	610 Fisher Road Longview, TX 75604 903-759-7151 Not available.
Telephone	
E-mail	
Emergency phone number	800-424-9300 CHEMTREC

2. Hazard(s) identification

Physical hazards	Not classified.
Health hazards	Skin corrosion/irritation Category 1 Serious eye damage/eye irritation Category 1
Environmental hazards	Not classified.
OSHA defined hazards	Not classified.
Label elements	



Signal word	Danger
Hazard statement	Causes severe skin burns and eye damage. Causes serious eye damage.

Precautionary statement

Prevention	Do not breathe mist or vapor. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection.
Response	If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. Wash contaminated clothing before reuse.
Storage	Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	20% of the mixture consists of component(s) of unknown acute oral toxicity. 60% of the mixture consists of component(s) of unknown acute inhalation toxicity.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
SODIUM HYDROXIDE (NA(OH))		1310-73-2	20
Other components below reportable levels			80

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

Material name: SODIUM HYDROXIDE 20% MEM 1-WAY

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8. Exposure controls/personal protection

Occupational exposure limits

US, OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)	Type	Value
SODIUM HYDROXIDE (NA(OH)) (CAS 1310-73-2)	PEL	2 mg/m3
US, ACGIH Threshold Limit Values	Type	Value
SODIUM HYDROXIDE (NA(OH)) (CAS 1310-73-2)	Ceiling	2 mg/m3
US, NIOSH Pocket Guide to Chemical Hazards	Type	Value
SODIUM HYDROXIDE (NA(OH)) (CAS 1310-73-2)	Ceiling	2 mg/m3

Biological limit values

Appropriate engineering controls	No biological exposure limits noted for the ingredient(s). Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.
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Individual protection measures, such as personal protective equipment

The following are recommendations for Personal Protective Equipment (PPE). The employer/user of this product must perform a Hazard Assessment of the workplace according to OSHA regulations 29 CFR 1910.132 to determine the appropriate PPE for use while performing any task involving potential exposure to this product.

Eye/face protection Wear safety glasses with side shields (or goggles) and a face shield.

Skin protection

Hand protection Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.

Other

Respiratory protection In case of insufficient ventilation, wear suitable respiratory equipment.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state	Liquid.
Form	Liquid.
Color	CLEAR TO HAZY WHITE
Odor	ODORLESS
Odor threshold	Not available
pH	14
Melting point/freezing point	-25 °F (-31.67 °C)
Initial boiling point and boiling range	675.66 °F (357.6 °C) estimated
Flash point	Not available
Evaporation rate	Not available
Flammability (solid, gas)	Not applicable.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.

Explosive limit - lower (%)	Not available
Explosive limit - upper (%)	Not available
Vapor pressure	Not available
Vapor density	Not available
Relative density	Not available
Solubility(ies)	
Solubility (water)	Not available
Partition coefficient (n-octanol/water)	Not available
Auto-ignition temperature	Not available
Decomposition temperature	Not available
Viscosity	Not available
Other information	
Density	10.12 lbs/gal
Explosive properties	Not explosive
Oxidizing properties	Not oxidizing
Percent volatile	60 % estimated
Specific gravity	1.21

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Strong acids.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May cause irritation to the respiratory system. Prolonged inhalation may be harmful.
Skin contact	Causes severe skin burns.
Eye contact	Causes serious eye damage.
Ingestion	Causes digestive tract burns.
Symptoms related to the physical, chemical and toxicological characteristics	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.
Information on toxicological effects	
Acute toxicity	Not known.
Skin corrosion/irritation	Causes severe skin burns and eye damage.
Serious eye damage/eye irritation	Causes serious eye damage.
Respiratory or skin sensitization	
Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	Not classifiable as to carcinogenicity to humans.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)
Not regulated.

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US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.
Chronic effects	Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
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Components	Species	Test Results
SODIUM HYDROXIDE (NaOH) (CAS 1310-73-2)		
Aquatic		
Crustacea	EC50 Water flea (Ceriodaphnia dubia)	34.59 - 47.13 mg/l, 48 hours
Fish	LC50 Western mosquitofish (Gambusia affinis)	125 mg/l, 96 hours
Persistence and degradability	No data is available on the degradability of this product.	
Bioaccumulative potential	No data available.	
Mobility in soil	No data available.	
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.	

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT	
UN number	UN1824
UN proper shipping name	SODIUM HYDROXIDE SOLUTION
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
ERG number	154
Transport information on packaging may be different from that listed. Transportation information on packaging may be different from that listed.	
IATA	
UN number	UN1824
UN proper shipping name	SODIUM HYDROXIDE SOLUTION
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Environmental hazards	No.
ERG Code	154

Material name: SODIUM HYDROXIDE 20% MEM 1-WAY
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Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
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IMDG	
UN number	UN1824
UN proper shipping name	SODIUM HYDROXIDE SOLUTION (SODIUM HYDROXIDE (NaOH))
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Environmental hazards	
Marine pollutant	No.
EmS	F-A, S-B
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

DOT



IATA; IMDG



15. Regulatory information

US federal regulations	This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)	Not regulated.
CERCLA Hazardous Substance List (40 CFR 302.4)	
SODIUM HYDROXIDE (NaOH) (CAS 1310-73-2)	Listed.
SARA 304 Emergency release notification	Not regulated.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)	Not regulated.
Superfund Amendments and Reauthorization Act of 1986 (SARA)	
SARA 302 Extremely hazardous substance	Not listed.
SARA 311/312 Hazardous chemical	Yes
Classified hazard categories	Skin corrosion or irritation Serious eye damage or eye irritation
SARA 312 (TRI reporting)	Not regulated.

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Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List	Not regulated.
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)	Not regulated.
Safe Drinking Water Act (SDWA)	Not regulated.

US state regulations

California Proposition 65	California Safe Drinking Water and Toxic Enforcement Act of 2016 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to www.P65Warnings.ca.gov .
US, California, Candidate Chemicals List, Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))	
SODIUM HYDROXIDE (NaOH) (CAS 1310-73-2)	

International inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Toxic Chemical Substances (TCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	03-08-2017
Revision date	02-05-2019
Version #	05
HMIS® ratings	Health: 3 Flammability: 0 Physical hazard: 0
NFPA ratings	Health: 3 Flammability: 0 Instability: 1
Disclaimer	While Brenntag believes the information contained herein to be accurate, Brenntag makes no representation or warranty, express or implied, regarding, and assumes no liability for, the accuracy or completeness of the information. The Buyer assumes all responsibility for handling, using and/or reselling the Product in accordance with applicable federal, state, and local law. This SDS shall not in any way limit or preclude the operation and effect of any of the provisions of Brenntag's terms and conditions of sale.

Material name: SODIUM HYDROXIDE 20% MEM 1-WAY
591700 Version #: 05 Revision date: 02-05-2019 Issue date: 03-08-2017
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Revision information

Hazard(s) identification: Hazard statement
Hazard(s) identification: Response
Hazard(s) identification: GHS Symbols
Hazard(s) identification: Supplemental information
Handling and storage: Precautions for safe handling
Exposure controls/personal protection: Eye/Face protection
Exposure controls/personal protection: Other
Exposure controls/personal protection: PPE Symbols
Toxicological information: Acute toxicity
Toxicological information: Skin contact



SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name: ChemTreat PB8045
Product Use: Biological Wastewater Treatment Aid
Supplier's Name: ChemTreat, Inc.
Emergency Telephone Number: (800)424-9300 (Toll Free)
Address (Corporate Headquarters): 5640 Cox Road
Glen Allen, VA 23060
Telephone Number for Information: (800)648-4579
Date of SDS: July 9, 2019
Revision Date: July 9, 2019
Revision Number: 19070901AN

Section 2. Hazard(s) Identification



Signal Word: **WARNING**

GHS Classification(s): Acute Toxicity Dermal – Category 5
Acute Toxicity Oral – Category 4
Hazardous to the aquatic environment Acute – Category 3

Hazard Statement(s): H302 Harmful if swallowed.
H313 May be harmful in contact with skin.
H402 Harmful to aquatic life.

Precautionary Statement(s):

Prevention: P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response: P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Storage: None.

Material name: SODIUM HYDROXIDE 20% MEM 1-WAY
591700 Version #: 05 Revision date: 02-05-2019 Issue date: 03-08-2017

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Disposal: P501 Dispose of contents and container in accordance with applicable local, regional, national, and/or international regulations.

System of Classification Used: Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Hazards Not Otherwise Classified: None.

Section 3. Composition/Hazardous Ingredients

Component	CAS Registry #	Wt. %
Ammonium sulfate	7783-20-2	< 2
Urea	57-13-6	15 – 50
Ammonia polyphosphate	68333-79-9	10 – 30
Ammonium nitrate	6484-52-2	15 – 50

Comments If chemical identity and/or exact percentage of composition has been withheld, this information is considered to be a trade secret.

Section 4. First Aid Measures

Inhalation: Call a POISON CENTER or doctor/physician if you feel unwell.

Eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.

Skin: Wash with plenty of soap and water. Call a poison center or doctor/physician if you feel unwell.

Ingestion: DO NOT INDUCE VOMITING. Rinse mouth. Call a POISON CENTER or doctor/physician.

Most Important Symptoms: N/D

Indication of Immediate Medical Attention and Special Treatment Needed, if Necessary: N/A



Section 5. Fire Fighting Measures

Flammability of the Product: Not flammable.

Suitable Extinguishing Media: Use extinguishing media suitable to surrounding fire.

Specific Hazards Arising from the Chemical: None known.

Protective Equipment: If product is involved in a fire, wear full protective clothing including a positive-pressure, NIOSH approved, self-contained breathing apparatus.

Section 6. Accidental Release Measures

Personal Precautions: Use appropriate Personal Protective Equipment (PPE).

Environmental Precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.

Methods for Cleaning up: Contain and/or absorb spill with inert material then place in suitable container.

Other Statements: None.

Section 7. Handling and Storage

Handling: Wear appropriate Personal Protective Equipment (PPE) when handling this product. Do not get in eyes, or on skin and clothing. Wash thoroughly after handling. Do not ingest. Avoid breathing vapors, mist or dust.

Storage: Store away from incompatible materials (see Section 10). Store at ambient temperatures. Keep container securely closed when not in use. Label precautions also apply to empty container. Recondition or dispose of empty containers in accordance with government regulations. For Industrial use only. Store above Freeze Point.



Section 8. Exposure Controls/Personal Protection

Exposure Limits

Component	Source	Exposure Limits
Ammonium sulfate	N/E	N/E
Urea	N/E	N/E
Ammonia polyphosphate	N/E	N/E
Ammonium nitrate	N/E	N/E

Engineering Controls: Use only with adequate ventilation. The use of local ventilation is recommended to control emission near the source.

Personal Protection

Eyes: Safety glasses are recommended if risk of eye contact.

Skin: Wear appropriate chemical resistant gloves.

Respiratory: If misting occurs, use NIOSH approved organic vapor/acid gas dual cartridge respirator with a dust/mist prefilter in accordance with 29 CFR 1910.134.

Section 9. Physical and Chemical Properties

Physical State and Appearance: Liquid, Light Green, Hazy

Specific Gravity: 1.280 @ 20°C

pH: 6.0 @ 20°C, 100.0%

Freezing Point: <-13°F

Flash Point: N/A

Odor: Mild

Melting Point: N/D

Initial Boiling Point and Boiling Range: N/D

Solubility in Water: N/D

Evaporation Rate: N/D

Vapor Density: N/D

Molecular Weight: N/D

Viscosity: <100 CPS @ 20°C

Flammability (solid, gas): N/D

Flammable Limits: N/A

Autoignition Temperature: N/D

Density: 10.68 LB/GA

Vapor Pressure: N/D

% VOC: N/D

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Odor Threshold N/D

n-octanol Partition Coefficient N/D

Decomposition Temperature N/D

Section 10. Stability and Reactivity

Chemical Stability: Stable at normal temperatures and pressures.

Incompatibility with Various Substances: Brass, Zinc, Aluminum/aluminum alloys, Copper/copper alloys.

Hazardous Decomposition Products: Ammonia.

Possibility of Hazardous Reactions: None known.

Reactivity: N/D

Conditions To Avoid: N/D

Section 11. Toxicological Information

Acute Toxicity

Chemical Name	Exposure	Type of Effect	Concentration	Species
ChemTreat PB8045	N/D	N/D	N/D	N/D

Carcinogenicity Category

Component	Source	Code	Brief Description
Ammonium sulfate	N/E	N/E	N/E
Urea	N/E	N/E	N/E
Ammonia polyphosphate	N/E	N/E	N/E
Ammonium nitrate	N/E	N/E	N/E

Likely Routes of Exposure: N/D

Symptoms

Inhalation: N/D

Eye Contact: N/D

Skin Contact: N/D

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Ingestion: N/D

Skin Corrosion/Irritation: N/D

Serious Eye Damage/Eye Irritation: N/D

Sensitization: N/D

Germ Cell Mutagenicity: N/D

Reproductive/Developmental Toxicity: N/D

Specific Target Organ Toxicity

Single Exposure: N/D

Repeated Exposure: N/D

Aspiration Hazard: N/D

Comments: None.

Section 12. Ecological Information

Ecotoxicity

Species	Duration	Type of Effect	Test Results
N/D	N/D	N/D	N/D

Persistence and Biodegradability: N/D

Bioaccumulative Potential: N/D

Mobility In Soil: N/D

Other Adverse Effects: N/D

Comments: None.

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ChemTreat PB8045



Section 13. Disposal Considerations

Dispose of in accordance with local, state and federal regulations.

Section 14. Transport Information

Controlling Regulation	UN/NA#:	Proper Shipping Name:	Technical Name:	Hazard Class:	Packing Group:
DOT	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
SCT	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A

Note: N/A

Section 15. Regulatory Information

Inventory Status

United States (TSCA): All ingredients listed or exempt.

Canada (DSL/NDL): All ingredients listed or exempt.

Federal Regulations

SARA Title III Rules

Sections 311/312 Hazard Classes

Fire Hazard: No

Reactive Hazard: No

Release of Pressure: No

Acute Health Hazard: Yes

Chronic Health Hazard: No

Other Sections

Component	Section 313 Toxic Chemical	Section 302 EHS TPO	CERCLA RQ
Ammonium sulfate	N/A	N/A	N/A
Urea	N/A	N/A	N/A
Ammonia polyphosphate	N/A	N/A	N/A

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Component	Section 313 Toxic Chemical	Section 302 EHS TPQ	CERCLA RQ
Ammonium nitrate	N/A	N/A	N/A

Comments: None.

State Regulations

California Proposition 65: None known.

Special Regulations

Component	States
Ammonium sulfate	MA, PA
Urea	None.
Ammonia polyphosphate	None.
Ammonium nitrate	None.

Compliance Information

NSF: N/A

Food Regulations: N/A

KOSHER: This product has not been evaluated for Kosher approval.

Halal: This product has not been evaluated for Halal approval.

FIFRA: N/A

Other: None

Comments: None.

Section 16. Other Information

HMIS Hazard Rating

Health: 1
Flammability: 0
Physical Hazard: 0
PPE: X

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Notes:

The PPE rating depends on circumstances of use. See Section 8 for recommended PPE. The Hazardous Material Information System (HMIS) is a voluntary, subjective alpha-numeric symbolic system for recommending hazard risk and personal protection equipment information. It is a subjective rating system based on the evaluator's understanding of the chemical associated risks. The end-user must determine if the code is appropriate for their use.

Abbreviations

Abbreviation	Definition
<	Less Than
>	Greater Than
ACGIH	American Conference of Governmental Industrial Hygienists
EHS	Environmental Health and Safety Dept
N/A	Not Applicable
N/D	Not Determined
N/E	Not Established
OSHA	Occupational Health and Safety Dept
PEL	Personal Exposure Limit
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weight Average
UNK	Unknown

Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

Revision Date: July 9, 2019

Disclaimer

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, ChemTreat, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ChemTreat, Inc. be responsible for damages of any nature whatsoever resulting from the use or reliance upon information. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.

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SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name: ChemTreat P873L
Product Use: Water Clarification Agent
Supplier's Name: ChemTreat, Inc.
Emergency Telephone Number: (800)424-9300 (Toll Free)
Address (Corporate Headquarters): 5640 Cox Road
Glen Allen, VA 23060
Telephone Number for Information: (800)648-4579
Date of SDS: February 7, 2019
Revision Date: February 7, 2019
Revision Number: 19020701AN

Section 2. Hazard(s) Identification

Signal Word: None

GHS Classification(s): Non-Hazardous Substance

Hazard Statement(s): Non-Hazardous Substance

Precautionary Statement(s): No significant health risks are expected from exposures under normal conditions of use.

Prevention: None.

Response: None.

Storage: None.

Disposal: None.

System of Classification Used: Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Hazards Not Otherwise Classified: None.

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Section 3. Composition/Hazardous Ingredients

Component	CAS Registry #	Wt. %
Components not listed are either non hazardous or in concentration of less than 1%	N/A	N/A

Comments: If chemical identity and/or exact percentage of composition has been withheld, this information is considered to be a trade secret.

Section 4. First Aid Measures

Inhalation: Call a POISON CENTER or doctor/physician if you feel unwell.

Eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.

Skin: Call a poison center or doctor/physician if you feel unwell.

Ingestion: Rinse mouth. Call a poison center or doctor/physician if you feel unwell.

Most Important Symptoms: N/D

Indication of Immediate Medical Attention and Special Treatment Needed, if Necessary: N/A

Section 5. Fire Fighting Measures

Flammability of the Product: Not flammable.

Suitable Extinguishing Media: Use extinguishing media suitable to surrounding fire. Use water spray or fog. Firefighting foam. Carbon Dioxide. Dry Chemical.

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Specific Hazards Arising from the Chemical:

Use water spray to keep containers cool. Carbon oxides, nitrogen oxides, hydrogen chloride, hydrogen cyanide may be product in the event of combustion in an oxygen deficient atmosphere.

Protective Equipment:

If product is involved in a fire, wear full protective clothing including a positive-pressure, NIOSH approved, self-contained breathing apparatus.

Section 6. Accidental Release Measures

Personal Precautions:

Use appropriate Personal Protective Equipment (PPE).

Environmental Precautions:

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.

Methods for Cleaning up:

Contain and/or absorb spill with inert material then place in suitable container. Material is very slippery if spilled.

Other Statements:

None.

Section 7. Handling and Storage

Handling:

Wear appropriate Personal Protective Equipment (PPE) when handling this product. Do not get in eyes, or on skin and clothing. Wash thoroughly after handling. Do not ingest. Avoid breathing vapors, mist or dust.

Storage:

Store away from incompatible materials (see Section 10). Store at ambient temperatures. Keep container securely closed when not in use. Label precautions also apply to empty container. Recondition or dispose of empty containers in accordance with government regulations. For Industrial use only. Do not freeze. Store above Freeze Point. If freezes, then mechanical mixing is required.

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% VOC: 0
Odor Threshold N/D
n-octanol Partition Coefficient N/D
Decomposition Temperature N/D

Section 10. Stability and Reactivity

Chemical Stability:

Stable at normal temperatures and pressures.

Incompatibility with Various Substances:

Strong oxidizers, Strong bases.

Hazardous Decomposition Products:

Oxides of carbon, Oxides of nitrogen, Hydrogen chloride, Hydrogen cyanide.

Possibility of Hazardous Reactions:

None known.

Reactivity:

N/D

Conditions To Avoid:

N/D

Section 11. Toxicological Information

Acute Toxicity

Chemical Name	Exposure	Type of Effect	Concentration	Species
ChemTreat P873L	Oral	LD50	>5000 MG/KG	Rat
	Dermal	LD50	>5000 MG/KG	Rat

Carcinogenicity Category

Component	Source	Code	Brief Description
Components not listed are either non hazardous or in concentration of less than 1%	N/E	N/E	N/E

Likely Routes of Exposure:

N/D

Symptoms

Inhalation: N/D
Eye Contact: N/D
Skin Contact: N/D

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Section 8. Exposure Controls/Personal Protection

Exposure Limits

Component	Source	Exposure Limits
Components not listed are either non hazardous or in concentration of less than 1%	N/E	N/E

Engineering Controls:

Use only with adequate ventilation. The use of local ventilation is recommended to control emission near the source.

Personal Protection

Eyes:

Safety glasses are recommended if risk of eye contact.

Skin:

Wear butyl rubber or neoprene gloves. Wash them after each use and replace as necessary. If conditions warrant, wear protective clothing such as boots, aprons, and coveralls to prevent skin contact.

Respiratory:

If misting occurs, use NIOSH approved organic vapor/acid gas dual cartridge respirator with a dust/mist prefilter in accordance with 29 CFR 1910.134.

Section 9. Physical and Chemical Properties

Physical State and Appearance: Liquid, Light Straw, Clear
Specific Gravity: 1.042 @ 20°C
pH: 5.9 @ 20°C, 100.0%
Freezing Point: 30°F
Flash Point: N/D
Odor: Mild
Melting Point: N/A
Initial Boiling Point and Boiling Range: 212°F
Solubility in Water: Soluble
Evaporation Rate: N/D
Vapor Density: Similar to water
Molecular Weight: N/D
Viscosity: N/A
Flammability (solid, gas): N/D
Flammable Limits: N/A
Autoignition Temperature: N/A
Density: 8.69 LB/GA
Vapor Pressure: Similar to water

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Ingestion: N/D
Skin Corrosion/Irritation: N/D
Serious Eye Damage/Eye Irritation: N/D
Sensitization: N/D
Germ Cell Mutagenicity: N/D
Reproductive/Developmental Toxicity: N/D
Specific Target Organ Toxicity
Single Exposure: N/D
Repeated Exposure: N/D
Aspiration Hazard: N/D
Comments: None.

Section 12. Ecological Information

Ecotoxicity

Species	Duration	Type of Effect	Test Results
Fathead Minnow	96h	LC50	2.253 mg/l
Ceriodaphnia dubia	48h	LC50	0.473 mg/l

Persistence and Biodegradability: N/D

Bioaccumulative Potential: N/D

Mobility In Soil: N/D

Other Adverse Effects: N/D

Comments:

Water clarification polymers function by multipoint adsorption and charge neutralization with suspended solids. Polymers inherently migrate with solids in the separation process and with the exception of uneconomic overdose do not remain in the clarified waters. Aquatic toxicity determinations in test method protocol waters without suspended solids overestimate the toxicity compared to natural receiving waters.

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Section 13. Disposal Considerations

Dispose of in accordance with local, state and federal regulations.
Not a RCRA-regulated hazardous waste when disposed in the original product form.

Section 14. Transport Information

Controlling Regulation	UN/NA#	Proper Shipping Name:	Technical Name:	Hazard Class:	Packing Group:
DOT	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
IMDG	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
ICAO	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
TDG	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A

Note: N/A

Section 15. Regulatory Information

Inventory Status

United States (TSCA): All ingredients listed.
Canada (DSL/NDSL): All ingredients listed.

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Food Regulations:

FDA: Complies with 21 CFR 176.170 and 21 CFR 176.180 for use in paper and paperboard which contacts food.
FDA: GRAS, 21 CFR 570.30 – Generally Recognized as Safe by experts in accordance with the Federal Food, Drug and Cosmetic Act (Section 201s) for their intended use as flocculants and dewatering aids for food processing waste destined for recycling as animal feed, and is subject to the limitations therein.

KOSHER: This product has not been evaluated for Kosher approval.

Halal: This product has not been evaluated for Halal approval.

FIFRA: N/A

Other: None

Comments: None.

Section 16. Other Information

HMIS Hazard Rating

Health: 0
Flammability: 0
Physical Hazard: 0
PPE: X

Notes: The PPE rating depends on circumstances of use. See Section 8 for recommended PPE.
The Hazardous Material Information System (HMIS) is a voluntary, subjective alpha-numeric symbolic system for recommending hazard risk and personal protection equipment information. It is a subjective rating system based on the evaluator's understanding of the chemical associated risks. The end-user must determine if the code is appropriate for their use.

Abbreviations

Abbreviation	Definition
<	Less Than
>	Greater Than
ACGIH	American Conference of Governmental Industrial Hygienists
EHS	Environmental Health and Safety Dept
N/A	Not Applicable
ND	Not Determined
NE	Not Established

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Federal Regulations

SARA Title III Rules

Sections 311/312 Hazard Classes

Fire Hazard: No
Reactive Hazard: No
Release of Pressure: No
Acute Health Hazard: No
Chronic Health Hazard: No

Other Sections

Component	Section 313 Toxic Chemical	Section 302 EHS TPQ	CERCLA RQ
Components not listed are either non hazardous or in concentration of less than 1%	N/A	N/A	N/A

Comments: None.

State Regulations

California Proposition 65: None known.

Special Regulations

Component	States
Components not listed are either non hazardous or in concentration of less than 1%	None.

Compliance Information

NSF: Certified to NSF/ANSI Standard 60
Maximum use rate for potable water – 50 mg/L
This product ships as NSF from:
Ashland, VA
Eldridge, IA
Nederland, TX
Facility #2 USA
Facility #3 USA

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Abbreviation	Definition
OSHA	Occupational Health and Safety Dept
PEL	Personal Exposure Limit
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weight Average
UNK	Unknown

Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

Revision Date: February 7, 2019

Disclaimer

Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, ChemTreat, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ChemTreat, Inc. be responsible for damages of any nature whatsoever resulting from the use or reliance upon information. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.

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SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name: ChemTreat P880L
Product Use: Water Clarification Agent
Supplier's Name: ChemTreat, Inc.
Emergency Telephone Number: (800)424-9300 (Toll Free)
Address (Corporate Headquarters): 5640 Cox Road
Glen Allen, VA 23060
Telephone Number for Information: (800)648-4579
Date of SDS: October 4, 2019
Revision Date: October 4, 2019
Revision Number: 19100401AN

Section 2. Hazard(s) Identification

Signal Word: None
GHS Classification(s): Non-Hazardous Substance
Hazard Statement(s): Non-Hazardous Substance
Precautionary Statement(s): No significant health risks are expected from exposures under normal conditions of use.
Prevention: None.
Response: None.
Storage: None.
Disposal: None.
System of Classification Used: Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).
Hazards Not Otherwise Classified: None.

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Protective Equipment: If product is involved in a fire, wear full protective clothing including a positive-pressure, NIOSH approved, self-contained breathing apparatus.

Section 6. Accidental Release Measures

Personal Precautions: Use appropriate Personal Protective Equipment (PPE).
Environmental Precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.
Methods for Cleaning up: Contain and/or absorb spill with inert material then place in suitable container.
Material is very slippery if spilled.
Other Statements: None.

Section 7. Handling and Storage

Handling: Wear appropriate Personal Protective Equipment (PPE) when handling this product. Do not get in eyes, or on skin and clothing. Wash thoroughly after handling. Do not ingest. Avoid breathing vapors, mist or dust.
Storage: Store away from incompatible materials (see Section 10). Store at ambient temperatures. Keep container securely closed when not in use. Label precautions also apply to empty container. Recondition or dispose of empty containers in accordance with government regulations. For Industrial use only. Protect from heat and sources of ignition. Do not freeze. Store above Freeze Point. If freezes, then mechanical mixing is required.

Section 8. Exposure Controls/Personal Protection

Exposure Limits

Component	Source	Exposure Limits
Components not listed are either non hazardous or in concentration of less than 1%	N/E	N/E

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ChemTreat P880L



Section 3. Composition/Hazardous Ingredients

Component	CAS Registry #	Wt.%
Components not listed are either non hazardous or in concentration of less than 1%	N/A	N/A

Comments If chemical identity and/or exact percentage of composition has been withheld, this information is considered to be a trade secret.

Section 4. First Aid Measures

Inhalation: Call a POISON CENTER or doctor/physician if you feel unwell.
Eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.
Skin: Call a poison center or doctor/physician if you feel unwell.
Ingestion: Rinse mouth. Call a poison center or doctor/physician if you feel unwell.
Most Important Symptoms: N/D
Indication of Immediate Medical Attention and Special Treatment Needed, if Necessary: N/A

Section 5. Fire Fighting Measures

Flammability of the Product: Not flammable.
Suitable Extinguishing Media: Use extinguishing media suitable to surrounding fire.
Use water spray or fog.
Dry Chemical
Carbon Dioxide
Specific Hazards Arising from the Chemical: None known.

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ChemTreat P880L



Engineering Controls: Use only with adequate ventilation. The use of local ventilation is recommended to control emission near the source.

Personal Protection

Eyes: Safety glasses are recommended if risk of eye contact.
Skin: Wear butyl rubber or neoprene gloves. Wash them after each use and replace as necessary. If conditions warrant, wear protective clothing such as boots, aprons, and coveralls to prevent skin contact.
Respiratory: If misting occurs, use NIOSH approved organic vapor/acid gas dual cartridge respirator with a dust/mist prefilter in accordance with 29 CFR 1910.134.

Section 9. Physical and Chemical Properties

Physical State and Appearance: Liquid, Straw, Clear
Specific Gravity: 1.044 @ 20°C
pH: 6.6 @ 20°C, 100.0%
Freezing Point: 26.6°F
Flash Point: N/D
Odor: Mild
Melting Point: N/A
Initial Boiling Point and Boiling Range: 212°F
Solubility in Water: Miscible
Evaporation Rate: N/D
Vapor Density: N/D
Molecular Weight: N/A
Viscosity: N/A
Flammability (solid, gas): N/D
Flammable Limits: N/A
Autoignition Temperature: N/A
Density: 8.71 LB/GA
Vapor Pressure: N/D
% VOC: N/D
Odor Threshold: N/D
n-octanol Partition Coefficient: N/D
Decomposition Temperature: N/D

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Section 10. Stability and Reactivity

Chemical Stability:	Stable at normal temperatures and pressures.
Incompatibility with Various Substances:	None known.
Hazardous Decomposition Products:	Oxides of carbon, Oxides of nitrogen, Hydrogen chloride.
Possibility of Hazardous Reactions:	None known.
Reactivity:	N/D
Conditions To Avoid:	N/D

Section 11. Toxicological Information

Acute Toxicity

Chemical Name	Exposure	Type of Effect	Concentration	Species
ChemTreat P880L	N/D	N/D	N/D	N/D

Carcinogenicity Category

Component	Source	Code	Brief Description
Components not listed are either non hazardous or in concentration of less than 1%	N/E	N/E	N/E

Likely Routes of Exposure: N/D

Symptoms

Inhalation:	N/D
Eye Contact:	N/D
Skin Contact:	N/D
Ingestion:	N/D

Skin Corrosion/Irritation: N/D

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Serious Eye Damage/Eye Irritation:	N/D
Sensitization:	N/D
Germ Cell Mutagenicity:	N/D
Reproductive/Developmental Toxicity:	N/D
Specific Target Organ Toxicity	
Single Exposure:	N/D
Repeated Exposure:	N/D
Aspiration Hazard:	N/D
Comments:	None.

Section 12. Ecological Information

Ecotoxicity

Species	Duration	Type of Effect	Test Results
Ceriodaphnia dubia	48h	LC50	0.46 mg/l
Fathead Minnow	96h	LC50	3.4 mg/l

Persistence and Biodegradability:	N/D
Bioaccumulative Potential:	Not bioaccumulating
Mobility In Soil:	N/D
Other Adverse Effects:	N/D

Comments: Water clarification polymers function by multipoint adsorption and charge neutralization with suspended solids. Polymers inherently migrate with solids in the separation process and with the exception of uneconomic overdose do not remain in the clarified waters. Aquatic toxicity determinations in test method protocol waters without suspended solids overestimate the toxicity compared to natural receiving waters.

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Section 13. Disposal Considerations

Dispose of in accordance with local, state and federal regulations.

Section 14. Transport Information

Controlling Regulation	UN/NA#:	Proper Shipping Name:	Technical Name:	Hazard Class:	Packing Group:
DOT	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
IMDG	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
ICAO	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
TDG	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A

Note: N/A

Section 15. Regulatory Information

Inventory Status

United States (TSCA): All ingredients listed.
Canada (DSL/NDSL): All ingredients listed.

Federal Regulations

SARA Title III Rules

Sections 311/312 Hazard Classes

Fire Hazard:	No
Reactive Hazard:	No
Release of Pressure:	No
Acute Health Hazard:	No
Chronic Health Hazard:	No

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Other Sections

Component	Section 313 Toxic Chemical	Section 302 EHS TPQ	CERCLA RQ
Components not listed are either non hazardous or in concentration of less than 1%	N/A	N/A	N/A

Comments: None.

State Regulations

California Proposition 65: None known.

Special Regulations

Component	States
Components not listed are either non hazardous or in concentration of less than 1%	None.

Compliance Information

NSF:	Certified to NSF/ANSI Standard 60 Maximum use rate for potable water – 50 mg/L Facility #2 USA
Food Regulations:	FDA: GRAS, 21 CFR 570.30 – Generally Recognized as Safe by experts in accordance with the Federal Food, Drug and Cosmetic Act (Section 201s) for their intended use as flocculants and dewatering aids for food processing waste destined for recycling as animal feed, and is subject to the limitations therein.
KOSHER:	This product has not been evaluated for Kosher approval.
Halal:	This product has not been evaluated for Halal approval.
FIFRA:	N/A
Other:	None
Comments:	None.

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Section 16. Other Information

HMIS Hazard Rating

Health: 0
Flammability: 0
Physical Hazard: 0
PPE: X

Notes:

The PPE rating depends on circumstances of use. See Section 8 for recommended PPE.
The Hazardous Material Information System (HMIS) is a voluntary, subjective alpha-numeric symbolic system for recommending hazard risk and personal protection equipment information. It is a subjective rating system based on the evaluator's understanding of the chemical associated risks. The end-user must determine if the code is appropriate for their use.

Abbreviations

Abbreviation	Definition
<	Less Than
>	Greater Than
ACGIH	American Conference of Governmental Industrial Hygienists
EHS	Environmental Health and Safety Dept
N/A	Not Applicable
N/D	Not Determined
N/E	Not Established
OSHA	Occupational Health and Safety Dept
PEL	Personal Exposure Limit
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weight Average
UNK	Unknown

Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

Revision Date: October 4, 2019

Disclaimer

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, ChemTreat, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ChemTreat, Inc. be responsible for damages of any nature whatsoever resulting from the use or reliance upon information. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.

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SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name: ChemTreat P824L
Product Use: Water Clarification Agent
Supplier's Name: ChemTreat, Inc.
Emergency Telephone Number: (800)424-9300 (Toll Free)
Address (Corporate Headquarters): 5640 Cox Road
Glen Allen, VA 23060
Telephone Number for Information: (800)648-4579
Date of SDS: October 9, 2019
Revision Date: October 9, 2019
Revision Number: 19100901AN

Section 2. Hazard(s) Identification

Signal Word: None

GHS Classification(s): Non-Hazardous Substance

Hazard Statement(s): Non-Hazardous Substance

Precautionary Statement(s): No significant health risks are expected from exposures under normal conditions of use.

Prevention: None.

Response: None.

Storage: None.

Disposal: None.

System of Classification Used: Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Hazards Not Otherwise Classified: None.

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Section 3. Composition/Hazardous Ingredients

Component	CAS Registry #	Wt.%
Components not listed are either non hazardous or in concentration of less than 1%	N/A	N/A

Comments: If chemical identity and/or exact percentage of composition has been withheld, this information is considered to be a trade secret.

Section 4. First Aid Measures

Inhalation: Call a POISON CENTER or doctor/physician if you feel unwell.

Eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.

Skin: Call a poison center or doctor/physician if you feel unwell.

Ingestion: Rinse mouth. Call a poison center or doctor/physician if you feel unwell.

Most Important Symptoms: N/D

Indication of Immediate Medical Attention and Special Treatment Needed, if Necessary: N/A

Section 5. Fire Fighting Measures

Flammability of the Product: Not flammable.

Suitable Extinguishing Media: Use extinguishing media suitable to surrounding fire.

Specific Hazards Arising from the Chemical: Use water spray to keep containers cool.

Protective Equipment: If product is involved in a fire, wear full protective clothing including a positive-pressure, NIOSH approved, self-contained breathing apparatus.

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Section 6. Accidental Release Measures

Personal Precautions:	Use appropriate Personal Protective Equipment (PPE).
Environmental Precautions:	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.
Methods for Cleaning up:	Contain and recover liquid when possible. Flush spill area with water spray. Material is very slippery if spilled.
Other Statements:	None.

Section 7. Handling and Storage

Handling:	Wear appropriate Personal Protective Equipment (PPE) when handling this product. Do not get in eyes, or on skin and clothing. Wash thoroughly after handling. Do not ingest. Avoid breathing vapors, mist or dust.
Storage:	Store away from incompatible materials (see Section 10). Store at ambient temperatures. Keep container securely closed when not in use. Label precautions also apply to empty container. Recondition or dispose of empty containers in accordance with government regulations. For Industrial use only. Do not freeze. Store above Freeze Point. If freezes, then mechanical mixing is required.

Section 8. Exposure Controls/Personal Protection

Exposure Limits

Component	Source	Exposure Limits
Components not listed are either non hazardous or in concentration of less than 1%	N/E	N/E

Engineering Controls:	Use only with adequate ventilation. The use of local ventilation is recommended to control emission near the source.
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Personal Protection

Eyes:	Safety glasses are recommended if risk of eye contact.
Skin:	Wear butyl rubber or neoprene gloves. Wash them after each use and replace as necessary. If conditions warrant, wear protective clothing such as boots, aprons, and coveralls to prevent skin contact.
Respiratory:	If misting occurs, use NIOSH approved organic vapor/acid gas dual cartridge respirator with a dust/mist prefilter in accordance with 29 CFR 1910.134.

Section 9. Physical and Chemical Properties

Physical State and Appearance:	Liquid, Straw, Clear
Specific Gravity:	1.044 @ 20°C
pH:	6.8 @ 20°C, 100.0%
Freezing Point:	32°F
Flash Point:	>212°F
Odor:	Mild
Melting Point:	N/A
Initial Boiling Point and Boiling Range:	212°F
Solubility in Water:	Miscible
Evaporation Rate:	Similar to water
Vapor Density:	Similar to water
Molecular Weight:	N/D
Viscosity:	N/A
Flammability (solid, gas):	N/D
Flammable Limits:	N/A
Autoignition Temperature:	N/A
Density:	8.71 LB/GA
Vapor Pressure:	Similar to water
% VOC:	0.1
Odor Threshold	N/D
n-octanol Partition Coefficient	N/D
Decomposition Temperature	N/D

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Section 10. Stability and Reactivity

Chemical Stability:	Stable at normal temperatures and pressures.
Incompatibility with Various Substances:	Strong oxidizers, Strong bases.
Hazardous Decomposition Products:	Carbon dioxide, Carbon monoxide, Oxides of nitrogen, Hydrogen chloride.
Possibility of Hazardous Reactions:	None known.
Reactivity:	N/D
Conditions To Avoid:	N/D

Section 11. Toxicological Information

Acute Toxicity

Chemical Name	Exposure	Type of Effect	Concentration	Species
ChemTreat P824L	Oral	LD50	>2000 MG/KG	Rat

Carcinogenicity Category

Component	Source	Code	Brief Description
Components not listed are either non hazardous or in concentration of less than 1%	N/E	N/E	N/E

Likely Routes of Exposure:	N/D
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Symptoms

Inhalation:	N/D
Eye Contact:	N/D
Skin Contact:	N/D
Ingestion:	N/D
Skin Corrosion/Irritation:	N/D

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Serious Eye Damage/Eye Irritation:	N/D
Sensitization:	N/D
Germ Cell Mutagenicity:	N/D
Reproductive/Developmental Toxicity:	N/D
Specific Target Organ Toxicity	
Single Exposure:	N/D
Repeated Exposure:	N/D
Aspiration Hazard:	N/D
Comments:	None.

Section 12. Ecological Information

Ecotoxicity

Species	Duration	Type of Effect	Test Results
Fathead Minnow	96h	LC50	1.13 mg/l
Ceriodaphnia dubia	48h	LC50	0.374 mg/l

Persistence and Biodegradability:	N/D
Bioaccumulative Potential:	N/D
Mobility In Soil:	N/D
Other Adverse Effects:	N/D
Comments:	Water clarification polymers function by multipoint adsorption and charge neutralization with suspended solids. Polymers inherently migrate with solids in the separation process and with the exception of uneconomic overdose do not remain in the clarified waters. Aquatic toxicity determinations in test method protocol waters without suspended solids overestimate the toxicity compared to natural receiving waters.

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Section 13. Disposal Considerations

Dispose of in accordance with local, state and federal regulations.
Not a RCRA-regulated hazardous waste when disposed in the original product form.

Section 14. Transport Information

Controlling Regulation	UN/NA#:	Proper Shipping Name:	Technical Name:	Hazard Class:	Packing Group:
DOT	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
IMDG	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
ICAO	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
TDG	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A

Note: N/A

Section 15. Regulatory Information

Inventory Status

United States (TSCA): All ingredients listed.
Canada (DSL/NDSL): All ingredients listed.

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FIFRA: N/A
Other: None
Comments: None.

Section 16. Other Information

HMIS Hazard Rating

Health: 0
Flammability: 0
Physical Hazard: 0
PPE: X

Notes: The PPE rating depends on circumstances of use. See Section 8 for recommended PPE.
The Hazardous Material Information System (HMIS) is a voluntary, subjective alpha-numeric symbolic system for recommending hazard risk and personal protection equipment information. It is a subjective rating system based on the evaluator's understanding of the chemical associated risks. The end-user must determine if the code is appropriate for their use.

Abbreviations

Abbreviation	Definition
<	Less Than
>	Greater Than
ACGIH	American Conference of Governmental Industrial Hygienists
EHS	Environmental Health and Safety Dept
N/A	Not Applicable
N/D	Not Determined
N/E	Not Established
OSHA	Occupational Health and Safety Dept
PEL	Personal Exposure Limit
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weight Average
UNK	Unknown

Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com
Revision Date: October 9, 2019

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Federal Regulations

SARA Title III Rules

Sections 311/312 Hazard Classes

Fire Hazard: No
Reactive Hazard: No
Release of Pressure: No
Acute Health Hazard: No
Chronic Health Hazard: No

Other Sections

Component	Section 313 Toxic Chemical	Section 302 EHS TPQ	CERCLA RQ
Components not listed are either non hazardous or in concentration of less than 1%	N/A	N/A	N/A

Comments: None.

State Regulations

California Proposition 65: None known.

Special Regulations

Component	States
Components not listed are either non hazardous or in concentration of less than 1%	None.

Compliance Information

NSF: Certified to NSF/ANSI Standard 60
Maximum use rate for potable water – 50 mg/L
This product ships as NSF from:
Facility #2 USA
Facility #3 USA

Food Regulations: FDA: GRAS, 21 CFR 570.30 – Generally Recognized as Safe by experts in accordance with the Federal Food, Drug and Cosmetic Act (Section 201s) for their intended use as flocculants and dewatering aids for food processing waste destined for recycling as animal feed, and is subject to the limitations therein.

KOSHER: This product has not been evaluated for Kosher approval.

Halal: This product has not been evaluated for Halal approval.

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Disclaimer

Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, ChemTreat, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ChemTreat, Inc. be responsible for damages of any nature whatsoever resulting from the use or reliance upon information. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.

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SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name: ChemTreat P893L
Product Use: Water Clarification Agent
Supplier's Name: ChemTreat, Inc.
Emergency Telephone Number: (800)424-9300 (Toll Free)
Address (Corporate Headquarters): 5640 Cox Road
Glen Allen, VA 23060
Telephone Number for Information: (800)648-4579
Date of SDS: March 31, 2020
Revision Date: March 31, 2020
Revision Number: 20033101AN

Section 2. Hazard(s) Identification

Signal Word: **WARNING**

GHS Classification(s): Skin corrosion/irritation – Category 2
Eye damage/irritation – Category 2a
Corrosive to Metals – Category 1

Hazard Statement(s): H315 Causes skin irritation.
H319 Causes serious eye irritation.
H290 May be corrosive to metals.

Precautionary Statement(s):

Prevention: P264 Wash thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P234 Keep only in original container.

Response: P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.
P362 Take off contaminated clothing and wash before reuse.
P390 Absorb spillage to prevent material damage.

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Section 5. Fire Fighting Measures

Flammability of the Product: Not flammable.

Suitable Extinguishing Media: Use extinguishing media suitable to surrounding fire.

Specific Hazards Arising from the Chemical: Containers exposed in a fire should be cooled with water to prevent vapor pressure build-up leading to rupture.

Protective Equipment: If product is involved in a fire, wear full protective clothing including a positive-pressure, NIOSH approved, self-contained breathing apparatus.

Section 6. Accidental Release Measures

Personal Precautions: Use appropriate Personal Protective Equipment (PPE).

Environmental Precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.

Methods for Cleaning up: Contain and/or absorb spill with inert material then place in suitable container.

Other Statements: None.

Section 7. Handling and Storage

Handling: Wear appropriate Personal Protective Equipment (PPE) when handling this product. Do not get in eyes, or on skin and clothing. Wash thoroughly after handling. Do not ingest. Avoid breathing vapors, mist or dust.

Storage: Store away from incompatible materials (see Section 10). Store at ambient temperatures. Keep container securely closed when not in use. Label precautions also apply to empty container. Recondition or dispose of empty containers in accordance with government regulations. For Industrial use only. Protect from heat and sources of ignition. Do not store or handle in aluminum, steel, copper, or their alloys. Do not freeze. Store above Freeze Point. If freezes, then mechanical mixing is required.

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Storage: P406 Store in a corrosive resistant container with a resistant inner liner.

Disposal: None.

System of Classification Used: Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Hazards Not Otherwise Classified: None.

Section 3. Composition/Hazardous Ingredients

Component	CAS Registry #	Wt.%
Aluminum chlorohydrate	12042-91-0	15 - 30

Comments: If chemical identity and/or exact percentage of composition has been withheld, this information is considered to be a trade secret.

Section 4. First Aid Measures

Inhalation: Call a POISON CENTER or doctor/physician if you feel unwell.

Eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.

Skin: Wash with plenty of soap and water. Take off contaminated clothing and wash before re-use. If skin irritation occurs, seek medical advice/attention.

Ingestion: Rinse mouth. Call a poison center or doctor/physician if you feel unwell.

Most Important Symptoms: N/D

Indication of Immediate Medical Attention and Special Treatment Needed, if Necessary: N/A

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Section 8. Exposure Controls/Personal Protection

Exposure Limits

Component	Source	Exposure Limits
Aluminum chlorohydrate	N/E	N/E

Engineering Controls: Use only with adequate ventilation. The use of local ventilation is recommended to control emission near the source.

Personal Protection

Eyes: Wear chemical splash goggles or safety glasses with full-face shield. Maintain eyewash fountain in work area.

Skin: Maintain quick-drench facilities in work area. Wear butyl rubber or neoprene gloves. Wash them after each use and replace as necessary. If conditions warrant, wear protective clothing such as boots, aprons, and coveralls to prevent skin contact.

Respiratory: If misting occurs, use NIOSH approved organic vapor/acid gas dual cartridge respirator with a dust/mist prefilter in accordance with 29 CFR 1910.134.

Section 9. Physical and Chemical Properties

Physical State and Appearance: Liquid, Colorless, Clear
Specific Gravity: 1.176 @ 20°C
pH: 4.0 @ 20°C, 100.0%
Freezing Point: 34°F
Flash Point: N/D
Odor: Mild
Melting Point: N/A
Initial Boiling Point and Boiling Range: N/D
Solubility in Water: Soluble
Evaporation Rate: N/D
Vapor Density: N/D
Molecular Weight: N/D
Viscosity: N/A
Flammability (solid, gas): N/D
Flammable Limits: N/A
Autoignition Temperature: N/A
Density: 9.81 LB/GA

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Vapor Pressure: N/D
% VOC: N/D
Odor Threshold: N/D
n-octanol Partition Coefficient: N/D
Decomposition Temperature: N/D

Section 10. Stability and Reactivity

Chemical Stability: Stable at normal temperatures and pressures.

Incompatibility with Various Substances: Alkalis.

Hazardous Decomposition Products: Hydrogen chloride, Chlorine gas.

Possibility of Hazardous Reactions: None known.

Reactivity: N/D

Conditions To Avoid: N/D

Section 11. Toxicological Information

Acute Toxicity

Chemical Name	Exposure	Type of Effect	Concentration	Species
Aluminum chlorohydrate	Oral	LD50	9187 MG/KG	Rat
	Dermal	LD50	>2000 MG/KG	Rat

Carcinogenicity Category

Component	Source	Code	Brief Description
Aluminum chlorohydrate	N/E	N/E	N/E

Likely Routes of Exposure: N/D

Symptoms

Inhalation: N/D
Eye Contact: N/D
Skin Contact: N/D

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Ingestion: N/D

Skin Corrosion/Irritation: N/D

Serious Eye Damage/Eye Irritation: N/D

Sensitization: N/D

Germ Cell Mutagenicity: N/D

Reproductive/Developmental Toxicity: N/D

Specific Target Organ Toxicity

Single Exposure: N/D

Repeated Exposure: N/D

Aspiration Hazard: N/D

Comments: None.

Section 12. Ecological Information

Ecotoxicity

Species	Duration	Type of Effect	Test Results
Daphnia magna	48h	LC50	2.56 mg/l
	48h	LC50	1.34 mg/l
Ceriodaphnia dubia	48h	LC50	1.148 mg/l
	48h	LC50	0.34 mg/l
Fathead Minnow	96h	LC50	4.218 mg/l
	96h	LC50	4.1 mg/l

Persistence and Biodegradability: N/D

Bioaccumulative Potential: N/D

Mobility In Soil: N/D

Other Adverse Effects: N/D

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Comments: Water clarification polymers function by multipoint adsorption and charge neutralization with suspended solids. Polymers inherently migrate with solids in the separation process and with the exception of uneconomic overdose do not remain in the clarified waters. Aquatic toxicity determinations in test method protocol waters without suspended solids overestimate the toxicity compared to natural receiving waters.

Section 13. Disposal Considerations

Dispose of in accordance with local, state and federal regulations.

Section 14. Transport Information

Controlling Regulation	UN/NA#:	Proper Shipping Name:	Technical Name:	Hazard Class:	Packing Group:
DOT	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
IMDG	UN3264	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.	(POLYALUMINUM CHLORIDE)	8	PGIII
ICAO	UN3264	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.	(POLYALUMINUM CHLORIDE)	8	PGIII
TDG	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A

Note: When shipped by ground in the U.S., by exception 49 CFR 173.154 (d) (1) not subject to transport as a hazardous material when in authorized packaging that will not react dangerously or be degraded by the corrosive material.

Section 15. Regulatory Information

Inventory Status

United States (TSCA): All ingredients listed.
Canada (DSL/NDL): All ingredients listed.

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Federal Regulations

SARA Title III Rules

Sections 311/312 Hazard Classes

Fire Hazard: No
Reactive Hazard: No
Release of Pressure: No
Acute Health Hazard: Yes
Chronic Health Hazard: No

Other Sections

Component	Section 313 Toxic Chemical	Section 302 EHS TPO	CERCLA RQ
Aluminum chlorohydrate	N/A	N/A	N/A

Comments: None.

State Regulations

California Proposition 65: None known.

Special Regulations

Component	States
Aluminum chlorohydrate	None.

Compliance Information

NSF: Certified to NSF/ANSI Standard 60
Maximum use rate for potable water – 20 mg/L
This product ships as NSF from:
Ashland, VA
Nederland, TX
Facility #4 USA
Facility #7 USA
Facility #25 USA

Food Regulations: N/A

KOSHER: This product has not been evaluated for Kosher approval.

Halal: This product has not been evaluated for Halal approval.

FIFRA: N/A

Other: None

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Comments: None.

Section 16. Other Information

HMIS Hazard Rating

Health: 1
Flammability: 0
Physical Hazard: 0
PPE: X

Notes: The PPE rating depends on circumstances of use. See Section 8 for recommended PPE. The Hazardous Material Information System (HMIS) is a voluntary, subjective alpha-numeric symbolic system for recommending hazard risk and personal protection equipment information. It is a subjective rating system based on the evaluator's understanding of the chemical associated risks. The end-user must determine if the code is appropriate for their use.

Abbreviations

Abbreviation	Definition
<	Less Than
>	Greater Than
ACGIH	American Conference of Governmental Industrial Hygienists
EHS	Environmental Health and Safety Dept
N/A	Not Applicable
N/D	Not Determined
N/E	Not Established
OSHA	Occupational Health and Safety Dept
PEL	Personal Exposure Limit
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weight Average
UNK	Unknown

Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

Revision Date: March 31, 2020

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Disclaimer

Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, ChemTreat, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ChemTreat, Inc. be responsible for damages of any nature whatsoever resulting from the use or reliance upon information. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.

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SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name: ChemTreat OC9103
Product Use: Odor Control
Supplier's Name: ChemTreat, Inc.
Emergency Telephone Number: (800)424-9300 (Toll Free)
Address (Corporate Headquarters): 5640 Cox Road
Glen Allen, VA 23060
Telephone Number for Information: (800)648-4579
Date of SDS: December 8, 2021
Revision Date: December 8, 2021
Revision Number: 21120801AN

Section 2. Hazard(s) Identification

Signal Word: **WARNING**

GHS Classification(s): Acute Toxicity Inhalation - Category 4
Eye damage/irritation - Category 2b
Specific Target Organ Toxicity - Single Exposure - Category 3
Sensitization Skin - Category 1
Germ cell mutagenicity - Category 2
Skin corrosion/irritation - Category 2

Hazard Statement(s): H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H320 Causes eye irritation.
H332 Harmful if inhaled.
H335 May cause respiratory irritation.
H341 Suspected of causing genetic defects.

Precautionary Statement(s):



Prevention:

P202 Do not handle until all safety precautions have been read and understood.
P201 Obtain special instructions before use.
P271 Use only outdoors or in a well-ventilated area.
P272 Contaminated work clothing should not be allowed out of the workplace.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P260 Do not breathe dust/fume/gas/mist/vapors/spray.
P264 Wash thoroughly after handling.

Response:

P308 + P311 IF exposed or concerned: Call a POISON CENTER/doctor.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P332 + P313 If skin irritation develops or persists, get medical advice/attention.
P337 + P313 If eye irritation persists, get medical advice/attention.
P362 + P364 Take off contaminated clothing and wash it before reuse.

Storage:

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.

Disposal:

P501 Dispose of contents and container in accordance with applicable local, regional, national, and/or international regulations.

System of Classification Used: Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Hazards Not Otherwise Classified:

None.

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Section 3. Composition/Hazardous Ingredients

Component	CAS Registry #	Wt. %
Glyoxal	107-22-2	30 - 60
Ethylene glycol	107-21-1	0 - 2.5

Comments If chemical identity and/or exact percentage of composition has been withheld, this information is considered to be a trade secret.

Section 4. First Aid Measures

Inhalation:	Remove to fresh air and keep at rest in a position comfortable for breathing. Call a poison center or doctor/physician if you feel unwell.
Eyes:	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.
Skin:	Wash with plenty of soap and water. Take off contaminated clothing and wash before re-use. If skin irritation occurs, seek medical advice/attention.
Ingestion:	Rinse mouth. Call a poison center or doctor/physician if you feel unwell.
Most Important Symptoms:	N/D
Indication of Immediate Medical Attention and Special Treatment Needed, if Necessary:	N/A

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Storage: Store away from incompatible materials (see Section 10). Store at ambient temperatures. Keep container securely closed when not in use. Label precautions also apply to empty container. Recondition or dispose of empty containers in accordance with government regulations. For Industrial use only. Store above Freeze Point.

Section 8. Exposure Controls/Personal Protection

Exposure Limits

Component	Source	Exposure Limits
Glyoxal	N/E	N/E
Ethylene glycol	ACGIH TLV	100 mg/m ³ Ceiling; Aerosol

Engineering Controls: Use only with adequate ventilation. The use of local ventilation is recommended to control emission near the source.

Personal Protection

Eyes:	Wear chemical splash goggles or safety glasses with full-face shield.
Skin:	Wear appropriate chemical resistant gloves.
Respiratory:	If misting occurs, use NIOSH approved organic vapor/acid gas dual cartridge respirator with a dust/mist prefilter in accordance with 29 CFR 1910.134.

Section 9. Physical and Chemical Properties

Physical State and Appearance:	Liquid, Colorless, Clear
Specific Gravity:	1.270 @ 20°C
pH:	2.3 @ 20°C, 100.0%
Freezing Point:	19.4°F
Flash Point:	N/A
Odor:	Mild
Melting Point:	N/D
Initial Boiling Point and Boiling Range:	N/D
Solubility in Water:	N/D
Evaporation Rate:	N/D
Vapor Density:	N/D
Molecular Weight:	N/D
Viscosity:	<100 CPS @ 20°C
Flammability (solid, gas):	N/D

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Section 5. Fire Fighting Measures

Flammability of the Product:	Not flammable.
Suitable Extinguishing Media:	Alcohol foam Carbon Dioxide Dry Chemical Water fog Use extinguishing media suitable to surrounding fire.
Specific Hazards Arising from the Chemical:	None known.
Protective Equipment:	If product is involved in a fire, wear full protective clothing including a positive-pressure, NIOSH approved, self-contained breathing apparatus.

Section 6. Accidental Release Measures

Personal Precautions:	Use appropriate Personal Protective Equipment (PPE).
Environmental Precautions:	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.
Methods for Cleaning up:	Contain and/or absorb spill with inert material then place in suitable container.
Other Statements:	If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and Storage

Handling: Wear appropriate Personal Protective Equipment (PPE) when handling this product. Do not get in eyes, or on skin and clothing. Wash thoroughly after handling. Do not ingest. Avoid breathing vapors, mist or dust.

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Flammable Limits:	N/A
Autoignition Temperature:	N/D
Density:	10.59 LB/GA
Vapor Pressure:	N/D
% VOC:	N/D
Odor Threshold	N/D
n-octanol Partition Coefficient	N/D
Decomposition Temperature	N/D

Section 10. Stability and Reactivity

Chemical Stability:	Stable at normal temperatures and pressures.
Incompatibility with Various Substances:	Strong Alkalies.
Hazardous Decomposition Products:	None known.
Possibility of Hazardous Reactions:	None known.
Reactivity:	N/D
Conditions To Avoid:	N/D

Section 11. Toxicological Information

Acute Toxicity

Chemical Name	Exposure	Type of Effect	Concentration	Species
N/D	N/D	N/D	N/D	N/D

Carcinogenicity Category

Component	Source	Code	Brief Description
Glyoxal	ACGIH	TLV-A4	Not classifiable as a human carcinogen.
	MAK	MAK-3B	Cannot be conclusively assessed; tests have yielded insufficient data
Ethylene glycol	ACGIH	TLV-A4	Not classifiable as a human carcinogen.

Likely Routes of Exposure: N/D

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Symptoms

Inhalation: N/D

Eye Contact: N/D

Skin Contact: N/D

Ingestion: N/D

Skin Corrosion/Irritation: N/D

Serious Eye Damage/Eye Irritation: N/D

Sensitization: N/D

Germ Cell Mutagenicity: N/D

Reproductive/Developmental Toxicity: N/D

Specific Target Organ Toxicity

Single Exposure: N/D

Repeated Exposure: N/D

Aspiration Hazard: N/D

Comments: None.

Section 12. Ecological Information

Ecotoxicity

Species	Duration	Type of Effect	Test Results
N/D	N/D	N/D	N/D

Persistence and Biodegradability: N/D

Bioaccumulative Potential: N/D

Mobility In Soil: N/D

Other Adverse Effects: N/D

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Comments: Not tested.

Section 13. Disposal Considerations

Dispose of in accordance with local, state and federal regulations.

Section 14. Transport Information

Controlling Regulation	UN/NA#	Proper Shipping Name:	Technical Name:	Hazard Class:	Packing Group:
DOT	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A

Note: N/A

Section 15. Regulatory Information

Inventory Status

United States (TSCA): All ingredients listed or exempt.
Canada (DSL/NDL): All ingredients listed or exempt.

Federal Regulations

SARA Title III Rules

Sections 311/312 Hazard Classes

Fire Hazard: No
Reactive Hazard: No
Release of Pressure: No
Acute Health Hazard: Yes
Chronic Health Hazard: Yes

Other Sections

Component	Section 313 Toxic Chemical	Section 302 EHS TPQ	CERCLA RQ
Glyoxal	N/A	N/A	N/A
Ethylene glycol	Yes	N/A	5000

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Comments: None.

State Regulations

California Proposition 65: WARNING: This product can expose you to chemicals including Formaldehyde, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.
WARNING: This product can expose you to Ethylene glycol, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Special Regulations

Component	States
Glyoxal	None.
Ethylene glycol	MA, MN, NJ, NY, PA, WA

Compliance Information

NSF: N/A

Food Regulations: FDA: Complies with 21 CFR 175.105 for use as components of adhesives.
FDA: Complies with 21 CFR 176.170 and 21 CFR 176.180 for use in paper and paperboard which contacts food.
FDA: Complies with 21 CFR 177.2280 for use as components of articles intended for repeated use.

KOSHER: This product has not been evaluated for Kosher approval.

Halal: This product has not been evaluated for Halal approval.

FIFRA: N/A

Other: None

Comments: None.

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Section 16. Other Information

HMIS Hazard Rating

Health: 2
Flammability: 0
Physical Hazard: 0
PPE: X

Notes:

The PPE rating depends on circumstances of use. See Section 8 for recommended PPE.
The Hazardous Material Information System (HMIS) is a voluntary, subjective alpha-numeric symbolic system for recommending hazard risk and personal protection equipment information. It is a subjective rating system based on the evaluator's understanding of the chemical associated risks. The end-user must determine if the code is appropriate for their use.

Abbreviations

Abbreviation	Definition
<	Less Than
>	Greater Than
ACGIH	American Conference of Governmental Industrial Hygienists
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N/A	Not Applicable
N/D	Not Determined
N/E	Not Established
OSHA	Occupational Health and Safety Dept
PEL	Personal Exposure Limit
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weight Average
UNK	Unknown

Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

Revision Date: December 8, 2021

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1. Identification

Product identifier	AQUACHLOR 12.5% NSF SODIUM HYPOCHLORITE	
Other means of identification	None	
Recommended use	ALL PROPER AND LEGAL PURPOSES	
Recommended restrictions	None known.	
Manufacturer/Importer/Supplier/Distributor information		
Manufacturer		
Company name	Brenntag Southwest, Inc.	
Address	610 Fisher Road Longview, TX 75604	
Telephone	903-759-7151	
E-mail	Not available.	
Emergency phone number	800-424-9300	CHEMTREC

2. Hazard(s) identification

Physical hazards	Not classified.	
Health hazards	Skin corrosion/irritation	Category 1
	Serious eye damage/eye irritation	Category 1
Environmental hazards	Not classified.	
OSHA defined hazards	Not classified.	
Label elements		



Signal word	Danger
Hazard statement	Causes severe skin burns and eye damage. Causes serious eye damage
Precautionary statement	
Prevention	Do not breathe mist or vapor. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection.
Response	If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. Wash contaminated clothing before reuse.
Storage	Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures			
Chemical name	Common name and synonyms	CAS number	%
HYPOCHLOROUS ACID, SODIUM SALT (1:1)		7681-52-9	12.5
SODIUM HYDROXIDE (NaOH)		1310-73-2	0.7
Other components below reportable levels			86.6
*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.			
Material name: AQUACHLOR 12.5% NSF SODIUM HYPOCHLORITE			
200001 Version # 00 Revision date: 01-19-2016 Issue date: 07-02-2015			

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4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Most important symptoms/effects, acute and delayed	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim under observation. Symptoms may be delayed.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Foam. Powder. Carbon dioxide (CO ₂).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Use water spray to reduce vapors or divert vapor cloud drift. Prevent entry into waterways, sewer, basements or confined areas. Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS. Avoid discharge into drains, water courses or onto the ground.
Environmental precautions	

7. Handling and storage

Precautions for safe handling	Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store locked up. Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits		
US, OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)		
Components	Type	Value
SODIUM HYDROXIDE (NaOH) (CAS 1310-73-2)	PEL	2 mg/m ³
US, ACGIH Threshold Limit Values		
Components	Type	Value
SODIUM HYDROXIDE (NaOH) (CAS 1310-73-2)	Ceiling	2 mg/m ³
US, NIOSH: Pocket Guide to Chemical Hazards		
Components	Type	Value
SODIUM HYDROXIDE (NaOH) (CAS 1310-73-2)	Ceiling	2 mg/m ³
US, Workplace Environmental Exposure Level (WEEL) Guides		
Components	Type	Value
HYPOCHLOROUS ACID, SODIUM SALT (1:1) (CAS 7681-52-9)	STEL	2 mg/m ³
Biological limit values	No biological exposure limits noted for the ingredient(s).	
Appropriate engineering controls	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.	
Individual protection measures, such as personal protective equipment		
Eye/face protection	Wear safety glasses with side shields (or goggles) and a face shield.	
Skin protection		
Hand protection	Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.	
Other	Wear appropriate chemical resistant clothing.	
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment.	
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.	
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.	

9. Physical and chemical properties

Appearance	
Physical state	Liquid.
Form	Liquid.
Color	Colorless to pale yellow
Odor	CHLORINE
Odor threshold	Not available
pH	11.5 - 13.5
Melting point/freezing point	10 °F (-12.22 °C)
Initial boiling point and boiling range	230.55 °F (110.3 °C) estimated
Flash point	Not available
Evaporation rate	Not available
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.

Material name: AQUACHLOR 12.5% NSF SODIUM HYPOCHLORITE
200001 Version # 00 Revision date: 01-19-2016 Issue date: 07-02-201550/5 0/0
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Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	10.14 lbs/gal.
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Percent volatile	86.8 % estimated.
Specific gravity	1.22.

10. Stability and reactivity

Reactivity	Reacts violently with strong acids. This product may react with oxidizing agents.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Contact with incompatible materials. Do not mix with other chemicals.
Incompatible materials	Acids. Oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May cause irritation to the respiratory system. Prolonged inhalation may be harmful.
Skin contact	Causes severe skin burns.
Eye contact	Causes serious eye damage.
Ingestion	Causes digestive tract burns.
Symptoms related to the physical, chemical and toxicological characteristics	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

Information on toxicological effects

Acute toxicity	Not available.
Skin corrosion/irritation	Causes severe skin burns and eye damage.
Serious eye damage/eye irritation	Causes serious eye damage.

Respiratory or skin sensitization

Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	This product is not expected to cause skin sensitization.

Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
------------------------	--

Carcinogenicity

IARC Monographs, Overall Evaluation of Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
--	---

Not available.	
----------------	--

Material name: AQUACHLOR 12.5% NSF SODIUM HYPOCHLORITE	50/5 US
200001 Version #: 00 Revision date: 01-19-2016 Issue date: 07-02-2015	4 / 8

IATA

UN number	1791
UN proper shipping name	HYPOCHLORITE SOLUTION
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	III
Environmental hazards	No
ERG Code	154
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

DOT



IATA



General information	IMDG Regulated Marine Pollutant
---------------------	---------------------------------

15. Regulatory information

US federal regulations	This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
------------------------	--

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)	Not regulated.
CERCLA Hazardous Substance List (40 CFR 302.4)	
HYPOCHLOROUS ACID, SODIUM SALT (1:1) (CAS 7661-52-9)	Listed.
SODIUM HYDROXIDE (NA(OH)) (CAS 1310-73-2)	Listed.
SARA 304 Emergency release notification	Not regulated.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)	Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - No Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No
-------------------	---

SARA 302 Extremely hazardous substance	Not listed.
--	-------------

SARA 311/312 Hazardous chemical	Yes
---------------------------------	-----

Material name: AQUACHLOR 12.5% NSF SODIUM HYPOCHLORITE	50/5 US
200001 Version #: 00 Revision date: 01-19-2016 Issue date: 07-02-2015	6 / 8

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.	
US. National Toxicology Program (NTP) Report on Carcinogens	Not available.

Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.
Chronic effects	Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
-------------	--

Components	Species	Test Results
HYPOCHLOROUS ACID, SODIUM SALT (1:1) (CAS 7661-52-9)		
Aquatic		
Fish	LC50	Chinook salmon (Oncorhynchus tshawytscha)
SODIUM HYDROXIDE (NA(OH)) (CAS 1310-73-2)		
Aquatic		
Crustacea	EC50	Water flea (Ceriodaphnia dubia)
Fish	LC50	Western mosquitofish (Gambusia affinis)

* Estimates for product may be based on additional component data not shown.

Persistence and degradability	No data is available on the degradability of this product.
Bioaccumulative potential	No data available.
Mobility in soil	No data available.
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.
-----------------------	--

Local disposal regulations	Dispose in accordance with all applicable regulations.
----------------------------	--

Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
----------------------	--

Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
---------------------------------------	--

Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.
------------------------	--

14. Transport information

DOT

UN number	UN1791
UN proper shipping name	HYPOCHLORITE SOLUTION
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	III
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
ERG number	154
DOT information on packaging	may be different from that listed.

Material name: AQUACHLOR 12.5% NSF SODIUM HYPOCHLORITE	50/5 US
200001 Version #: 00 Revision date: 01-19-2016 Issue date: 07-02-2015	5 / 8

SARA 313 (TRI) reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA)

Not regulated.

US state regulations

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs. tit. 22, 69502.3, subd. (a))

SODIUM HYDROXIDE (NA(OH)) (CAS 1310-73-2)

US. Massachusetts RTK - Substance List

HYPOCHLOROUS ACID, SODIUM SALT (1:1) (CAS 7661-52-9)

SODIUM HYDROXIDE (NA(OH)) (CAS 1310-73-2)

US. New Jersey Worker and Community Right-to-Know Act

HYPOCHLOROUS ACID, SODIUM SALT (1:1) (CAS 7661-52-9)

HYPOCHLOROUS ACID, SODIUM SALT (1:1) (CAS 1310-73-2)

US. Pennsylvania Worker and Community Right-to-Know Law

HYPOCHLOROUS ACID, SODIUM SALT (1:1) (CAS 7661-52-9)

SODIUM HYDROXIDE (NA(OH)) (CAS 1310-73-2)

US. Rhode Island RTK

HYPOCHLOROUS ACID, SODIUM SALT (1:1) (CAS 7661-52-9)

SODIUM HYDROXIDE (NA(OH)) (CAS 1310-73-2)

US. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1985 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes
*A "yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s). A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).		

16. Other information, including date of preparation or last revision

Issue date	07-02-2015
Revision date	01-19-2016
Version #	08
HMIS® ratings	Health: 3 Flammability: 0 Physical hazard: 0

Material name: AQUACHLOR 12.5% NSF SODIUM HYPOCHLORITE	50/5 US
200001 Version #: 00 Revision date: 01-19-2016 Issue date: 07-02-2015	7 / 8

NFPA ratings	Health: 3 Flammability: 0 Instability: 0
Disclaimer	While Brenntag believes the information contained herein to be accurate, Brenntag makes no representation or warranty, express or implied, regarding, and assumes no liability for, the accuracy or completeness of the information. The Buyer assumes all responsibility for handling, using and/or reselling the Product in accordance with applicable federal, state, and local law. This SDS shall not in any way limit or preclude the operation and effect of any of the provisions of Brenntag's terms and conditions of sale.
Revision information	Fire-fighting measures: Suitable extinguishing media Accidental release measures: Personal precautions, protective equipment and emergency procedures Accidental release measures: Methods and materials for containment and cleaning up Handling and storage: Conditions for safe storage, including any incompatibilities Stability and reactivity: Incompatible materials Toxicological information: Chronic effects Toxicological information: Inhalation Transport information: General information



SAFETY DATA SHEET

1. Identification		
Product identifier	CD24	
Other means of identification	None.	
Recommended use	Cooling Water Treatment	
Recommended restrictions	None known.	
Manufacturer/Importer/Supplier/Distributor information		
Manufacturer		
Company name	ChemTreat, Inc.	
Address	5640 Cox Road Glen Allen, VA 23060 United States 800-648-4579 chemtreat.com productcompliance@chemtreat.com	
Telephone		
Website		
E-mail		
Emergency phone number	800-424-9300	

2. Hazard(s) identification		
Physical hazards	Not classified.	
Health hazards	Skin corrosion/irritation Serious eye damage/eye irritation	Category 1 Category 1
Environmental hazards	Not classified.	
OSHA defined hazards	Not classified.	
Label elements		



Signal word	Danger
Hazard statement	Causes severe skin burns and eye damage. Causes serious eye damage.
Precautionary statement	
Prevention	Do not breathe mist/vapors. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection.
Response	If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. Wash contaminated clothing before reuse.
Storage	Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	None.

3. Composition/information on ingredients			
Mixtures			
Chemical name	Common name and synonyms	CAS number	%
Sulfuric acid		7664-93-9	10 - < 20
Other components below reportable levels			80 - < 90

Material name: CD24	SDS US
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Material name: AQUACHLOR 12.5% NSF SODIUM HYPOCHLORITE	SDS US
203001 Version #: 06 Revision date: 01-19-2016 Issue date: 07-02-2015	8 / 8

4. First-aid measures	
Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Most important symptoms/effects, acute and delayed	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim under observation. Symptoms may be delayed.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures	
Suitable extinguishing media	Foam. Powder. Carbon dioxide (CO ₂).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures	
Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist/vapors. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Should not be released into the environment. Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.
Environmental precautions	Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage	
Precautions for safe handling	Do not breathe mist/vapors. Do not get in eyes, on skin, or on clothing. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store locked up. Store in tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection			
Occupational exposure limits			
The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.			
US. OSHA Table Z-1 Permissible Exposure Limits (PEL) for Air Contaminants (29 CFR 1910.1000)			
Components	Type	Value	
Sulfuric acid (CAS 7664-93-9)	PEL	1 mg/m3	
US. ACGIH Threshold Limit Values (TLV)			
Components	Type	Value	Form
Sulfuric acid (CAS 7664-93-9)	TWA	0.2 mg/m3	Thoracic fraction.
NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended			
Components	Type	Value	
Sulfuric acid (CAS 7664-93-9)	IDLH	15 mg/m3	
US. NIOSH: Pocket Guide to Chemical Hazards Recommended Exposure Limits (REL)			
Components	Type	Value	
Sulfuric acid (CAS 7664-93-9)	TWA	1 mg/m3	
Biological limit values			
No biological exposure limits noted for the ingredient(s).			
Appropriate engineering controls		Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.	
Individual protection measures, such as personal protective equipment			
Eye/face protection		Wear safety glasses with side shields (or goggles) and a face shield.	
Skin protection			
Hand protection		Wear appropriate chemical resistant gloves.	
Other		Wear appropriate chemical resistant clothing.	
Respiratory protection		In case of insufficient ventilation, wear suitable respiratory equipment.	
Thermal hazards		Wear appropriate thermal protective clothing, when necessary.	
General hygiene considerations		Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.	

9. Physical and chemical properties	
Appearance	
Physical state	Liquid.
Form	Liquid.
Color	Colorless.
Odor	Mild
Odor threshold	Not available.
pH	0 - 2 (10% Dilution)
Melting point/freezing point	<-11.20 °F (<-24.00 °C)
Initial boiling point and boiling range	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Explosive limit - lower (%)	Not available.

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Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Pounds per gallon	9.56
Specific gravity	1.12 - 1.16 @ 20C

10. Stability and reactivity

Reactivity	Reacts violently with strong alkaline substances. This product may react with reducing agents.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Contact with incompatible materials. Do not mix with other chemicals.
Incompatible materials	Bases. Reducing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May cause irritation to the respiratory system. Prolonged inhalation may be harmful.
Skin contact	Causes severe skin burns.
Eye contact	Causes serious eye damage.
Ingestion	Causes digestive tract burns.

Symptoms related to the physical, chemical and toxicological characteristics
Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

Information on toxicological effects

Acute toxicity Not known.

Components	Species	Test Results
Sulfuric acid (CAS 7664-93-9)		
Acute Inhalation LC50	Guinea pig	0.018 mg/l, 8 Hours
	Rat	347 mg/l, 1 Hours
Oral LD50	Rat	2140 mg/kg
Skin corrosion/irritation		
Causes severe skin burns and eye damage.		
Serious eye damage/eye irritation		
Causes serious eye damage.		
Respiratory or skin sensitization		
Respiratory sensitization		
Not a respiratory sensitizer.		
Skin sensitization		
This product is not expected to cause skin sensitization.		

Material name: CD24 SDS US
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Transport hazard class(es)	
Class	8
Subsidiary risk	-
Label(s)	8
Packing group	II
Environmental hazards	
Marine pollutant	No.
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	A3, A7, B2, B15, IB2, N6, N34, T8, TP2, TP12
Packaging exceptions	154
Packaging non bulk	202
Packaging bulk	242
Reportable Quantity (LBS)	5003

IATA

UN number	UN2796
UN proper shipping name	SULFURIC ACID SOLUTION
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Environmental hazards	No.
ERG Code	8L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed with restrictions.
Cargo aircraft only	Allowed with restrictions.

IMDG

UN number	UN2796
UN proper shipping name	SULFURIC ACID SOLUTION
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Environmental hazards	No.
Marine pollutant	No.
EmS	F-A, S-B
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not established.

DOT



Material name: CD24 SDS US
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Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	Not classifiable as to carcinogenicity to humans.
IARC Monographs. Overall Evaluation of Carcinogenicity	Not listed.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)	Not regulated.
US. National Toxicology Program (NTP) Report on Carcinogens	Sulfuric acid (CAS 7664-93-9) Known To Be Human Carcinogen.
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.
Chronic effects	Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity Because of the low pH of this product, it would be expected to produce significant ecotoxicity upon exposure to aquatic organisms and aquatic systems.

Product	Species	Test Results
CD24		
Aquatic Acute Crustacea	LC50	Daphnia magna > 100 mg/l, 48 hours (Estimated)
	LC50	Daphnia pulex > 100 mg/l, 48 hours (Estimated)
Fish	LC50	Fathead minnow (Pimephales promelas) > 100 mg/l, 96 hours (Estimated)

Persistence and degradability No data is available on the degradability of any ingredients in the mixture.

Bioaccumulative potential

Partition coefficient n-octanol / water (log Kow)	-2.2
Sulfuric acid	

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Dispose of this material and its container to hazardous or special waste collection point. Incinerate the material under controlled conditions in an approved incinerator. Do not allow this material to drain into sewers/water supplies. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations

Hazardous waste code Dispose in accordance with all applicable regulations.
D002: Waste Corrosive material [pH ≤2 or ≥12.5, or corrosive to steel]
The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging

Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

UN number	UN2796
UN proper shipping name	SULFURIC ACID SOLUTION

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IATA; IMDG



15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Toxic Substances Control Act (TSCA)

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Sulfuric acid (CAS 7664-93-9) Listed.

SARA 304 Emergency release notification

Sulfuric acid (aerosol forms only) (CAS 7664-93-9) 1000 LBS

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Chemical name	CAS number	Reportable quantity (pounds)	Threshold planning quantity (pounds)	Threshold planning quantity, lower value (pounds)	Threshold planning quantity, upper value (pounds)
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Sulfuric acid 7664-93-9 1000 1000

SARA 311/312 Hazardous chemical

Classified hazard categories	Skin corrosion or irritation Serious eye damage or eye irritation
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SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Sulfuric acid	7664-93-9	10 - < 20

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Sulfuric acid (CAS 7664-93-9) 6552

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Sulfuric acid (CAS 7664-93-9) 20 %WV

DEA Exempt Chemical Mixtures Code Number

Sulfuric acid (CAS 7664-93-9) 6552

US state regulations

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

Sulfuric acid (CAS 7664-93-9)

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California Proposition 65



WARNING: This product can expose you to Sulfuric acid, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

California Proposition 65 - CRT: Listed date/Carcinogenic substance

Sulfuric acid (CAS 7664-93-9)

Listed: March 14, 2003

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Industrial Chemicals (AICIS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	05-05-2023
Version #	01
HMIS® ratings	Health: 3 Flammability: 0 Physical hazard: 0 Personal protection: B
Disclaimer	ChemTreat, Inc. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available. Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, ChemTreat, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ChemTreat, Inc. be responsible for damages of any nature whatsoever resulting from the use or reliance upon information. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.
Other information	Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com



SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name:	ChemTreat CL25D
Product Use:	Cooling Water Microbiocide and Chlorine Dioxide Precursor
Supplier's Name:	ChemTreat, Inc.
Emergency Telephone Number:	(800)424-9300 (Toll Free)
Address (Corporate Headquarters):	5640 Cox Road Glen Allen, VA 23060
Telephone Number for Information:	(800)648-4579
Date of SDS:	February 7, 2019
Revision Date:	February 7, 2019
Revision Number:	19020701AN

Section 2. Hazard(s) Identification



Signal Word:	DANGER
GHS Classification(s):	Acute Toxicity Oral – Category 3 Eye damage/irritation – Category 1 Specific Target Organ Toxicity – Single Exposure – Category 3 Specific Target Organ Toxicity – Repeated Exposure – Category 2 Hazardous to the aquatic environment Acute – Category 1
Hazard Statement(s):	H301 Toxic if swallowed. H318 Causes serious eye damage. H335 May cause respiratory irritation. H373 May cause damage to organs through prolonged or repeated exposure. H400 Very toxic to aquatic life.
Precautionary Statement(s):	
Prevention:	P280 Wear protective gloves/protective clothing/eye protection/face protection. P271 Use only outdoors or in a well-ventilated area. P260 Do not breathe dust/fume/gas/mist/vapors/spray. P270 Do not eat, drink, or smoke when using this product. P264 Wash thoroughly after handling. P273 Avoid release into the environment.

Material name: CD24
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ChemTreat CL25D



Response:	P314 Get medical advice/attention if you feel unwell. P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P315 Get immediate medical advice/attention.
Storage:	P405 Store locked up.
Disposal:	P501 Dispose of contents and container in accordance with applicable local, regional, national, and/or international regulations.

System of Classification Used: Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Hazards Not Otherwise Classified: None.

Section 3. Composition/Hazardous Ingredients

Component	CAS Registry #	Wt.%
Sodium chlorite	7758-19-2	25

Comments If chemical identity and/or exact percentage of composition has been withheld, this information is considered to be a trade secret.

Section 4. First Aid Measures

Inhalation:	Call a POISON CENTER or doctor/physician if you feel unwell.
Eyes:	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor/physician.
Skin:	Call a poison center or doctor/physician if you feel unwell.
Ingestion:	DO NOT INDUCE VOMITING. Rinse mouth. Immediately call a POISON CENTER or doctor/physician.
Most Important Symptoms:	N/D



Indication of Immediate Medical Attention and Special Treatment Needed, if Necessary:	Have the product container, label or MSDS with you when calling a poison control center or doctor, or when going for treatment.
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Section 5. Fire Fighting Measures

Flammability of the Product:	Not flammable.
Suitable Extinguishing Media:	Use extinguishing media suitable to surrounding fire.
Specific Hazards Arising from the Chemical:	Product may emit toxic gases or fumes under fire conditions.
Protective Equipment:	If product is involved in a fire, wear full protective clothing including a positive-pressure, NIOSH approved, self-contained breathing apparatus.

Section 6. Accidental Release Measures

Personal Precautions:	Use appropriate Personal Protective Equipment (PPE).
Environmental Precautions:	This pesticide is toxic to fish and aquatic organisms. Do not discharge effluent containing this product into lakes, ponds, streams, estuaries, oceans or public waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit, and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.
Methods for Cleaning up:	Contain spill. Spilled materials may be absorbed using non-combustible and non-organic commercial absorbents. Dampen and scoop spilled material into clean, dedicated equipment. Every attempt should be made to avoid mixing spilled material with other chemicals or debris when cleaning up. Keep collected material damp and put into drums. Dried material can ignite upon contact with combustibles. Dispose of promptly. Dispose of in accordance with all applicable regulations.
Other Statements:	None.



Section 7. Handling and Storage

Handling:	Wear appropriate Personal Protective Equipment (PPE) when handling this product. Do not get in eyes, or on skin and clothing. Wash thoroughly after handling. Do not ingest. Avoid breathing vapors, mist or dust.
Storage:	Store away from incompatible materials (see Section 10). Store at ambient temperatures. Keep container securely closed when not in use. Label precautions also apply to empty container. Recondition or dispose of empty containers in accordance with government regulations. For Industrial use only. Do not freeze. Store above Freeze Point. If freezes, then mechanical mixing is required.

Section 8. Exposure Controls/Personal Protection

Exposure Limits

Component	Source	Exposure Limits
Sodium chlorite	N/E	N/E

Engineering Controls:	Use only with adequate ventilation. The use of local ventilation is recommended to control emission near the source.
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Personal Protection

Eyes:	Wear chemical splash goggles or safety glasses with full-face shield. Maintain eyewash fountain in work area.
Skin:	Maintain quick-drench facilities in work area. Wear appropriate chemical resistant gloves.
Respiratory:	If misting occurs, use NIOSH approved organic vapor/acid gas dual cartridge respirator with a dust/mist prefilter in accordance with 29 CFR 1910.134.

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ChemTreat CL25D



Section 11. Toxicological Information

Acute Toxicity

Chemical Name	Exposure	Type of Effect	Concentration	Species
Sodium chlorite	Inhalation	LC50	0.23 MG/L	Rat
	Dermal	LD50	134 MG/KG	Rabbit
	Oral	LD50	284 MG/KG	Rat
ChemTreat CL25D	N/D	N/D	N/D	N/D

Carcinogenicity Category

Component	Source	Code	Brief Description
Sodium chlorite	N/E	N/E	N/E

Likely Routes of Exposure:	N/D
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Symptoms

Inhalation:	N/D
Eye Contact:	N/D
Skin Contact:	N/D
Ingestion:	N/D

Skin Corrosion/Irritation:	N/D
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Serious Eye Damage/Eye Irritation:	N/D
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Sensitization:	N/D
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Germ Cell Mutagenicity:	N/D
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Reproductive/Developmental Toxicity:	N/D
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Specific Target Organ Toxicity

Single Exposure:	N/D
Repeated Exposure:	N/D

Aspiration Hazard:	N/D
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Section 9. Physical and Chemical Properties

Physical State and Appearance:	Liquid, Light Straw, Clear
Specific Gravity:	1.205 @ 20°C
pH:	12.0 @ 20°C, 100.0%
Freezing Point:	-0.4°F
Flash Point:	N/A
Odor:	Moderate
Melting Point:	N/A
Initial Boiling Point and Boiling Range:	>222°F
Solubility in Water:	Complete
Evaporation Rate:	N/D
Vapor Density:	N/D
Molecular Weight:	N/D
Viscosity:	<100 CPS @ 20°C
Flammability (solid, gas):	N/D
Flammability Limits:	N/A
Autoignition Temperature:	N/A
Density:	10.05 LB/GA
Vapor Pressure:	N/D
% VOC:	0
Odor Threshold	N/D
n-octanol Partition Coefficient	N/D
Decomposition Temperature	N/D

Section 10. Stability and Reactivity

Chemical Stability:	Stable at normal temperatures and pressures.
Incompatibility with Various Substances:	Strong acids, Strong oxidizers, Reducing agents, Organic compounds, Organic solvents, Halogens.
Hazardous Decomposition Products:	Chlorine dioxide gas, Chlorine.
Possibility of Hazardous Reactions:	None known.
Reactivity:	N/D
Conditions To Avoid:	N/D

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Comments:	None.
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Section 12. Ecological Information

Ecotoxicity

Species	Duration	Type of Effect	Test Results
Daphnia magna	48h	EC50	<1 mg/l
Myxid Shrimp	96h	LC50	0.65 mg/l
Sheepshead Minnow	96h	LC50	105 mg/l
Ceriodaphnia dubia	48h	LC50	0.392 mg/l
Fathead Minnow	96h	LC50	147.4 mg/l

Persistence and Biodegradability:	N/D
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Bioaccumulative Potential:	N/D
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Mobility In Soil:	N/D
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Other Adverse Effects:	N/D
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Comments:	Based on active ingredient
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Section 13. Disposal Considerations

PESTICIDE DISPOSAL: Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL: Non-refillable container. Do not reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by procedures approved by state and local authorities. EPA corrosivity characteristic hazardous waste D002 when disposed of in the original product form.

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Section 14. Transport Information

Controlling Regulation	UN/NA#	Proper Shipping Name:	Technical Name:	Hazard Class:	Packing Group:
DOT	UN1908	CHLORITE SOLUTION, WITH MORE THAN 5% AVAILABLE CHLORINE	N/A	8	PGII

Note: N/A

Section 15. Regulatory Information

Inventory Status

United States (TSCA): All ingredients listed or exempt.
Canada (DSL/NDL): All ingredients listed or exempt.

Federal Regulations

SARA Title III Rules

Sections 311/312 Hazard Classes

Fire Hazard: No
Reactive Hazard: No
Release of Pressure: No
Acute Health Hazard: Yes
Chronic Health Hazard: Yes

Other Sections

Component	Section 313 Toxic Chemical	Section 302 EHS TPQ	CERCLA RQ
Sodium chlorite	N/A	N/A	N/A

Comments: None.

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Notes:

The PPE rating depends on circumstances of use. See Section 8 for recommended PPE.
The Hazardous Material Information System (HMIS) is a voluntary, subjective alpha-numeric symbolic system for recommending hazard risk and personal protection equipment information. It is a subjective rating system based on the evaluator's understanding of the chemical associated risks. The end-user must determine if the code is appropriate for their use.

Abbreviations

Abbreviation	Definition
<	Less Than
>	Greater Than
ACGIH	American Conference of Governmental Industrial Hygienists
EHS	Environmental Health and Safety Dept
N/A	Not Applicable
N/D	Not Determined
N/E	Not Established
OSHA	Occupational Health and Safety Dept
PEL	Personal Exposure Limit
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weight Average
UNK	Unknown

Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

Revision Date: February 7, 2019

Disclaimer

Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, ChemTreat, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ChemTreat, Inc. be responsible for damages of any nature whatsoever resulting from the use or reliance upon information. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.

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State Regulations

California Proposition 65: None known.

Special Regulations

Component	States
Sodium chlorite	MA, NJ, PA

Compliance Information

NSF: Certified to NSF/ANSI Standard 60
Maximum use rate for potable water ~ 28 mg/L
This product ships as NSF from:
Facility #30 USA
Facility #33 USA
Facility #34 USA
Facility #36 USA

Food Regulations: N/A

KOSHER: This product has not been evaluated for Kosher approval.

Halal: This product has not been evaluated for Halal approval.

FIFRA: Registered pesticide under 40 CFR 152.10, Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), EPA Registration Number: 9150-7-15300.

Other: None

Comments: None.

Section 16. Other Information

HMIS Hazard Rating

Health: 3
Flammability: 1
Physical Hazard: 0
PPE: X

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SAFETY DATA SHEET

1. Identification

Product identifier CL4520
Other means of identification None.
Recommended use Cooling Water Microbiocide
Recommended restrictions None known.
Manufacturer/Importer/Supplier/Distributor information
Manufacturer
Company name ChemTreat, Inc.
Address 5640 Cox Road
Glen Allen, VA 23060
United States
Telephone 800-648-4579
Website chemtreat.com
E-mail productcompliance@chemtreat.com
Emergency phone number 800-424-9300

2. Hazard(s) identification

Physical hazards Not classified.
Health hazards Serious eye damage/eye irritation Category 2
Environmental hazards Not classified.
OSHA defined hazards Not classified.
Label elements



Signal word Warning
Hazard statement Causes serious eye irritation.
Precautionary statement
Prevention Wash thoroughly after handling. Wear eye protection/face protection.
Response If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
Storage Not available.
Disposal Not available.
Hazard(s) not otherwise classified (HNOC) None known.
Supplemental information None.

3. Composition/information on ingredients

Mixtures	Chemical name	Common name and synonyms	CAS number	%
	Ammonium sulfate		7783-20-2	20 - < 30
	Other components below reportable levels			80 - < 90

4. First-aid measures

Inhalation Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact Wash off with soap and water. Get medical attention if irritation develops and persists.
Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

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Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures	
Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures	
Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage	
Precautions for safe handling	Avoid contact with eyes. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store in tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection	
Occupational exposure limits	This mixture has no ingredients that have PEL, TLV, or other recommended exposure limit.
Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station.
Individual protection measures, such as personal protective equipment	
Eye/face protection	Wear safety glasses with side shields (or goggles).
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves.
Other	Wear suitable protective clothing.
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.

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Symptoms related to the physical, chemical and toxicological characteristics	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.	
Information on toxicological effects		
Acute toxicity		
Components	Species	Test Results
Ammonium sulfate (CAS 7783-20-2)		
Acute		
Dermal		
LD50	Rat	> 2000 mg/kg
Inhalation		
LC50	Guinea pig	900 mg/m3, 8 Hours
Oral		
LD50	Rat	3000 mg/kg
Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.	
Serious eye damage/eye irritation	Causes serious eye irritation.	
Respiratory or skin sensitization		
Respiratory sensitization	Not a respiratory sensitizer.	
Skin sensitization	This product is not expected to cause skin sensitization.	
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.	
Carcinogenicity	Not classifiable as to carcinogenicity to humans.	

IARC Monographs. Overall Evaluation of Carcinogenicity	
Not listed.	
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)	
Not regulated.	
US. National Toxicology Program (NTP) Report on Carcinogens	
Not listed.	
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.

12. Ecological information			
Ecotoxicity			
The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.			
Product	Species		Test Results
CL4520			
Aquatic			
Acute			
Crustacea	EC50	Water flea (Ceriodaphnia dubia)	> 260 mg/l, 48 hours (Estimated)
	LC50	Daphnia pulex	> 100 mg/l, 48 hours (Estimated)
Fish	LC50	Fathead minnow (Pimephales promelas)	> 100 mg/l, 96 hours (Estimated)
Persistence and degradability	No data is available on the degradability of any ingredients in the mixture.		
Bioaccumulative potential	No data available.		
Mobility in soil	No data available.		
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.		

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General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.
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9. Physical and chemical properties	
Appearance	
Physical state	Liquid.
Form	Liquid.
Color	Colorless.
Odor	Mild
Odor threshold	Not available.
pH	5.5 - 7.5 (100% Dilution)
Melting point/freezing point	32.00 °F (0 °C)
Initial boiling point and boiling range	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	0 - 200 cps
Other information	
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Pounds per gallon	9.32
Specific gravity	1.11 - 1.15 @ 20C

10. Stability and reactivity	
Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information	
Information on likely routes of exposure	
Inhalation	No adverse effects due to inhalation are expected.
Skin contact	No adverse effects due to skin contact are expected.
Eye contact	Causes serious eye irritation.
Ingestion	Expected to be a low ingestion hazard.

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13. Disposal considerations	
Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information	
DOT	
Not regulated as dangerous goods.	
IATA	
Not regulated as dangerous goods.	
IMDG	
Not regulated as dangerous goods.	
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	
Not established.	

15. Regulatory information	
US federal regulations	This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
Toxic Substances Control Act (TSCA)	
TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)	
Ammonium sulfate (CAS 7783-20-2)	
1.0 % One-Time Export Notification only.	
Toxic Substances Control Act (TSCA) Section 5(a)(2) Final Significant New Use Rules (SNURs) (40 CFR 721, Subpt E)	
Ammonium sulfate (CAS 7783-20-2)	
721.11253	
CERCLA Hazardous Substance List (40 CFR 302.4)	
Not listed.	
SARA 304 Emergency release notification	
Not regulated.	
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)	
Not regulated.	
Superfund Amendments and Reauthorization Act of 1986 (SARA)	
SARA 302 Extremely hazardous substance	
Not listed.	
SARA 311/312 Hazardous chemical	Yes
Classified hazard categories	Serious eye damage or eye irritation
SARA 313 (TRI reporting)	
Not regulated.	
Other federal regulations	
Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List	
Not regulated.	
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)	
Not regulated.	
Safe Drinking Water Act (SDWA)	Not regulated.

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US state regulations

California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to www.P65Warnings.ca.gov.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Industrial Chemicals (AICIS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

Compliance Information: Biocide Regulation

Registered pesticide under 40 CFR 152.10, Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), EPA Registration Number: 15300-30.

16. Other information, including date of preparation or last revision

Issue date	05-05-2023
Version #	01
HMIS® ratings	Health: 1 Flammability: 0 Physical hazard: 0 Personal protection: B
Disclaimer	ChemTreat, Inc. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available. Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, ChemTreat, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ChemTreat, Inc. be responsible for damages of any nature whatsoever resulting from the use or reliance upon information. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.
Other information	Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

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SAFETY DATA SHEET

Section 1. Identification

Product identifier	: PurDOX™ BCD
Material Number	: 201801251
Identified uses	: Industrial use
Supplier/Manufacturer	: International Dioxide, Inc. 40 Whitecap Drive North Kingstown, RI 02852 For Information: (800) 477-6071 International: +1 (401) 295-8800
In case of emergency	: CHEMTREC (800) 424 9300 International (703) 527 3887

Section 2. Hazards identification

HAZCOM Standard Status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Physical state	: Liquid.
Color	: Clear, to Light Blue.
Classification of the substance or mixture	: OXIDIZING LIQUIDS - Category 2 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (inhalation) - Category 3 SKIN CORROSION - Category 1 SERIOUS EYE DAMAGE - Category 1 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (digestive system and respiratory tract) (inhalation) - Category 1
Hazard pictograms	:
Signal word	: Danger
Hazard statements	: May intensify fire; oxidizer. Toxic if inhaled. Harmful if swallowed. Causes severe skin burns and eye damage. Causes damage to organs if inhaled. (digestive system, respiratory tract)
Hazard Not Otherwise Classified (HNOC)	: None known.
Precautionary statements	: Wear protective gloves/clothing and eye/face protection. Keep away from heat. - No smoking. Keep away from clothing, incompatible materials and combustible materials. Take any precaution to avoid mixing with combustibles and other incompatible materials. Use only in a well-ventilated area. Do not breathe vapor. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling.
Prevention	: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.
Response	: Store locked up.
Storage	: Store locked up.

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Section 2. Hazards identification

Disposal	: Dispose of contents and container in accordance with all local, regional, national and international regulations.
Supplemental label elements	: Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials and food and drink.

Section 3. Composition/information on ingredients

Substance/mixture		: Mixture	
Ingredient name	%	CAS number	
Sodium chlorate	40 - 50	7775-09-9	
Hydrogen Peroxide	≤10	7722-84-1	

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of first aid measures

Eye contact	: Get medical attention immediately. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. In case of contact with eyes, flush eyes with plenty of water for at least 30 minutes. Chemical burns must be treated promptly by a physician.
Inhalation	: Get medical attention immediately. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. If not breathing, if breathing is irregular or respiratory arrest occurs, provide artificial respiration, or oxygen by a trained professional, using a pocket type respirator.
Skin contact	: In case of contact, flush skin with plenty of water for at least 30 minutes. Get medical attention immediately. Rinse immediately contaminated clothing and skin with plenty of water. Immediately remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Ingestion	: Get medical attention immediately. Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Potential acute health effects

Eye contact	: Causes serious eye damage.
Inhalation	: Toxic if inhaled. Causes damage to organs following a single exposure if inhaled. May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system.
Skin contact	: Causes severe burns.
Ingestion	: Harmful if swallowed. May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Section 4. First aid measures

Eye contact	: Corrosive with symptoms of reddening, tearing, swelling, burning and possible permanent damage.
Inhalation	: No specific data.
Skin contact	: Corrosive with symptoms of reddening, itching, swelling, burning and possible permanent damage.
Ingestion	: Corrosive with symptoms of coughing, burning, ulceration, and pain. Symptoms of ingestion may include abdominal pain, nausea, vomiting, and diarrhea.

Potential chronic health effects

No known significant effects or critical hazards.

Notes to physician	: Treat symptomatically. No specific treatment.
Protection of first-aiders	: If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media	: Can only be extinguished with large quantities of water.
Unsuitable extinguishing media	: Do not use dry chemical or foam.

Specific hazards arising from the chemical

	: Oxidizing material. May intensify fire. In a fire or if heated, a pressure increase will occur and the container may burst. Toxic and irritating gases/fumes may be given off during burning or thermal decomposition. Water runoff from fire fighting may be corrosive.
--	--

Hazardous thermal decomposition products

	: Decomposition products may include the following materials: halogenated compounds metal oxide/oxides
--	--

Special protective actions for fire-fighters

	: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
--	--

Special protective equipment for fire-fighters

	: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
--	---

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flames, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
Environmental precautions	: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

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Section 6. Accidental release measures

Methods and materials for containment and cleaning up : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Do not absorb in sawdust or other combustible material. It may lead to a fire risk when it dries out. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal. Prevent entry into sewers, water courses, basements or confined areas.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Keep away from clothing, incompatible materials and combustible materials. Keep away from heat. Empty containers retain product residue and can be hazardous. Do not reuse container. Remove contaminated clothing and protective equipment before entering eating areas. Workers should wash hands and face before eating, drinking and smoking. Put on appropriate personal protection equipment. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed.

Conditions for safe storage : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Separate from reducing agents and combustible materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. Empty containers retain product residue and can be hazardous. Do not reuse container. See NFPA 430, Code for the Storage of Liquid and Solid Oxidizers.

Section 8. Exposure controls/personal protection

Occupational exposure limits

Ingredient name	Exposure limits
Sodium chlorate	None
Hydrogen Peroxide	ACGIH TLV (United States, 3/2016). TWA: 1 ppm 8 hours. TWA: 1.4 mg/m ³ 8 hours. OSHA PEL (United States, 6/2016). TWA: 1 ppm 8 hours. TWA: 1.4 mg/m ³ 8 hours.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal protection

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

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Section 8. Exposure controls/personal protection

Respiratory protection : Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. A NIOSH approved air purifying respirator with organic vapor cartridges and particulate prefilter can be used to minimize exposure.

Skin protection : Permeation resistant clothing and foot protection. Permeation resistant gloves.

Eye/face protection : chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead. If contact with product is possible, wear safety glasses with side shields.

Medical Surveillance : Not available.

Section 9. Physical and chemical properties

Physical state : Liquid.

Color : Clear. to Light Blue.

Odor : Not available.

Odor threshold : Not available.

pH : 4.5 to 5

Boiling point : Not available.

Melting point : Not available.

Flash point : Closed cup. Not applicable.

Evaporation rate : Not available.

Explosion limits : Not available.

Vapor pressure : Not available.

Density : 1.38 g/cm³

Specific gravity (Relative density) : 1.38

Solubility in water : Not available.

Partition coefficient: n-octanol/water : Not available.

Vapor density : Not available.

Viscosity : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Hazardous reactions or instability may occur under certain conditions of storage or use. Conditions may include the following:
contact with combustible materials
Reactions may include the following:
risk of causing or intensifying fire

Conditions to avoid : Drying on clothing or other combustible materials may cause fire.

Incompatible materials : Reactive or incompatible with the following materials:
combustible materials
reducing materials

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

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Section 11. Toxicological information

Information on the likely routes of exposure : Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : Toxic if inhaled. Causes damage to organs following a single exposure if inhaled. May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system.

Skin contact : Causes severe burns.

Ingestion : Harmful if swallowed. May cause burns to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Corrosive with symptoms of reddening, tearing, swelling, burning and possible permanent damage.

Inhalation : No specific data.

Skin contact : Corrosive with symptoms of reddening, itching, swelling, burning and possible permanent damage.

Ingestion : Corrosive with symptoms of coughing, burning, ulceration, and pain.
Symptoms of ingestion may include abdominal pain, nausea, vomiting, and diarrhea.

Potential chronic health effects

Short term exposure

Potential immediate effects : Not available.

Long term exposure

Potential delayed effects : Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure	Test
Sodium chlorate	LD50 Oral	Rat	1200 mg/kg	-	-
Hydrogen Peroxide	LD50 Oral	Rat	>500 mg/kg	-	-
Hydrogen Peroxide	LD50 Dermal	Rat	4060 mg/kg	-	-
Sodium chlorate	LC50	Rat	>7 mg/l	4 hours	-
Hydrogen Peroxide	Inhalation Vapor LC50	Rat	>0.17 mg/l *	4 hours	-

Conclusion/Summary : Hydrogen Peroxide: * Die inhalative LC50 (Ratte/4Std) konnte nicht bestimmt werden, weil bei der maximalen Sättigungskonzentration keine Todesfälle bei den Ratten beobachtet worden sind.

Irritation/Corrosion

Section 11. Toxicological information

Product/ingredient name	Result	Species	Score	Exposure	Observation	Reversibility
Sodium chlorate	Eyes - Mild irritant	Mammal - species unspecified	-	-	-	-

Conclusion/Summary

Skin : Hydrogen Peroxide: slightly irritant

Eyes

Sodium chlorate: Causes serious eye irritation.
Hydrogen Peroxide: Severe irritant, Risk of serious damage to eyes.

Respiratory

Hydrogen Peroxide: May cause respiratory irritation.

Sensitization

Skin : Hydrogen Peroxide: Not sensitizing

Carcinogenicity

Product/ingredient name	CAS #	IARC	NTP	OSHA
Sodium chlorate		Not classified.	Not classified.	Not classified.
Hydrogen Peroxide	7722-84-1	Not classified.	Not classified.	Not classified.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
PurDOX™ BCD	Category 1	Inhalation	digestive system and respiratory tract
Sodium chlorate	Category 3	Not applicable.	Respiratory tract irritation

Acute toxicity estimates

Route	ATE value (Acute Toxicity Estimates)
Oral	1967.2 mg/kg
Dermal	46400 mg/kg
Inhalation (vapors)	7.5 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Test	Result	Species	Exposure
Hydrogen Peroxide	-	Acute EC50 1.38 mg/l (growth rate)	Algae - Skeletonema costatum	72 hours
-	-	Acute EC50 2.4 mg/l	Daphnia - Daphnia magna	48 hours
-	-	Acute LC50 16.4 mg/l	Fish - Pimephales promelas	96 hours
-	-	Chronic NOEC 0.63 mg/l (growth rate)	Algae - Skeletonema costatum	72 hours
-	-	Chronic NOEC 0.63 mg/l	Daphnia - Daphnia magna	21 days

Conclusion/Summary : Not available.

Persistence and degradability

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Section 12. Ecological information

Conclusion/Summary	: Not available.		
Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Hydrogen Peroxide	-	-	Readily
Bioaccumulative potential			
Product/ingredient name	LogP _{ow}	BCF	Potential
Hydrogen Peroxide	-1.1	-	low






Mobility in soil
Soil/water partition coefficient (K_{oc}) : Not available.
Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Waste disposal should be in accordance with existing federal state, provincial and or local environmental controls laws.

RCRA classification : When discarded in its purchased form, this product meets the criteria of ignitability, and should be managed as a hazardous waste (EPA Hazardous Waste Number D001). (40 CFR 261.20-24) Under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product, should be classified as a hazardous waste. (40 CFR 261.20-24)

Section 14. Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
DOT Classification	UN3139	Oxidizing liquid, n.o.s. (SODIUM CHLORATE, HYDROGEN PEROXIDE)	5.1	II		62, 127, 148, A2, IB2
IMDG Class	UN3139	OXIDIZING LIQUID, N.O.S. (SODIUM CHLORATE, HYDROGEN PEROXIDE)	5.1	II	 	Emergency schedules (EmS) F-A, S-Q
IATA-DGR Class	UN3139	Oxidizing liquid, n.o.s. (SODIUM CHLORATE, HYDROGEN PEROXIDE)	5.1	II	 	Passenger aircraft 550: 1 L Cargo aircraft 554: 5 L

PG* : Packing group
RQ : 0 lbs
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Section 16. Other information

Our method of hazard communication is comprised of Product Labels and Safety Data Sheets. HMIS and NFPA ratings are provided as a customer service. Reprinted with permission from NFPA 704-2001, Identification of the Hazards of Materials for Emergency Response Copyright ©1997, National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association, on the referenced subject which is represented only by the standard in its entirety.

Date of issue : 01-25-2018
Date of previous issue : 08-03-2017
Version : 1
Product Safety and Regulatory Affairs
Indicates information that has changed from previously issued version.

Notice to reader

This information is furnished without warranty, express or implied. This information is believed to be accurate to the best knowledge of International Dioxide, Inc.. The information in this SDS relates only to the specific material designated herein. International Dioxide, Inc. assumes no legal responsibility for use of or reliance upon the information in this SDS.

Section 15. Regulatory information

SARA 311/312 : Fire hazard
Immediate (acute) health hazard
Ingredient name : Hydrogen Peroxide CAS number 7722-84-1 Concentration (%) ≤10

SARA Title III Section 302 Extremely Hazardous Substances
SARA Title III Section 313 : None
Toxic Chemicals
US EPA CERCLA Hazardous Substances (40 CFR 302.4) : None
State regulations

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections on the SDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

Ingredient name	CAS number	State Code	Concentration (%)
Sodium chlorate	7775-09-9	MA - S, NJ - HS, PA - RTK HS	25 - 50
Hydrogen Peroxide	7722-84-1	MA - S, NJ - HS, PA - RTK HS	≤10
Water	7732-18-5		50 - 75

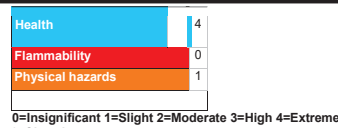
Massachusetts Substances: MA - S
Massachusetts Extraordinary Hazardous Substances: MA - Extra HS
New Jersey Hazardous Substances: NJ - HS
Pennsylvania RTK Hazardous Substances: PA - RTK HS
Pennsylvania Special Hazardous Substances: PA - Special HS

California Prop. 65

To the best of our knowledge, this product does not contain any of the listed chemicals, which the state of California has found to cause cancer, birth defects or other reproductive harm.

U.S. Toxic Substances : Listed on the TSCA Inventory.
Control Act

Hazardous Material Information System



The customer is responsible for determining the PPE code for this material. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

National Fire Protection Association (U.S.A.) :



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Safety Data Sheet (SDS)

Sulfuric Acid Solution 78%

Revision Date: 5/13/2015

Section 1: Identification	
Product Name:	Sulfuric Acid Solution 78%
Synonyms:	Sulfuric Acid
Product Use Description:	Various
Manufacturer/Supplier:	ChemQuest Chemicals 9730 Bay Area Blvd. Pasadena, Texas 77507 (281) 291 - 9966
Telephone:	(281) 291 - 9966
Emergency Contact Number:	(800) 424 - 9300 CHEMTREC

Section 2: Hazard(s) Identification	
Classifications:	Metal corrosion H290 Fatal if swallowed H300 Harmful if swallowed H302 Skin corrosion H314 Harmful if inhaled H332
Pictograms:	  GHS05 GHS07
Signal Word:	Danger; Warning
Hazard Statements:	H290 – May be corrosive to metals H300 – Fatal if swallowed H302 – Harmful if swallowed H314 – Causes severe skin burns and eye damage H332 – Harmful if inhaled
Precautionary Statements:	P234 – Keep in original container. P260 – Do not breathe the mist, spray, and vapors.

P264 – Wash exposed skin thoroughly after handling.
P270 – Do not eat, drink or smoke when using this product.
P271 – Use only outdoors or in a well-ventilated area.
P280 – Wear protective gloves/protective clothing/eye protection/face protection.
P301+P310 – IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P301+P330+P331 – IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353 – IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340 – IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 – Immediately call a POISON CENTER or doctor/physician.
P321 – Specific treatment (see....on this label).
P330 – Rinse mouth.
P363 – Wash contaminated clothing before reuse.
P390 – Absorb spillage to prevent material damage.
P403+P233 – Store in a well-ventilated place. Keep container tightly closed.
P405 – Store locked up.
P406 – Store in corrosive resistant containers with a resistant inner liner.
P501 – Dispose of contents/container to comply with local, state and federal regulations.

NFPA Ratings: (scale 0-4)



Health = 3
Fire = 0
Reactivity = 2

HMIS Ratings: (scale 0-4)

HEALTH	3
FLAMMABILITY	0
REACTIVITY	2

Health = 3
Fire = 0
Reactivity = 2

From substance or mixture:	NOT get water inside containers. Reacts violently with water and organic materials with evolution of heat and sulfur dioxide. Oxidising material contributes to combustion of other materials.
Recommendations for firefighters:	Cool the fire exposed containers/tanks with water spray (Do NOT get water inside containers). Wear self-contained breathing apparatus (NIOSH-approved) and full protective equipment (eye, body, and respiratory). Prevent spillage from entering drains or waterways.
Protective equipment:	Wear OSHA standard goggles or face shield. Wear self-contained breathing apparatus (NIOSH-approved) if necessary. Wear gloves, apron, and footwear impervious to this material.

Section 6: Accidental Release Measures

Personal precautions:	Wear full face shield. Goggles. Rubber Gloves. Cartridge Mask. Rubber Boots. Slicker Suit.
Emergency procedures:	Shut off or remove all ignition sources. Evacuate unnecessary personnel. Ventilate area.
Environmental precautions:	Prevent entry to sewers and public water. Notify the authorities if liquid enters sewers or public waters.
Methods for cleaning up:	Dike the flow of spilled material and absorb spills with absorbent vermiculite or sand and place in suitable containers for later disposal. Neutralize with soda ash or lime.

Section 7: Handling and Storage

Precautions for safe handling:	Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide proper ventilation. Do not ingest. Do not breathe gas/fumes/vapor/spray. Do not add water to this product add acid to water slowly. Avoid contact with skin or eyes. Wear proper protective equipment when handling this material (See Section 8).
Conditions for safe storage, Including incompatibilities:	Store in a cool, dry, well ventilated place, in a securely closed container that is corrosive proof. Do not store near combustible materials or alkaline substances.

Section 8: Exposure Controls/Personal Protection

Exposure Guidelines

List	Components	CAS-NO.	Type	Value
OSHA (PEL)	Sulfuric Acid	7664-93-9	TWA	1 mg/m ³
ACGIH (TLV)	Sulfuric Acid	7664-93-9	TWA	1 mg/m ³
	Sulfuric Acid	7664-93-9	STEL	3 mg/m ³
NIOSH (REL)	Sulfuric Acid	7664-93-9	TWA	1 mg/m ³
	Sulfuric Acid	7664-93-9	STEL	15 mg/m ³

Section 3: Composition/Information on Ingredients

Chemical characterization: Mixtures/Substances?

Component	CAS – No.	Weight %	GHS-US Classification
Sulfuric Acid	7664-93-9	78%	H290 – May be corrosive to metals H300 – Fatal if swallowed H302 – Harmful if swallowed H314 – Causes severe skin burns and eye damage H332 – Harmful if inhaled

Section 4: First-Aid Measures

Inhalation:	Move patient to obtain fresh air. Allow the victim to rest. Remove to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician/doctor.
Skin Contact:	Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Immediately call a POISON CENTER or doctor/physician.
Eye Contact:	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.
Ingestion:	Rinse mouth. DO NOT induce vomiting. If victim is conscious and alert, give 2-4 capfuls of milk or water. Never give anything by mouth to an unconscious person. Immediately call a POISON CENTER or doctor/physician.
Information for doctor:	All treatments should be based on observed signs and symptoms of distress given by the patient. Monitor arterial blood gases, chest x-ray, and pulmonary function tests if respiratory tract irritation or respiratory depression is evident. Treat dermal irritation or burns with the standard topical therapy. Do NOT use sodium bicarbonate in an attempt to neutralize the acid.
Most important symptoms and effects, both acute and delayed:	Causes severe skin burns and eye damage. May cause gastrointestinal burns with nausea, vomiting and diarrhea. Inhalation can result in inflammation and edema of the lungs, larynx, and bronchi.

Section 5: Fire-Fighting Measures

Suitable extinguishing agents:	For small fires use dry chemical or carbon dioxide (CO ₂). Do NOT use water on fire. Expect violent reaction with water. For large fires, flood area with water from A DISTANCE. Do NOT get solid stream of water on spilled material.
Special hazards arising	Contact with metals may evolve into flammable hydrogen gas. Do

Engineering measures:	Local exhaust ventilation should be provided at the site of chemical release. Emergency showers and eye wash stations should be readily accessible. Wash hands at the end of each work shift and before eating, smoking or using the toilet. Laundry or discard contaminated clothing.
Eye protection:	Impact resistant eye protection with side shields, goggles or face shield
Hand protection:	Rubber gloves
Skin and body protection:	Slicker suit and rubber boots
Respiratory protection:	Filter or cartridge respirator (NIOSH Approved)
Work/Hygiene practices:	Do not eat, drink or smoke during use.

Section 9: Physical and Chemical Properties

Appearance	
Form:	Liquid
Color:	Colorless
Odor:	Odorless
Odor Threshold:	Not available
pH:	1.0
Change in condition	
Melting point:	-4.4° C (24° F)
Boiling point:	109.5° C (229.1° F)
Flash point:	Not combustible
Evaporation rate:	Not available
Flammability (solid, gaseous):	Not flammable
Ignition temperature:	Not available
Decomposition temperature:	Not available
Auto igniting:	Not available
Danger of explosion:	Not available
Explosion limits	Not available
Lower:	
Upper:	
Vapor pressure @ 20° C (68° F):	Not available
Specific Gravity @ 25° C (77° F):	1.71
Density @ 20° C (68° F):	14.26
Solubility in/Miscibility with Water:	Miscible
Partition coefficient (n-octanol/water)	Not available
Viscosity:	Not available

Section 10: Stability and Reactivity	
Reactivity:	
Chemical stability:	Stable under normal conditions.
Possibility of hazardous reactions:	Sulfuric acid in contact with metal surfaces can generate flammable and explosive hydrogen gas. A fire risk can arise on contact with organic materials and chemicals such as nitrates, carbides, and chlorates.
Conditions to avoid:	Incompatible materials and excess heat. Do NOT add water to acid make sure to add acid to water slowly.
Hazardous decomposition dioxide:	Sulfur oxides may form when heated.
Incompatible materials:	Avoid contact with different organics, chlorates, carbides, fulminates, picrates, metals. Material reacts violently (exothermically) with water.

Section 11: Toxicological Information	
Information on Toxicological effects	
Acute Toxicity:	
LD/LC50	
Oral LD50 (Rat) – Sulfuric Acid	2140 mg/kg
Inhalation LC50 (Rat) – Sulfuric Acid	510 mg/m³/2H
Irritant effects	
Skin:	Causes severe irritation, burning, itching, and redness.
Eye:	Causes severe irritation and damage from direct exposure or vapor.
Respiratory:	Causes corrosion to the mucous membranes.
Ingestion:	Can cause burns to the mouth, throat, esophagus, and stomach.
Specific target organ toxicity (single exposure):	Eyes, skin, mouth, and digestive system.
Specific target organ toxicity (repeated exposure):	Eyes, skin, mouth, and digestive system. Workers that are chronically exposed to sulfuric acid mists may show various lesions of the skin, tracheobronchitis, stomatitis, conjunctivitis, or gastritis.
Aspiration hazard:	
Symptoms/injuries after inhalation:	Causes burns of the respiratory tract. Inhalation of mists may become fatal as a result of inflammation and edema of the lungs, larynx, and bronchi.
Symptoms/injuries after ingestion:	Causes severe gastrointestinal tract burns, nausea, vomiting, and diarrhea. May cause perforation of the gastrointestinal tract or peritonitis and death.
Symptoms/injuries after eye contact:	Causes severe burns, irritation, irreversible eye damage, and possible blindness.

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Packing group number:	II
IMDG	
UN Number:	UN1830
UN proper shipping name:	Sulfuric Acid
Transport Hazard class(es):	Class 8 – Corrosive substances
Packing group number:	II
Environmental hazards:	None
Special precaution for user:	Warning! Corrosive
Transport in bulk (according to Annex II of MARPOL 73/78 and IBC code):	Not available
UN "Model Regulation"	UN1830, Sulfuric Acid Solution, 8, II
Reportable Quantity	1000 lbs

Section 15: Regulatory Information	
Safety, health and environmental regulations/legislation specific for the substance or mixture	
State/International Right to Know Regulations	
California: Not Listed	
Connecticut: Survey	
Florida: Toxic substances RTK	
Illinois: Toxic, Chem	
Louisiana: RTK, Spill RQ=1,000 lbs	
Massachusetts: RTK; EHS, 1 PPM Threshold, Spill RQ = 50 lbs	
New Jersey: ID# 1761, RTK, Special Hazard; Corrosive, Reactive; Tax	
New York: Spill: Air RQ=1,000lbs, L/W RQ = 100 lbs	
Pennsylvania: RTK, ENV.	
Rhode Island: RTK, HAZ. Codes: Flammable, Toxic	
Canada: List, 1%, No. 1485	
EPA SARA Title III Section 302 Extremely Hazardous Substance	
Yes	
EPA SARA Title III Section 311, 312 (40CFR370) Hazard Class	
Acute Health Hazard	
EPA SARA Title III Section 313 (40CFR372) Toxic Chemicals above "De Minimis" Level Are	
This material contains Sulfuric Acid which is subject to the reporting requirements of section 313 of SARA Title III.	
Toxic Substance Control Act	
This material is listed in the TSCA Inventory.	
Clean Air Act – Hazardous Air Pollutants (HAPs)	
None of the components are on this list	

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Carcinogenic Categories	
IARC (International Agency for Research on Cancer)	Occupational exposure to strong inorganic acid mists containing sulfuric acid causes cancer. Listed as a carcinogen.
NTP (National Toxicity Program)	Occupational exposure to strong inorganic acid mists containing sulfuric acid causes cancer. Listed as a carcinogen.

Section 12: Ecological Information	
Aquatic Toxicity:	Extremely toxic to all forms of aquatic life
Persistence and degradability:	
Bioaccumulative potential:	
PBT and vPvB assessment	
PBT:	
vPvB:	
Mobility in soil:	
Other adverse effects:	

Section 13: Disposal Considerations	
Waste treatment methods	
Recommendation:	Consult the local, state, and federal regulatory agencies for the acceptable disposal procedures and correct disposal locations.
Uncleaned packaging's	
Recommendation:	

Section 14: Transport Information	
US DOT	
UN Number:	UN1830
UN proper shipping name:	Sulfuric Acid
Transport Hazard class(es):	Class 8 – Corrosive substances
Packing group number:	II
TDG	
UN Number:	UN1830
UN proper shipping name:	Sulfuric Acid
Transport Hazard class(es):	Class 8 – Corrosive substances
Packing group number:	II
IATA/ICAO	
UN Number:	UN1830
UN proper shipping name:	Sulfuric Acid
Transport Hazard class(es):	Class 8 – Corrosive substances

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Clean Air Act – Class 1 Ozone Depletors	None of the components are on this list
Clean Air Act – Class 1 Ozone Depletors	None of the components are on this list
Clean Water Act – Hazardous Substances	CAS# 7664-93-9 is listed as a Hazardous Substance under the CWA
Clean Water Act – Priority Pollutants	None of the components are on this list
Clean Water Act – Toxic Pollutants	None of the components are on this list
CERCLA/SUPERFUND, 40 CFR 117.302	The following materials are listed as CERCLA Hazardous Substances: Sulfuric Acid (7664-93-9) RQ = 1000 lbs./2270 kg

Section 16: Other Information	
Indication of changes:	07/01/2014
Other Information:	

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SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name: ChemTreat CT775
Product Use: Cooling Water Treatment Corrosion Inhibitor
Supplier's Name: ChemTreat, Inc.
Emergency Telephone Number: (800)424-9300 (Toll Free)
Address (Corporate Headquarters): 5640 Cox Road
Glen Allen, VA 23060
(800)648-4579
Telephone Number for Information: June 17, 2020
Date of SDS: June 17, 2020
Revision Date: 20061701AN
Revision Number:

Section 2. Hazard(s) Identification

Signal Word: DANGER

GHS Classification(s): Skin corrosion/irritation – Category 1b
Eye damage/irritation – Category 1
Acute Toxicity Oral – Category 4
Specific Target Organ Toxicity – Single Exposure – Category 3
Corrosive to Metals – Category 1

Hazard Statement(s): H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.
H302 Harmful if swallowed.
H290 May be corrosive to metals.
H335 May cause respiratory irritation.

Precautionary Statement(s):

Prevention: P260 Do not breathe dust/fume/gas/mist/vapors/spray.
P264 Wash thoroughly after handling.
P270 Do not eat, drink, or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P234 Keep only in original container.
P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
P271 Use only outdoors or in a well-ventilated area.

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Section 4. First Aid Measures

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a poison center or doctor/physician.

Eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor/physician.

Skin: Immediately remove/take off all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before re-use. Immediately call a poison center or doctor/physician.

Ingestion: DO NOT INDUCE VOMITING. Rinse mouth. Call a POISON CENTER or doctor/physician.

Most Important Symptoms: N/D

Indication of Immediate Medical Attention and Special Treatment Needed, if Necessary: N/A

Section 5. Fire Fighting Measures

Flammability of the Product: Not flammable.

Suitable Extinguishing Media: Use extinguishing media suitable to surrounding fire.

Specific Hazards Arising from the Chemical: Use water spray to keep containers cool.

Protective Equipment: If product is involved in a fire, wear full protective clothing including a positive-pressure, NIOSH approved, self-contained breathing apparatus.

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Response:

P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER/doctor.
P363 Wash contaminated clothing before reuse.
P390 Absorb spillage to prevent material damage.

Storage:

P405 Store locked up.
P406 Store in a corrosive resistant container with a resistant inner liner.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

Disposal:

P501 Dispose of contents and container in accordance with applicable local, regional, national, and/or international regulations.

System of Classification Used: Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Hazards Not Otherwise Classified: None.

Section 3. Composition/Hazardous Ingredients

Component	CAS Registry #	Wt.%
Phosphoric acid	7664-38-2	60 – 100

Comments If chemical identity and/or exact percentage of composition has been withheld, this information is considered to be a trade secret.

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Section 6. Accidental Release Measures

Personal Precautions: Use appropriate Personal Protective Equipment (PPE).

Environmental Precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.

Methods for Cleaning up: Contain and recover liquid when possible. Flush spill area with water spray.

Other Statements: If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.
Reportable Quantity of the product is 506 Gal.

Section 7. Handling and Storage

Handling: Wear appropriate Personal Protective Equipment (PPE) when handling this product. Do not get in eyes, or on skin and clothing. Wash thoroughly after handling. Do not ingest. Avoid breathing vapors, mist or dust.

Storage: Store away from incompatible materials (see Section 10). Store at ambient temperatures. Keep container securely closed when not in use. Label precautions also apply to empty container. Recondition or dispose of empty containers in accordance with government regulations. For Industrial use only. Store above Freeze Point.

Section 8. Exposure Controls/Personal Protection

Exposure Limits

Component	Source	Exposure Limits
Phosphoric acid	ACGIH TLV	3 mg/m ³ STEL
	OSHA PEL	1 mg/m ³ TWA

Engineering Controls: Use only with adequate ventilation. The use of local ventilation is recommended to control emission near the source.

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Personal Protection

Eyes:	Wear chemical splash goggles or safety glasses with full-face shield. Maintain eyewash fountain in work area.
Skin:	Maintain quick-drench facilities in work area. Wear butyl rubber or neoprene gloves. Wash them after each use and replace as necessary. If conditions warrant, wear protective clothing such as boots, aprons, and coveralls to prevent skin contact.
Respiratory:	If misting occurs, use NIOSH approved organic vapor/acid gas dual cartridge respirator with a dust/mist prefilter in accordance with 29 CFR 1910.134.

Section 9. Physical and Chemical Properties

Physical State and Appearance:	Liquid, Colorless, Clear
Specific Gravity:	1.579 @ 20°C
pH:	<1.0 @ 20°C, 100.0%
Freezing Point:	0°F
Flash Point:	N/D
Odor:	Mild
Melting Point:	N/A
Initial Boiling Point and Boiling Range:	N/D
Solubility in Water:	Miscible
Evaporation Rate:	<1
Vapor Density:	N/D
Molecular Weight:	N/D
Viscosity:	<100 CPS @ 20°C
Flammability (solid, gas):	N/D
Flammable Limits:	N/A
Autoignition Temperature:	N/A
Density:	13.17 LB/GA
Vapor Pressure:	N/D
% VOC:	N/D
Odor Threshold	N/D
n-octanol Partition Coefficient	N/D
Decomposition Temperature	N/D

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Section 10. Stability and Reactivity

Chemical Stability:	Stable at normal temperatures and pressures.
Incompatibility with Various Substances:	Strong oxidizers, Bases, Fluorine, Reducing agents, Sulfur trioxide, Phosphorus pentoxide.
Hazardous Decomposition Products:	Oxides of phosphorus.
Possibility of Hazardous Reactions:	None known.
Reactivity:	N/D
Conditions To Avoid:	N/D

Section 11. Toxicological Information

Acute Toxicity

Chemical Name	Exposure	Type of Effect	Concentration	Species
Phosphoric acid	Dermal	LD50	2740 MG/KG	Rabbit
	Oral	LD50	1530 MG/KG	Rat

Carcinogenicity Category

Component	Source	Code	Brief Description
Phosphoric acid	N/E	N/E	N/E

Likely Routes of Exposure: N/D

Symptoms

Inhalation:	N/D
Eye Contact:	N/D
Skin Contact:	N/D
Ingestion:	N/D

Skin Corrosion/Irritation: N/D

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Serious Eye Damage/Eye Irritation:	N/D
Sensitization:	N/D
Germ Cell Mutagenicity:	N/D
Reproductive/Developmental Toxicity:	N/D
Specific Target Organ Toxicity	
Single Exposure:	N/D
Repeated Exposure:	N/D
Aspiration Hazard:	N/D
Comments:	None.

Section 12. Ecological Information

Ecotoxicity

Species	Duration	Type of Effect	Test Results
Ceriodaphnia dubia	48h	LC50	1649 mg/l
Fathead Minnow	96h	LC50	3538 mg/l
Mayd Shrimp	48h	LC50	884 mg/l
Inland Silverside	96h	LC50	3491 mg/l

Persistence and Biodegradability:	N/D
Bioaccumulative Potential:	N/D
Mobility In Soil:	N/D
Other Adverse Effects:	N/D
Comments:	None.

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Section 13. Disposal Considerations

Dispose of in accordance with local, state and federal regulations.
EPA corrosivity characteristic hazardous waste D002 when disposed of in the original product form.

Section 14. Transport Information

Controlling Regulation	UN/NA#:	Proper Shipping Name:	Technical Name:	Hazard Class:	Packing Group:
DOT	UN1805	PHOSPHORIC ACID SOLUTION	N/A	8	PGIII
Over 506 GA	RQ UN1805	PHOSPHORIC ACID SOLUTION	N/A	8	PGIII
IMDG	UN1805	PHOSPHORIC ACID SOLUTION	N/A	8	PGIII
TDG	UN1805	PHOSPHORIC ACID SOLUTION	N/A	8	PGIII
ICAO	UN1805	PHOSPHORIC ACID SOLUTION	N/A	8	PGIII

Note: N/A

Section 15. Regulatory Information

Inventory Status

United States (TSCA): All ingredients listed.
Canada (DSL/NDL): All ingredients listed.

Federal Regulations

SARA Title III Rules

Sections 311/312 Hazard Classes

Fire Hazard:	No
Reactive Hazard:	No
Release of Pressure:	No
Acute Health Hazard:	Yes
Chronic Health Hazard:	No

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Other Sections

Component	Section 313 Toxic Chemical	Section 302 EHS TPQ	CERCLA RQ
Phosphoric acid	No	N/A	5000

Comments: None.

State Regulations

California Proposition 65: None known.

Special Regulations

Component	States
Phosphoric acid	MA, MN, NY, WA

Compliance Information

NSF: Certified to NSF/ANSI Standard 60
Maximum use rate for potable water – 13 mg/L
This product ships as NSF from:
Ashland, VA
Eldridge, IA
Nederland, TX
Facility #32 USA

Food Regulations: N/A

KOSHER: This product has not been evaluated for Kosher approval.

Halal: This product has not been evaluated for Halal approval.

FIFRA: N/A

Other: None

Comments: None.

Section 16. Other Information

HMIS Hazard Rating

Health: 3
Flammability: 0
Physical Hazard: 0
PPE: X

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Notes:

The PPE rating depends on circumstances of use. See Section 8 for recommended PPE.
The Hazardous Material Information System (HMIS) is a voluntary, subjective alpha-numeric symbolic system for recommending hazard risk and personal protection equipment information. It is a subjective rating system based on the evaluator's understanding of the chemical associated risks. The end-user must determine if the code is appropriate for their use.

Abbreviations

Abbreviation	Definition
<	Less Than
>	Greater Than
ACGIH	American Conference of Governmental Industrial Hygienists
EHS	Environmental Health and Safety Dept
N/A	Not Applicable
N/D	Not Determined
N/E	Not Established
OSHA	Occupational Health and Safety Dept
PEL	Personal Exposure Limit
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weight Average
UNK	Unknown

Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

Revision Date: June 17, 2020

Disclaimer

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, ChemTreat, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ChemTreat, Inc. be responsible for damages of any nature whatsoever resulting from the use or reliance upon information. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.

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SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name: ChemTreat P817E
Product Use: Water Clarification/Solids Conditioning Agent
Supplier's Name: ChemTreat, Inc.
Emergency Telephone Number: (800)424-9300 (Toll Free)
Address (Corporate Headquarters): 5640 Cox Road
Glen Allen, VA 23060
Telephone Number for Information: (800)648-4579
Date of SDS: March 26, 2019
Revision Date: March 26, 2019
Revision Number: 19032601AN

Section 2. Hazard(s) Identification

Signal Word: None

GHS Classification(s): Non-Hazardous Substance

Hazard Statement(s): Non-Hazardous Substance

Precautionary Statement(s): No significant health risks are expected from exposures under normal conditions of use.

Prevention: None.

Response: None.

Storage: None.

Disposal: None.

System of Classification Used: Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Hazards Not Otherwise Classified: None.

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Section 3. Composition/Hazardous Ingredients

Component	CAS Registry #	Wt. %
Components not listed are either non hazardous or in concentration of less than 1%	N/A	N/A

Comments: If chemical identity and/or exact percentage of composition has been withheld, this information is considered to be a trade secret.

Section 4. First Aid Measures

Inhalation: Call a POISON CENTER or doctor/physician if you feel unwell.

Eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.

Skin: Call a poison center or doctor/physician if you feel unwell.

Ingestion: Rinse mouth. Call a poison center or doctor/physician if you feel unwell.

Most Important Symptoms: N/D

Indication of Immediate Medical Attention and Special Treatment Needed, if Necessary: N/A

Section 5. Fire Fighting Measures

Flammability of the Product: Not flammable.

Suitable Extinguishing Media: Use extinguishing media suitable to surrounding fire.

Specific Hazards Arising from the Chemical: Product becomes slippery when wet.

Protective Equipment: If product is involved in a fire, wear full protective clothing including a positive-pressure, NIOSH approved, self-contained breathing apparatus.

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Section 6. Accidental Release Measures

Personal Precautions:	Use appropriate Personal Protective Equipment (PPE).
Environmental Precautions:	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.
Methods for Cleaning up:	Contain and recover liquid when possible. Flush spill area with water spray.
Other Statements:	None.

Section 7. Handling and Storage

Handling:	Wear appropriate Personal Protective Equipment (PPE) when handling this product. Do not get in eyes, or on skin and clothing. Wash thoroughly after handling. Do not ingest. Avoid breathing vapors, mist or dust. Material is very slippery if spilled.
Storage:	Store away from incompatible materials (see Section 10). Store at ambient temperatures. Keep container securely closed when not in use. Label precautions also apply to empty container. Recondition or dispose of empty containers in accordance with government regulations. For Industrial use only. Do not store below 41°F. Do not store above 86°F. Do not freeze. Store above Freeze Point. If freezes, then product is unusable.

Section 8. Exposure Controls/Personal Protection

Exposure Limits

Component	Source	Exposure Limits
Components not listed are either non hazardous or in concentration of less than 1%	N/E	N/E

Engineering Controls:	Use only with adequate ventilation. The use of local ventilation is recommended to control emission near the source.
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Personal Protection

Eyes:	Safety glasses are recommended if risk of eye contact.
Skin:	Wear butyl rubber or neoprene gloves. Wash them after each use and replace as necessary. If conditions warrant, wear protective clothing such as boots, aprons, and coveralls to prevent skin contact.
Respiratory:	If misting occurs, use NIOSH approved organic vapor/acid gas dual cartridge respirator with a dust/mist prefilter in accordance with 29 CFR 1910.134.

Section 9. Physical and Chemical Properties

Physical State and Appearance:	Liquid Emulsion, White, Opaque
Specific Gravity:	1.072 @ 20°C
pH:	6.0 – 8.0 @ 20°C, 100.0%
Freezing Point:	32°F
Flash Point:	N/D
Odor:	Mild
Melting Point:	N/A
Initial Boiling Point and Boiling Range:	N/D
Solubility in Water:	Complete
Evaporation Rate:	N/D
Vapor Density:	N/D
Molecular Weight:	N/D
Viscosity:	N/A
Flammability (solid, gas):	N/D
Flammable Limits:	N/A
Autoignition Temperature:	N/A
Density:	8.94 LB/GA
Vapor Pressure:	0 mmHg @ 20C
% VOC:	N/D
Odor Threshold	N/D
n-octanol Partition Coefficient	N/D
Decomposition Temperature	N/D

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Section 10. Stability and Reactivity

Chemical Stability:	Stable at normal temperatures and pressures.
Incompatibility with Various Substances:	Strong oxidizers.
Hazardous Decomposition Products:	Oxides of carbon, Oxides of nitrogen.
Possibility of Hazardous Reactions:	None known.
Reactivity:	N/D
Conditions To Avoid:	N/D

Section 11. Toxicological Information

Acute Toxicity

Chemical Name	Exposure	Type of Effect	Concentration	Species
ChemTreat P817E	Oral	LD50	>5000 MG/KG	Rat
	Dermal	LD50	>5000 MG/KG	Rat

Carcinogenicity Category

Component	Source	Code	Brief Description
Components not listed are either non hazardous or in concentration of less than 1%	N/E	N/E	N/E

Likely Routes of Exposure:	N/D
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Symptoms

Inhalation:	N/D
Eye Contact:	N/D
Skin Contact:	N/D
Ingestion:	N/D

Skin Corrosion/Irritation:	N/D
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Serious Eye Damage/Eye Irritation:	N/D
Sensitization:	N/D
Germ Cell Mutagenicity:	N/D
Reproductive/Developmental Toxicity:	N/D
Specific Target Organ Toxicity	
Single Exposure:	N/D
Repeated Exposure:	N/D
Aspiration Hazard:	N/D
Comments:	None.

Section 12. Ecological Information

Ecotoxicity

Species	Duration	Type of Effect	Test Results
Algae	72h	IC50	>100 mg/l
Daphnia magna	48h	EC50	>100 mg/l
Mayd Shrimp	48h	LC50	6.8 mg/l
Inland Silverside	96h	LC50	320 mg/l
Ceriodaphnia dubia	48h	LC50	0.58 mg/l
Fathead Minnow	96h	LC50	104 mg/l
	48h	LC50	287 mg/l
Daphnia pulex	48h	LC50	0.21 mg/l

Persistence and Biodegradability:	N/D
Bioaccumulative Potential:	N/D
Mobility In Soil:	N/D
Other Adverse Effects:	N/D

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Comments:

Water clarification polymers function by multipoint adsorption and charge neutralization with suspended solids. Polymers inherently migrate with solids in the separation process and with the exception of uneconomic overdose do not remain in the clarified waters. Aquatic toxicity determinations in test method protocol waters without suspended solids overestimate the toxicity compared to natural receiving waters.

Section 13. Disposal Considerations

Dispose of in accordance with local, state and federal regulations. Not a RCRA-regulated hazardous waste when disposed in the original product form.

Section 14. Transport Information

Controlling Regulation	UN/NA#:	Proper Shipping Name:	Technical Name:	Hazard Class:	Packing Group:
DOT	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
IMDG	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
ICAO	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
TDG	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A

Note: N/A

Section 15. Regulatory Information

Inventory Status

United States (TSCA): All ingredients listed.
Canada (DSL/NDL): All ingredients listed.

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Other: None

Comments: None.

Section 16. Other Information

HMIS Hazard Rating

Health: 0
Flammability: 1
Physical Hazard: 0
PPE: X

Notes: The PPE rating depends on circumstances of use. See Section 8 for recommended PPE. The Hazardous Material Information System (HMIS) is a voluntary, subjective alpha-numeric symbolic system for recommending hazard risk and personal protection equipment information. It is a subjective rating system based on the evaluator's understanding of the chemical associated risks. The end-user must determine if the code is appropriate for their use.

Abbreviations

Abbreviation	Definition
<	Less Than
>	Greater Than
ACGIH	American Conference of Governmental Industrial Hygienists
EHS	Environmental Health and Safety Dept
N/A	Not Applicable
ND	Not Determined
N/E	Not Established
OSHA	Occupational Health and Safety Dept
PEL	Personal Exposure Limit
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weight Average
UNK	Unknown

Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

Revision Date: March 26, 2019

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Federal Regulations

SARA Title III Rules

Sections 311/312 Hazard Classes

Fire Hazard: No
Reactive Hazard: No
Release of Pressure: No
Acute Health Hazard: No
Chronic Health Hazard: No

Other Sections

Component	Section 313 Toxic Chemical	Section 302 EHS TPQ	CERCLA RQ
Components not listed are either non hazardous or in concentration of less than 1%	N/A	N/A	N/A

Comments: None.

State Regulations

California Proposition 65:

WARNING: This product can expose you to chemicals including Acrylamide, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

Special Regulations

Component	States
Components not listed are either non hazardous or in concentration of less than 1%	None.

Compliance Information

NSF: Certified to NSF/ANSI Standard 60
Maximum use rate for potable water – 3 mg/L
Facility #6 USA

Food Regulations: FDA: Complies with 21 CFR 176.170 and 21 CFR 176.180 for use in paper and paperboard which contacts food.

KOSHER: This product has not been evaluated for Kosher approval.

Halal: This product has not been evaluated for Halal approval.

FIFRA: N/A

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Disclaimer

Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, ChemTreat, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ChemTreat, Inc. be responsible for damages of any nature whatsoever resulting from the use or reliance upon information. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.

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SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name: ChemTreat P835E
Product Use: Water Clarification/Solids Conditioning Agent
Supplier's Name: ChemTreat, Inc.
Emergency Telephone Number: (800)424-9300 (Toll Free)
Address (Corporate Headquarters): 5640 Cox Road
Glen Allen, VA 23060
(800)648-4579
Telephone Number for Information: February 7, 2019
Date of SDS: February 7, 2019
Revision Date: February 7, 2019
Revision Number: 19020701AN

Section 2. Hazard(s) Identification

Signal Word: None
GHS Classification(s): Non-Hazardous Substance
Hazard Statement(s): Non-Hazardous Substance
Precautionary Statement(s): No significant health risks are expected from exposures under normal conditions of use.
Prevention: None.
Response: None.
Storage: None.
Disposal: None.
System of Classification Used: Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).
Hazards Not Otherwise Classified: None.

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Section 6. Accidental Release Measures

Personal Precautions: Use appropriate Personal Protective Equipment (PPE).
Environmental Precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.
Methods for Cleaning up: Contain and/or absorb spill with inert material then place in suitable container. Material is very slippery if spilled.
Other Statements: None.

Section 7. Handling and Storage

Handling: Wear appropriate Personal Protective Equipment (PPE) when handling this product. Do not get in eyes, or on skin and clothing. Wash thoroughly after handling. Do not ingest. Avoid breathing vapors, mist or dust.
Storage: Store away from incompatible materials (see Section 10). Store at ambient temperatures. Keep container securely closed when not in use. Label precautions also apply to empty container. Recondition or dispose of empty containers in accordance with government regulations. For Industrial use only. Protect from heat and sources of ignition. Do not freeze. Store above Freezing Point. If freezes, then product is unusable.

Section 8. Exposure Controls/Personal Protection

Exposure Limits

Component	Source	Exposure Limits
Components not listed are either non hazardous or in concentration of less than 1%	N/E	N/E

Engineering Controls: Use only with adequate ventilation. The use of local ventilation is recommended to control emission near the source.

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Section 3. Composition/Hazardous Ingredients

Component	CAS Registry #	Wt. %
Components not listed are either non hazardous or in concentration of less than 1%	N/A	N/A

Comments: If chemical identity and/or exact percentage of composition has been withheld, this information is considered to be a trade secret.

Section 4. First Aid Measures

Inhalation: Call a POISON CENTER or doctor/physician if you feel unwell.
Eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.
Skin: Call a poison center or doctor/physician if you feel unwell.
Ingestion: Rinse mouth. Call a poison center or doctor/physician if you feel unwell.
Most Important Symptoms: N/D
Indication of Immediate Medical Attention and Special Treatment Needed, if Necessary: N/A

Section 5. Fire Fighting Measures

Flammability of the Product: Not flammable.
Suitable Extinguishing Media: Use extinguishing media suitable to surrounding fire.
Specific Hazards Arising from the Chemical: Use water spray to keep containers cool.
Protective Equipment: If product is involved in a fire, wear full protective clothing including a positive-pressure, NIOSH approved, self-contained breathing apparatus.

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Personal Protection

Eyes: Safety glasses are recommended if risk of eye contact.
Skin: Wear PVC or other plastic material gloves. Wash them after each use and replace as necessary. If conditions warrant, wear protective clothing such as boots, aprons, and coveralls to prevent skin contact.
Respiratory: None needed under normal conditions of use.

Section 9. Physical and Chemical Properties

Physical State and Appearance: Liquid Emulsion, White, Opaque
Specific Gravity: 1.044 @ 20°C
pH: 3.4 @ 20°C, 100.0%
Freezing Point: 32°F
Flash Point: >200°F
Odor: Mild
Melting Point: N/A
Initial Boiling Point and Boiling Range: N/D
Solubility in Water: Appreciable
Evaporation Rate: N/A
Vapor Density: Similar to water
Molecular Weight: N/D
Viscosity: N/A
Flammability (solid, gas): N/D
Flammable Limits: N/A
Autoignition Temperature: N/A
Density: 8.71 LB/GA
Vapor Pressure: N/A
% VOC: 10
Odor Threshold: N/D
n-octanol Partition Coefficient: N/D
Decomposition Temperature: N/D

Section 10. Stability and Reactivity

Chemical Stability: Stable at normal temperatures and pressures.
Incompatibility with Various Substances: Oxidizers.
Hazardous Decomposition Products: Oxides of carbon, Oxides of nitrogen, Hydrogen chloride, Hydrogen cyanide, Ammonia.

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Possibility of Hazardous Reactions: None known.

Reactivity: N/D

Conditions To Avoid: N/D

Section 11. Toxicological Information

Acute Toxicity

Chemical Name	Exposure	Type of Effect	Concentration	Species
ChemTreat P835E	Oral	LD50	>5000 MG/KG	Rat
	Dermal	LD50	>5000 MG/KG	Rat

Carcinogenicity Category

Component	Source	Code	Brief Description
Components not listed are either non hazardous or in concentration of less than 1%	N/E	N/E	N/E

Likely Routes of Exposure: N/D

Symptoms

Inhalation: N/D

Eye Contact: N/D

Skin Contact: N/D

Ingestion: N/D

Skin Corrosion/Irritation: N/D

Serious Eye Damage/Eye Irritation: N/D

Sensitization: N/D

Germ Cell Mutagenicity: N/D

Reproductive/Developmental Toxicity: N/D

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Specific Target Organ Toxicity

Single Exposure: N/D

Repeated Exposure: N/D

Aspiration Hazard: N/D

Comments: None.

Section 12. Ecological Information

Ecotoxicity

Species	Duration	Type of Effect	Test Results
Ceriodaphnia dubia	48h	LC50	1,233 mg/l
Sheepshead Minnow	96h	LC50	117.5 mg/l
Myxid Shrimp	48h	LC50	33.2 mg/l
Fathead Minnow	96h	LC50	5,815 mg/l
	48h	LC50	3.4 mg/l
Daphnia pulex	48h	LC50	1.3 mg/l

Persistence and Biodegradability: N/D

Bioaccumulative Potential: N/D

Mobility In Soil: N/D

Other Adverse Effects: N/D

Comments: Water clarification polymers function by multipoint adsorption and charge neutralization with suspended solids. Polymers inherently migrate with solids in the separation process and with the exception of uneconomic overdose do not remain in the clarified waters. Aquatic toxicity determinations in test method protocol waters without suspended solids overestimate the toxicity compared to natural receiving waters.

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Section 13. Disposal Considerations

Dispose of in accordance with local, state and federal regulations. Not a RCRA-regulated hazardous waste when disposed in the original product form.

Section 14. Transport Information

Controlling Regulation	UN/NA#:	Proper Shipping Name:	Technical Name:	Hazard Class:	Packing Group:
DOT	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
IMDG	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
ICAO	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
TDG	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A

Note: N/A

Section 15. Regulatory Information

Inventory Status

United States (TSCA): All ingredients listed.

Canada (DSL/NDL): All ingredients listed.

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Federal Regulations

SARA Title III Rules

Sections 311/312 Hazard Classes

Fire Hazard: No

Reactive Hazard: No

Release of Pressure: No

Acute Health Hazard: No

Chronic Health Hazard: No

Other Sections

Component	Section 313 Toxic Chemical	Section 302 EHS TPQ	CERCLA RQ
Components not listed are either non hazardous or in concentration of less than 1%	N/A	N/A	N/A

Comments: None.

State Regulations

California Proposition 65: This product contains chemical(s) known to the State of California to cause cancer and/or to cause birth defects or other reproductive harm: residual acrylamide.

Special Regulations

Component	States
Components not listed are either non hazardous or in concentration of less than 1%	None.

Compliance Information

NSF: Certified to NSF/ANSI Standard 60
Maximum use rate for potable water – 3 mg/L
This product ships as NSF from:
Facility #6 USA

Food Regulations: N/A

KOSHER: This product has not been evaluated for Kosher approval.

Halal: This product has not been evaluated for Halal approval.

FIFRA: N/A

Other: None

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Comments: None.

Section 16. Other Information

HMIS Hazard Rating

Health: 0
Flammability: 1
Physical Hazard: 0
PPE: X

Notes: The PPE rating depends on circumstances of use. See Section 8 for recommended PPE. The Hazardous Material Information System (HMIS) is a voluntary, subjective alpha-numeric symbolic system for recommending hazard risk and personal protection equipment information. It is a subjective rating system based on the evaluator's understanding of the chemical associated risks. The end-user must determine if the code is appropriate for their use.

Abbreviations

Abbreviation	Definition
<	Less Than
>	Greater Than
ACGIH	American Conference of Governmental Industrial Hygienists
EHS	Environmental Health and Safety Dept
N/A	Not Applicable
N/D	Not Determined
N/E	Not Established
OSHA	Occupational Health and Safety Dept
PEL	Personal Exposure Limit
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weight Average
UNK	Unknown

Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

Revision Date: February 7, 2019

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Disclaimer

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SAFETY DATA SHEET



1. Identification

Product identifier BL124
Other means of identification
Product code RL124
Recommended use Boiler Water Treatment
Recommended restrictions None known.
Manufacturer/Importer/Supplier/Distributor information
Manufacturer
Company name ChemTreat
Address 5640 Cox Road
Glen Allen, VA 23060
United States
Telephone 800-648-4579
E-mail Not available.
Emergency phone number 800-424-9300

2. Hazard(s) Identification

Physical hazards Corrosive to metals Category 1
Health hazards Skin corrosion/irritation Category 2
Serious eye damage/eye irritation Category 1
Sensitization, respiratory Category 1
Sensitization, skin Category 1
Environmental hazards Hazardous to the aquatic environment, acute hazard Category 3
Hazardous to the aquatic environment, long-term hazard Category 3
OSHA defined hazards Not classified.

Label elements



Signal word Danger
Hazard statement May be corrosive to metals. Causes skin irritation. May cause an allergic skin reaction. Causes serious eye damage. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Harmful to aquatic life. Harmful to aquatic life with long lasting effects.
Precautionary statement
Prevention Keep only in original container. Avoid breathing mist/vapors. Wash thoroughly after handling. Contaminated work clothing must not be allowed out of the workplace. Avoid release to the environment. Wear eye protection/face protection. Wear protective gloves. In case of inadequate ventilation wear respiratory protection.
Response If on skin: Wash with plenty of water. If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse. Absorb spillage to prevent material damage.
Storage Store in corrosive resistant container with a resistant inner liner.
Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC) None known.

Supplemental information 30% of the mixture consists of component(s) of unknown acute dermal toxicity. 30% of the mixture consists of component(s) of unknown acute inhalation toxicity. 30% of the mixture consists of component(s) of unknown acute hazards to the aquatic environment. 30% of the mixture consists of component(s) of unknown long-term hazards to the aquatic environment.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Sodium bisulfite		7631-90-5	25 - < 40
Other components below reportable levels			70 - < 80

4. First-aid measures

Inhalation If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If experiencing respiratory symptoms: Call a poison center or doctor/physician.
Skin contact Remove contaminated clothing immediately and wash skin with soap and water. In case of eczema or other skin disorders: Seek medical attention and take along these instructions. Wash contaminated clothing before reuse.
Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.
Ingestion Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Difficulty in breathing. Skin irritation. May cause redness and pain. May cause an allergic skin reaction. Dermatitis. Rash.
Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
General information Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media Water fog. Foam. Dry chemical powder. Carbon dioxide (CO₂).
Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions Move containers from fire area if you can do so without risk.
Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Avoid breathing mist/vapors. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up Prevent entry into waterways, sewer, basements or confined areas.
Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb spillage to prevent material damage. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water.
Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.
Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling Do not get this material in contact with eyes. Avoid breathing mist/vapors. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Avoid release to the environment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities Store in a cool, dry place out of direct sunlight. Store in corrosive resistant container with a resistant inner liner. Store in tightly closed container. Keep only in the original container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

US. ACGIH Threshold Limit Values

Components	Type	Value
Sodium bisulfite (CAS 7631-90-5)	TWA	5 mg/m3

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Sodium bisulfite (CAS 7631-90-5)	TWA	5 mg/m3

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. General ventilation normally adequate. Provide eyewash station and safety shower.

Individual protection measures,

such as personal protective equipment

Eye/face protection Chemical respirator with organic vapor cartridge and full facepiece.

Skin protection

Hand protection

Wear appropriate chemical resistant gloves.

Other

Wear appropriate chemical resistant clothing.

Respiratory protection

Chemical respirator with organic vapor cartridge and full facepiece.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.

9. Physical and chemical properties

Appearance	Clear
Physical state	Liquid.
Form	Liquid. Liquid
Color	Yellow
Odor	Strong
Odor threshold	Not available.
pH	3.9 @ 100%
Melting point/freezing point	30.20 °F (-1.00 °C)
Initial boiling point and boiling range	Not available.
Flash point	Not available.
Evaporation rate	Not available.

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Components	Species	Test Results
Sodium bisulfite (CAS 7631-90-5)		
Acute		
Oral		
LD50	Rat	2 g/kg
Skin corrosion/irritation	Causes skin irritation.	
Serious eye damage/eye irritation	Causes serious eye damage.	
Respiratory or skin sensitization		
Respiratory sensitization	May cause allergy or asthma symptoms or breathing difficulties if inhaled.	
Skin sensitization	May cause an allergic skin reaction.	
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.	
Carcinogenicity	Not classifiable as to carcinogenicity to humans.	
IARC Monographs. Overall Evaluation of Carcinogenicity		
Sodium bisulfite (CAS 7631-90-5)	3 Not classifiable as to carcinogenicity to humans.	
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)		
Not regulated.		
US. National Toxicology Program (NTP) Report on Carcinogens		
Not listed.		
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.	
Specific target organ toxicity - single exposure	Not classified.	
Specific target organ toxicity - repeated exposure	Not classified.	
Aspiration hazard	Not an aspiration hazard.	
Chronic effects	Prolonged inhalation may be harmful.	

12. Ecological information

Ecotoxicity	Harmful to aquatic life with long lasting effects.		
Product	Species		Test Results
BL124			
Aquatic			
Crustacea	LC50	Ceriodaphnia dubia	459 mg/l, 48 hours
			390.4 mg/l, 48 hours
		Opossum shrimp order (Mysida)	70.7 mg/l, 48 hours
	LOEC	Ceriodaphnia dubia	600 mg/l, 7 days
	NOEC	Ceriodaphnia dubia	300 mg/l, 7 days
Fish	IC25	Fathead minnow (Pimephales promelas)	750 mg/l, 7 days
	LC50	Fathead minnow (Pimephales promelas)	> 1000 mg/l, 96 hours
			849 mg/l, 96 hours
		Sheepshead minnow (Cyprinodon variegatus)	100 mg/l, 96 hours
	LOEC	Fathead minnow (Pimephales promelas)	1200 mg/l, 7 days
	NOEC	Fathead minnow (Pimephales promelas)	600 mg/l, 7 days
Persistence and degradability	No data is available on the degradability of any ingredients in the mixture.		
Bioaccumulative potential	No data available.		
Mobility in soil	No data available.		
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.		

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Flammability (solid, gas) Not applicable.

Upper/lower flammability or explosive limits

Flammability limit - lower (%) Not available.

Flammability limit - upper (%) Not available.

Explosive limit - lower (%) Not available.

Explosive limit - upper (%) Not available.

Vapor pressure Not available.

Vapor density Not available.

Relative density Not available.

Solubility(ies)

Solubility (water) Not available.

Partition coefficient (n-octanol/water) Not available.

Auto-ignition temperature Not available.

Decomposition temperature Not available.

Viscosity 0 - 200 cps

Other information

Explosive properties Not explosive.

Oxidizing properties Not oxidizing.

Percent volatile 21 % estimated

Pounds per gallon 10.3

Specific gravity 1.24 @ 20C

VOC 0 %w/w

10. Stability and reactivity

Reactivity May be corrosive to metals.

Chemical stability Material is stable under normal conditions.

Possibility of hazardous reactions Hazardous polymerization does not occur.

Conditions to avoid Contact with incompatible materials.

Incompatible materials Strong oxidizing agents. Metals.

Hazardous decomposition products No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation May cause allergy or asthma symptoms or breathing difficulties if inhaled. Prolonged inhalation may be harmful.

Skin contact Causes skin irritation. May cause an allergic skin reaction.

Eye contact Causes serious eye damage.

Ingestion Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical and toxicological characteristics Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Difficulty in breathing. Skin irritation. May cause redness and pain. May cause an allergic skin reaction. Dermatitis. Rash.

Information on toxicological effects

Acute toxicity Not known.

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13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Incinerate the material under controlled conditions in an approved incinerator. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	D002: Waste Corrosive material [pH <2 or ->12.5, or corrosive to steel] The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT	
UN number	UN2693
UN proper shipping name	BISULFITES, AQUEOUS SOLUTIONS, N.O.S. (Sodium bisulfite RQ = 16667 LBS)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	III
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	IB3, T7, TP1, TP28
Packaging exceptions	154
Packaging non bulk	203
Packaging bulk	241
IATA	
UN number	UN2693
UN proper shipping name	BISULFITES, AQUEOUS SOLUTIONS, N.O.S. (Sodium bisulfite)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	III
Environmental hazards	No.
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
IMDG	
UN number	UN2693
UN proper shipping name	BISULFITES, AQUEOUS SOLUTIONS, N.O.S. (Sodium bisulfite)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	III
Environmental hazards	
Marine pollutant	No.
EmS	Not available.
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not established.

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DOT



IATA; IMDG



15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Toxic Substances Control Act (TSCA)
TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)
Sodium bisulfite (CAS 7631-90-5) Listed.

SARA 304 Emergency release notification
Not regulated.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)
Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance
Not listed.

SARA 311/312 Hazardous chemical Yes
Classified hazard categories Corrosive to metal
Skin corrosion or irritation
Serious eye damage or eye irritation
Respiratory or skin sensitization

SARA 313 (TRI reporting)
Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to www.P65Warnings.ca.gov.

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International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

Compliance Information: Halal

Compliance Information: Kosher

This product is certified by the Orthodox Unionas Kosher pareve

Eldridge IA
Ashland VA
Nederland TX
Fontana CA



Compliance Information: NSF Whitebook

This product conforms to the requirements of the NSF Nonfood Compounds Registration Program, Registration # 148827; Category G6, G7.



Compliance Information: Food Regulations

FDA: All ingredients in this product are authorized in 21 CFR 173.310 for use as "Boiler Water Additives" where the steam may contact food.

16. Other information, including date of preparation or last revision

Issue date	07-13-2022
Version #	01
HMIS® ratings	Health: 2 Flammability: 0 Physical hazard: 0 Personal protection: X

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Disclaimer

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Other information Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com



SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name:	Chemical Treatment CL2150
Product Use:	Cooling Water Microbiocide and Paper Slicicide
Supplier's Name:	ChemTreat, Inc.
Emergency Telephone Number:	(800)424-9300 (Toll Free)
Address (Corporate Headquarters):	5640 Cox Road Glen Allen, VA 23060
Telephone Number for Information:	(800)648-4579
Date of SDS:	May 28, 2020
Revision Date:	May 28, 2020
Revision Number:	20052801AN

Section 2. Hazard(s) Identification

Signal Word:	DANGER
GHS Classification(s):	Skin corrosion/irritation – Category 1b Eye damage/irritation – Category 1 Acute Toxicity Dermal – Category 4 Acute Toxicity Inhalation – Category 4 Acute Toxicity Oral – Category 4 Hazardous to the aquatic environment Acute – Category 3 Sensitization Skin – Category 1
Hazard Statement(s):	H314 Causes severe skin burns and eye damage. H318 Causes serious eye damage. H312 Harmful in contact with skin. H332 Harmful if inhaled. H302 Harmful if swallowed. H402 Harmful to aquatic life. H317 May cause an allergic skin reaction.
Precautionary Statement(s):	



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Chemical Treatment CL2150



Prevention:

P260 Do not breathe dust/fume/gas/mist/vapors/spray.
P264 Wash thoroughly after handling.
P270 Do not eat, drink, or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P273 Avoid release into the environment.
P272 Contaminated work clothing should not be allowed out of the workplace.

Response:

P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER/doctor.
P363 Wash contaminated clothing before reuse.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P333 + P313 IF skin irritation or rash occurs: Get medical advice/attention.
P362 + P364 Take off contaminated clothing and wash it before reuse.

Storage: P405 Store locked up.

Disposal: P501 Dispose of contents and container in accordance with applicable local, regional, national, and/or international regulations.

System of Classification Used: Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Hazards Not Otherwise Classified: None.



Section 3. Composition/Hazardous Ingredients

Component	CAS Registry #	Wt. %
5-chloro-2-methyl-4-isothiazolin-3-one	26172-55-4	1.11
2-methyl-4-isothiazolin-3-one	2682-20-4	0.39

Comments If chemical identity and/or exact percentage of composition has been withheld, this information is considered to be a trade secret.

Section 4. First Aid Measures

Inhalation: Remove to fresh air and keep at rest in a position comfortable for breathing. Call a poison center or doctor/physician if you feel unwell.

Eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor/physician.

Skin: Immediately remove/take off all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before re-use. Immediately call a poison center or doctor/physician.

Ingestion: DO NOT INDUCE VOMITING. Rinse mouth. Call a POISON CENTER or doctor/physician.

Most Important Symptoms: N/D

Indication of Immediate Medical Attention and Special Treatment Needed, If Necessary: Probable mucosal damage may contraindicate the use of gastric lavage. Have the product container, label or MSDS with you when calling a poison control center or doctor, or when going for treatment.



Section 5. Fire Fighting Measures

Flammability of the Product: Not flammable.

Suitable Extinguishing Media: Use extinguishing media suitable to surrounding fire.

Specific Hazards Arising from the Chemical: Use water spray to keep containers cool.

Protective Equipment: If product is involved in a fire, wear full protective clothing including a positive-pressure, NIOSH approved, self-contained breathing apparatus.

Section 6. Accidental Release Measures

Personal Precautions: Use appropriate Personal Protective Equipment (PPE).

Environmental Precautions: This pesticide is toxic to fish and aquatic organisms. Do not discharge effluent containing this product into lakes, ponds, streams, estuaries, oceans or public waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit, and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.

Methods for Cleaning up: Contain and recover liquid when possible. Flush spill area with water spray.

Other Statements: If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.



Section 7. Handling and Storage

Handling: Wear appropriate Personal Protective Equipment (PPE) when handling this product. Do not get in eyes, or on skin and clothing. Wash thoroughly after handling. Do not ingest. Avoid breathing vapors, mist or dust.

Storage: Store away from incompatible materials (see Section 10). Store at ambient temperatures. Keep container securely closed when not in use. Label precautions also apply to empty container. Recondition or dispose of empty containers in accordance with government regulations. For industrial use only. Store in corrosive resistant container with a resistant inliner. Store above Freeze Point.

Section 8. Exposure Controls/Personal Protection

Exposure Limits

Component	Source	Exposure Limits
5-chloro-2-methyl-4-isothiazolin-3-one	N/E	N/E
2-methyl-4-isothiazolin-3-one	N/E	N/E

Engineering Controls: Use only with adequate ventilation. The use of local ventilation is recommended to control emission near the source.

Personal Protection

Eyes: Wear chemical splash goggles or safety glasses with full-face shield. Maintain eyewash fountain in work area.

Skin: Maintain quick-drench facilities in work area. Wear butyl rubber or neoprene gloves. Wash them after each use and replace as necessary. If conditions warrant, wear protective clothing such as boots, aprons, and coveralls to prevent skin contact.

Respiratory: If misting occurs, use NIOSH approved organic vapor/acid gas dual cartridge respirator with a dust/mist prefilter in accordance with 29 CFR 1910.134.



Section 9. Physical and Chemical Properties

Physical State and Appearance:	Liquid, Green, Clear
Specific Gravity:	1.025 @ 20°C
pH:	3.6 @ 20°C, 100.0%
Freezing Point:	45°F
Flash Point:	N/D
Odor:	Mild
Melting Point:	N/A
Initial Boiling Point and Boiling Range:	N/D
Solubility in Water:	Complete
Evaporation Rate:	<1
Vapor Density:	N/D
Molecular Weight:	N/D
Viscosity:	N/D
Flammability (solid, gas):	N/D
Flammable Limits:	N/A
Autoignition Temperature:	N/A
Density:	8.55 LB/GA
Vapor Pressure:	N/D
% VOC:	<0.1
Odor Threshold	N/D
n-octanol Partition Coefficient	N/D
Decomposition Temperature	N/D

Section 10. Stability and Reactivity

Chemical Stability:	Stable at normal temperatures and pressures.
Incompatibility with Various Substances:	Strong oxidizers, Strong bases.
Hazardous Decomposition Products:	Oxides of nitrogen, Oxides of sulfur, Oxides of carbon, Halogenated compounds.
Possibility of Hazardous Reactions:	None known.
Reactivity:	N/D
Conditions To Avoid:	N/D

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Comments: None.

Section 12. Ecological Information

Ecotoxicity

Species	Duration	Type of Effect	Test Results
Daphnia magna	48h	LC50	10.7 mg/l
Bluegill Sunfish	96h	LC50	18.6 mg/l
Rainbow Trout	96h	LC50	12.6 mg/l
Sheepshead Minnow	96h	LC50	70.7 mg/l
Myxid Shrimp	48h	LC50	46.1 mg/l
Daphnia pulex	48h	LC50	17 mg/l
Fathead Minnow	48h	LC50	8.7 mg/l
Ceriodaphnia dubia	48h	LC50	18.1 mg/l

Persistence and Biodegradability:	N/D
Bioaccumulative Potential:	N/D
Mobility In Soil:	N/D
Other Adverse Effects:	N/D
Comments:	None.

Section 13. Disposal Considerations

PESTICIDE DISPOSAL: Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL: Non-refillable container. Do not reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by procedures approved by state and local authorities.

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Section 11. Toxicological Information

Acute Toxicity

Chemical Name	Exposure	Type of Effect	Concentration	Species
Chemical Treatment CL2150	Oral	LD50	3610 MG/KG	Rat
	Dermal	LD50	>5000 MG/KG	Rabbit
	Inhalation	LD50	13.7 MG/L	Rat

Carcinogenicity Category

Component	Source	Code	Brief Description
5-chloro-2-methyl-4-isothiazolin-3-one	N/E	N/E	N/E
2-methyl-4-isothiazolin-3-one	N/E	N/E	N/E

Likely Routes of Exposure: N/D

Symptoms

Inhalation:	N/D
Eye Contact:	N/D
Skin Contact:	N/D
Ingestion:	N/D

Skin Corrosion/Irritation: N/D

Serious Eye Damage/Eye Irritation: N/D

Sensitization: N/D

Germ Cell Mutagenicity: N/D

Reproductive/Developmental Toxicity: N/D

Specific Target Organ Toxicity

Single Exposure:	N/D
Repeated Exposure:	N/D

Aspiration Hazard: N/D

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Section 14. Transport Information

Controlling Regulation	UN/NA#:	Proper Shipping Name:	Technical Name:	Hazard Class:	Packing Group:
DOT	UN1760	CORROSIVE LIQUIDS, N.O.S.	(5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE AND 2-METHYL-4-ISOTHIAZOLIN-3-ONE)	8	PGII
IMDG	UN1760	CORROSIVE LIQUIDS, N.O.S.	(5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE AND 2-METHYL-4-ISOTHIAZOLIN-3-ONE)	8	PGII
TDG	UN1760	CORROSIVE LIQUIDS, N.O.S.	(5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE AND 2-METHYL-4-ISOTHIAZOLIN-3-ONE)	8	PGII
ICAO	UN1760	CORROSIVE LIQUIDS, N.O.S.	(5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE AND 2-METHYL-4-ISOTHIAZOLIN-3-ONE)	8	PGII
SCT	UN1760	CORROSIVE LIQUIDS, N.O.S.	(5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE AND 2-METHYL-4-ISOTHIAZOLIN-3-ONE)	8	PGII

Note: N/A

Section 15. Regulatory Information

Inventory Status

United States (TSCA):	All ingredients listed.
Canada (DSL/NDL):	All ingredients listed.

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Federal Regulations

SARA Title III Rules

Sections 311/312 Hazard Classes

Fire Hazard:	No
Reactive Hazard:	No
Release of Pressure:	No
Acute Health Hazard:	Yes
Chronic Health Hazard:	No

Other Sections

Component	Section 313 Toxic Chemical	Section 302 EHS TPQ	CERCLA RQ
5-chloro-2-methyl-4-isothiazolin-3-one	N/A	N/A	N/A
2-methyl-4-isothiazolin-3-one	N/A	N/A	N/A

Comments: None.

State Regulations

California Proposition 65: None known.

Special Regulations

Component	States
5-chloro-2-methyl-4-isothiazolin-3-one	None.
2-methyl-4-isothiazolin-3-one	None.

Compliance Information

NSF: N/A

Food Regulations: N/A

KOSHER: This product is certified by the Orthodox Union as Kosher for Passover and year-round use. Only when prepared by the following ChemTreat facilities: Ashland, VA; Eldridge, IA; Nederland, TX; Fontana, CA.

Halal: This product has not been evaluated for Halal approval.

FIFRA: Registered pesticide under 40 CFR 152.10, Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), EPA Registration Number: 15300-24.

Other: PMRA biocide registration NO. 26537.

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Disclaimer

Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, ChemTreat, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ChemTreat, Inc. be responsible for damages of any nature whatsoever resulting from the use or reliance upon information. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.

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Comments: None.

Section 16. Other Information

HMIS Hazard Rating

Health:	3
Flammability:	0
Physical Hazard:	0
PPE:	X

Notes:

The PPE rating depends on circumstances of use. See Section 8 for recommended PPE. The Hazardous Material Information System (HMIS) is a voluntary, subjective alpha-numeric symbolic system for recommending hazard risk and personal protection equipment information. It is a subjective rating system based on the evaluator's understanding of the chemical associated risks. The end-user must determine if the code is appropriate for their use.

Abbreviations

Abbreviation	Definition
<	Less Than
>	Greater Than
ACGIH	American Conference of Governmental Industrial Hygienists
EHS	Environmental Health and Safety Dept
N/A	Not Applicable
N/D	Not Determined
N/E	Not Established
OSHA	Occupational Health and Safety Dept
PEL	Personal Exposure Limit
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weight Average
UNK	Unknown

Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

Revision Date: May 28, 2020

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Chemical Treatment CL2150



SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name:	ChemTreat CL4132
Product Use:	Cooling Water Treatment
Supplier's Name:	ChemTreat, Inc.
Emergency Telephone Number:	(800)424-9300 (Toll Free)
Address (Corporate Headquarters):	5640 Cox Road Glen Allen, VA 23060
Telephone Number for Information:	(800)648-4579
Date of SDS:	October 4, 2019
Revision Date:	October 4, 2019
Revision Number:	19100401AN

Section 2. Hazard(s) Identification

Signal Word:	DANGER
GHS Classification(s):	Corrosive to Metals – Category 1 Skin corrosion/irritation – Category 1b Eye damage/irritation – Category 1
Hazard Statement(s):	H290 May be corrosive to metals. H314 Causes severe skin burns and eye damage. H318 Causes serious eye damage.
Precautionary Statement(s):	
Prevention:	P234 Keep only in original container. P280 Do not breathe dust/fume/gas/mist/vapors/spray. P264 Wash thoroughly after handling. P280 Wear protective gloves/protective clothing/eye protection/face protection.

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Response: P301 + 330 + 331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Storage: P405 Store locked up.

Disposal: P501 Dispose of contents and container in accordance with applicable local, regional, national, and/or international regulations.

System of Classification Used: Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Hazards Not Otherwise Classified: None.

Section 3. Composition/Hazardous Ingredients

Component	CAS Registry #	Wt. %
Chlorotolyltriazole sodium salt	202420-04-0	10 - 20
Dichlorotolyltriazole	N/A	2.5 - 10
Sodium 4(or 5)-methyl-1H-benzotriazole	84665-57-2	1 - 5
Sodium hydroxide	1310-73-2	1 - 5

Comments If chemical identity and/or exact percentage of composition has been withheld, this information is considered to be a trade secret.

Section 4. First Aid Measures

Inhalation: Call a POISON CENTER or doctor/physician if you feel unwell.

Eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor/physician.

Skin: Immediately remove/take off all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before re-use. Immediately call a poison center or doctor/physician.

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Ingestion: Rinse mouth. Call a poison center or doctor/physician if you feel unwell.

Most Important Symptoms: N/D

Indication of Immediate Medical Attention and Special Treatment Needed, if Necessary: N/A

Section 5. Fire Fighting Measures

Flammability of the Product: Not flammable.

Suitable Extinguishing Media: Use extinguishing media suitable to surrounding fire.

Specific Hazards Arising from the Chemical: Containers exposed in a fire should be cooled with water to prevent vapor pressure build-up leading to rupture.

Protective Equipment: If product is involved in a fire, wear full protective clothing including a positive-pressure, NIOSH approved, self-contained breathing apparatus.

Section 6. Accidental Release Measures

Personal Precautions: Use appropriate Personal Protective Equipment (PPE).

Environmental Precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.

Methods for Cleaning up: Contain and/or absorb spill with inert material then place in suitable container.

Other Statements: If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

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Section 7. Handling and Storage

Handling: Wear appropriate Personal Protective Equipment (PPE) when handling this product. Do not get in eyes, or on skin and clothing. Wash thoroughly after handling. Do not ingest. Avoid breathing vapors, mist or dust.

Storage: Store away from incompatible materials (see Section 10). Store at ambient temperatures. Keep container securely closed when not in use. Label precautions also apply to empty container. Recondition or dispose of empty containers in accordance with government regulations. For Industrial use only.
Do not Freeze. Store above Freeze Point. If freezes, then must warm to freeze recovery temperature 68°F and then mechanical mixing is required.

Section 8. Exposure Controls/Personal Protection

Exposure Limits

Component	Source	Exposure Limits
Chlorotolyltriazole sodium salt	N/E	N/E
Dichlorotolyltriazole	N/E	N/E
Sodium 4(or 5)-methyl-1H-benzotriazole	N/E	N/E
Sodium hydroxide	ACGIH TLV	2 mg/m ³ Ceiling
	OSHA PEL	2 mg/m ³ TWA

Engineering Controls: Use only with adequate ventilation. The use of local ventilation is recommended to control emission near the source.

Personal Protection

Eyes: Wear chemical splash goggles or safety glasses with full-face shield. Maintain eyewash fountain in work area.

Skin: Maintain quick-drench facilities in work area.
Wear butyl rubber or neoprene gloves. Wash them after each use and replace as necessary. If conditions warrant, wear protective clothing such as boots, aprons, and coveralls to prevent skin contact.

Respiratory: If misting occurs, wear a NIOSH-approved respirator with Organic Vapor Cartridges, in accordance with 29 CFR 1910.134.

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Section 9. Physical and Chemical Properties

Physical State and Appearance:	Liquid, Dark Straw, Clear
Specific Gravity:	1.161 @ 20°C
pH:	13.0 @ 20°C, 100.0%
Freezing Point:	12.2°F
Flash Point:	N/A
Odor:	Mild
Melting Point:	N/D
Initial Boiling Point and Boiling Range:	212°F
Solubility in Water:	N/D
Evaporation Rate:	N/A
Vapor Density:	Lighter than air
Molecular Weight:	N/D
Viscosity:	N/D
Flammability (solid, gas):	N/D
Flammable Limits:	N/A
Autoignition Temperature:	N/A
Density:	9.68 LB/GA
Vapor Pressure:	<18 mmHg @ 68°F
% VOC:	N/D
Odor Threshold	N/D
n-octanol Partition Coefficient	N/D
Decomposition Temperature	N/D

Section 10. Stability and Reactivity

Chemical Stability: Stable at normal temperatures and pressures.

Incompatibility with Various Substances: Strong acids, Strong oxidizers.

Hazardous Decomposition Products: Oxides of carbon, Oxides of nitrogen, Hydrogen cyanide.

Possibility of Hazardous Reactions: None known.

Reactivity: N/D

Conditions To Avoid: N/D

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Section 11. Toxicological Information

Acute Toxicity

Chemical Name	Exposure	Type of Effect	Concentration	Species
Sodium hydroxide	Oral	LD50	300 MG/KG	Rat
	Dermal	LD50	1350 MG/KG	Rabbit
ChemTreat CL4132	Oral	LD50	>5000 MG/KG	Rat
	Dermal	LD50	>5000 MG/KG	Rat

Carcinogenicity Category

Component	Source	Code	Brief Description
Chlorotolyltriazole sodium salt	N/E	N/E	N/E
Dichlorotolyltriazole	N/E	N/E	N/E
Sodium 4(or 5)-methyl-1H-benzotriazole	N/E	N/E	N/E
Sodium hydroxide	N/E	N/E	N/E

Likely Routes of Exposure: N/D

Symptoms

Inhalation: N/D
Eye Contact: N/D
Skin Contact: N/D
Ingestion: N/D

Skin Corrosion/Irritation: N/D

Serious Eye Damage/Eye Irritation: N/D

Sensitization: N/D

Germ Cell Mutagenicity: N/D

Reproductive/Developmental Toxicity: N/D

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Specific Target Organ Toxicity

Single Exposure: N/D

Repeated Exposure: N/D

Aspiration Hazard: N/D

Comments: None.

Section 12. Ecological Information

Ecotoxicity

Species	Duration	Type of Effect	Test Results
Ceriodaphnia dubia	48h	LC50	108 mg/l
Fathead Minnow	96h	LC50	44.1 mg/l
	7d	NOEC	12.5 mg/l
	7d	LOEC	25 mg/l
	7d	IC25	31.4 mg/l
Ceriodaphnia dubia	7d	NOEC	12.5 mg/l
	7d	LOEC	25 mg/l
	7d	IC25	22.4 mg/l

Persistence and Biodegradability: N/D

Bioaccumulative Potential: N/D

Mobility In Soil: N/D

Other Adverse Effects: N/D

Comments: None.

Section 13. Disposal Considerations

Dispose of in accordance with local, state and federal regulations.
EPA corrosivity characteristic hazardous waste D002 when disposed of in the original product form.

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Section 14. Transport Information

Controlling Regulation	UN/NA#	Proper Shipping Name	Technical Name	Hazard Class	Packing Group
DOT	UN1760	CORROSIVE LIQUIDS, N.O.S.	(SODIUM HYDROXIDE AND HALOGENATED AROMATIC HETEROCYCLE SODIUM SALT)	8	PGII
SCT	UN1760	CORROSIVE LIQUIDS, N.O.S.	(SODIUM HYDROXIDE AND HALOGENATED AROMATIC HETEROCYCLE SODIUM SALT)	8	PGII
TDG	UN1760	CORROSIVE LIQUIDS, N.O.S.	(SODIUM HYDROXIDE AND HALOGENATED AROMATIC HETEROCYCLE SODIUM SALT)	8	PGII
ANTT	UN1760	CORROSIVE LIQUIDS, N.O.S.	(SODIUM HYDROXIDE AND HALOGENATED AROMATIC HETEROCYCLE SODIUM SALT)	8	PGII

Note: N/A

Section 15. Regulatory Information

Inventory Status

United States (TSCA): All ingredients listed.
Canada (DSL/NDL): All ingredients listed.

Federal Regulations

SARA Title III Rules

Sections 311/312 Hazard Classes

Fire Hazard: No
Reactive Hazard: No
Release of Pressure: No
Acute Health Hazard: Yes
Chronic Health Hazard: No

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Other Sections

Component	Section 313 Toxic Chemical	Section 302 EHS TPQ	CERCLA RQ
Chlorotolyltriazole sodium salt	N/A	N/A	N/A
Dichlorotolyltriazole	N/A	N/A	N/A
Sodium 4(or 5)-methyl-1H-benzotriazole	N/A	N/A	N/A
Sodium hydroxide	N/A	N/A	1000

Comments: None.

State Regulations

California Proposition 65: None known.

Special Regulations

Component	States
Chlorotolyltriazole sodium salt	None.
Dichlorotolyltriazole	None.
Sodium 4(or 5)-methyl-1H-benzotriazole	None.
Sodium hydroxide	MA, MN, NY, PA, WA

Compliance Information

NSF: N/A

Food Regulations: N/A

KOSHER: This product has not been evaluated for Kosher approval.

Halal: This product has not been evaluated for Halal approval.

FIFRA: N/A

Other: None

Comments: None.

Section 16. Other Information

HMIS Hazard Rating

Health: 3
Flammability: 1
Physical Hazard: 0
PPE: X

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Notes:

The PPE rating depends on circumstances of use. See Section 8 for recommended PPE.
The Hazardous Material Information System (HMIS) is a voluntary, subjective alpha-numeric symbolic system for recommending hazard risk and personal protection equipment information. It is a subjective rating system based on the evaluator's understanding of the chemical associated risks. The end-user must determine if the code is appropriate for their use.

Abbreviations

Abbreviation	Definition
<	Less Than
>	Greater Than
ACGIH	American Conference of Governmental Industrial Hygienists
EHS	Environmental Health and Safety Dept.
N/A	Not Applicable
N/D	Not Determined
N/E	Not Established
OSHA	Occupational Health and Safety Dept.
PEL	Personal Exposure Limit
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weight Average
UNK	Unknown

Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

Revision Date: October 4, 2019

Disclaimer

Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, ChemTreat, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ChemTreat, Inc. be responsible for damages of any nature whatsoever resulting from the use or reliance upon information. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.

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Section 3. Composition/Hazardous Ingredients

Component	CAS Registry #	Wt.%
2-Phosphono-1,2,4-butane tricarboxylic acid	37971-36-1	3 - 7

Comments: If chemical identity and/or exact percentage of composition has been withheld, this information is considered to be a trade secret.

Section 4. First Aid Measures

Inhalation:	Remove to fresh air and keep at rest in a position comfortable for breathing. Call a poison center or doctor/physician if you feel unwell.
Eyes:	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.
Skin:	Wash with plenty of soap and water. Call a poison center or doctor/physician if you feel unwell.
Ingestion:	DO NOT INDUCE VOMITING. Rinse mouth. Call a POISON CENTER or doctor/physician if you feel unwell.
Most Important Symptoms:	N/D
Indication of Immediate Medical Attention and Special Treatment Needed, if Necessary:	N/A

Section 5. Fire Fighting Measures

Flammability of the Product:	Not flammable.
Suitable Extinguishing Media:	Use extinguishing media suitable to surrounding fire.
Specific Hazards Arising from the Chemical:	None known.

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Quadrasperse® CL5859



SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name:	Quadrasperse® CL5859
Product Use:	Cooling Water Treatment
Supplier's Name:	ChemTreat, Inc.
Emergency Telephone Number:	(800)424-9300 (Toll Free)
Address (Corporate Headquarters):	5640 Cox Road Glen Allen, VA 23060
Telephone Number for Information:	(800)648-4579
Date of SDS:	February 7, 2019
Revision Date:	February 7, 2019
Revision Number:	19020701AN

Section 2. Hazard(s) Identification

Signal Word:	WARNING
GHS Classification(s):	Eye damage/irritation – Category 2b Acute Toxicity Dermal – Category 5 Acute Toxicity Inhalation – Category 5 Acute Toxicity Oral – Category 5
Hazard Statement(s):	H320 Causes eye irritation. H313 May be harmful in contact with skin. H333 May be harmful if inhaled. H303 May be harmful if swallowed.
Precautionary Statement(s):	
Prevention:	P264 Wash thoroughly after handling.
Response:	None.
Storage:	None.
Disposal:	None.
System of Classification Used:	Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).
Hazards Not Otherwise Classified:	None.

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Quadrasperse® CL5859



Protective Equipment: If product is involved in a fire, wear full protective clothing including a positive-pressure, NIOSH approved, self-contained breathing apparatus.

Section 6. Accidental Release Measures

Personal Precautions:	Use appropriate Personal Protective Equipment (PPE).
Environmental Precautions:	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.
Methods for Cleaning up:	Contain and recover liquid when possible. Flush spill area with water spray.
Other Statements:	None.

Section 7. Handling and Storage

Handling:	Wear appropriate Personal Protective Equipment (PPE) when handling this product. Do not get in eyes, or on skin and clothing. Wash thoroughly after handling. Do not ingest. Avoid breathing vapors, mist or dust.
Storage:	Store away from incompatible materials (see Section 10). Store at ambient temperatures. Keep container securely closed when not in use. Label precautions also apply to empty container. Recondition or dispose of empty containers in accordance with government regulations. For Industrial use only. Do not store or handle in aluminum, zinc, copper, or their alloys. Store above Freeze Point.

Section 8. Exposure Controls/Personal Protection

Exposure Limits

Component	Source	Exposure Limits
2-Phosphono-1,2,4-butane tricarboxylic acid	N/E	N/E

Engineering Controls: Use only with adequate ventilation. The use of local ventilation is recommended to control emission near the source.

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Quadrasperse® CL5859



Personal Protection

Eyes:	Wear chemical splash goggles or safety glasses with full-face shield. Maintain eyewash fountain in work area.
Skin:	Maintain quick-drench facilities in work area. Wear butyl rubber or neoprene gloves. Wash them after each use and replace as necessary. If conditions warrant, wear protective clothing such as boots, aprons, and coveralls to prevent skin contact.
Respiratory:	If misting occurs, use NIOSH approved organic vapor/acid gas dual cartridge respirator with a dust/mist prefilter in accordance with 29 CFR 1910.134.

Section 9. Physical and Chemical Properties

Physical State and Appearance:	Liquid, Yellow, Clear
Specific Gravity:	1.153 @ 20°C
pH:	3.4 @ 20°C, 100.0%
Freezing Point:	34°F
Flash Point:	N/A
Odor:	Mild
Melting Point:	N/A
Initial Boiling Point and Boiling Range:	N/D
Solubility in Water:	Complete
Evaporation Rate:	N/D
Vapor Density:	N/D
Molecular Weight:	N/D
Viscosity:	<200 CPS @ 20°C
Flammability (solid, gas):	N/D
Flammable Limits:	N/A
Autoignition Temperature:	N/A
Density:	9.62 LB/GA
Vapor Pressure:	N/D
% VOC:	N/D
Odor Threshold	N/D
n-octanol Partition Coefficient	N/D
Decomposition Temperature	N/D

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Section 10. Stability and Reactivity

Chemical Stability:	Stable at normal temperatures and pressures.
Incompatibility with Various Substances:	Strong oxidizers, Strong bases.
Hazardous Decomposition Products:	Oxides of nitrogen, Oxides of phosphorus, Oxides of carbon.
Possibility of Hazardous Reactions:	None known.
Reactivity:	N/D
Conditions To Avoid:	N/D

Section 11. Toxicological Information

Acute Toxicity

Chemical Name	Exposure	Type of Effect	Concentration	Species
2-Phosphono-1,2,4-butane tricarboxylic acid	Oral	LD50	>6500 MG/KG	Rat

Carcinogenicity Category

Component	Source	Code	Brief Description
2-Phosphono-1,2,4-butane tricarboxylic acid	N/E	N/E	N/E

Likely Routes of Exposure: N/D

Symptoms

Inhalation:	N/D
Eye Contact:	N/D
Skin Contact:	N/D
Ingestion:	N/D

Skin Corrosion/Irritation: N/D

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Serious Eye Damage/Eye Irritation:	N/D
Sensitization:	N/D
Germ Cell Mutagenicity:	N/D
Reproductive/Developmental Toxicity:	N/D
Specific Target Organ Toxicity	
Single Exposure:	N/D
Repeated Exposure:	N/D
Aspiration Hazard:	N/D
Comments:	None.

Section 12. Ecological Information

Ecotoxicity

Species	Duration	Type of Effect	Test Results
Ceriodaphnia dubia	48h	LC50	934 mg/l
Fathead Minnow	96h	LC50	4682 mg/l

Persistence and Biodegradability:	N/D
Bioaccumulative Potential:	N/D
Mobility In Soil:	N/D
Other Adverse Effects:	N/D
Comments:	Aquatic toxicity data is based on testing of a similar product.

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Section 13. Disposal Considerations

Dispose of in accordance with local, state and federal regulations.

Section 14. Transport Information

Controlling Regulation	UN/NA#:	Proper Shipping Name:	Technical Name:	Hazard Class:	Packing Group:
DOT	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
TDG	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A

Note: N/A

Section 15. Regulatory Information

Inventory Status

United States (TSCA):	All ingredients listed.
Canada (DSL/NDSL):	All ingredients listed.

Federal Regulations

SARA Title III Rules

Sections 311/312 Hazard Classes

Fire Hazard:	No
Reactive Hazard:	No
Release of Pressure:	No
Acute Health Hazard:	Yes
Chronic Health Hazard:	No

Other Sections

Component	Section 313 Toxic Chemical	Section 302 EHS TPQ	CERCLA RQ
2-Phosphono-1,2,4-butane tricarboxylic acid	N/A	N/A	N/A

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Comments: None.

State Regulations

California Proposition 65: None known.

Special Regulations

Component	States
2-Phosphono-1,2,4-butane tricarboxylic acid	None.

Compliance Information

NSF: N/A
Food Regulations: N/A
KOSHER: This product has not been evaluated for Kosher approval.
Halal: This product has not been evaluated for Halal approval.
FIFRA: N/A
Other: None

Comments: None.

Section 16. Other Information

HMIS Hazard Rating

Health: 2
Flammability: 0
Physical Hazard: 0
PPE: X

Notes: The PPE rating depends on circumstances of use. See Section 8 for recommended PPE. The Hazardous Material Information System (HMIS) is a voluntary, subjective alpha-numeric symbolic system for recommending hazard risk and personal protection equipment information. It is a subjective rating system based on the evaluator's understanding of the chemical associated risks. The end-user must determine if the code is appropriate for their use.

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SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name: ChemTreat CL1495
Product Use: Cooling Water Treatment
Supplier's Name: ChemTreat, Inc.
Emergency Telephone Number: (800)424-9300 (Toll Free)
Address (Corporate Headquarters): 5640 Cox Road
Glen Allen, VA 23060
Telephone Number for Information: (800)648-4579
Date of SDS: February 7, 2019
Revision Date: February 7, 2019
Revision Number: 19020701AN

Section 2. Hazard(s) Identification

Signal Word: **WARNING**

GHS Classification(s): Acute Toxicity Dermal – Category 5
Acute Toxicity Inhalation – Category 5
Acute Toxicity Oral – Category 5

Hazard Statement(s): H313 May be harmful in contact with skin.
H333 May be harmful if inhaled.
H303 May be harmful if swallowed.

Precautionary Statement(s): No significant health risks are expected from exposures under normal conditions of use.

Prevention: None.
Response: None.
Storage: None.
Disposal: None.

System of Classification Used: Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Hazards Not Otherwise Classified: None.

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Abbreviations

Abbreviation	Definition
<	Less Than
>	Greater Than
ACGIH	American Conference of Governmental Industrial Hygienists
EHS	Environmental Health and Safety Dept
N/A	Not Applicable
N/D	Not Determined
N/E	Not Established
OSHA	Occupational Health and Safety Dept
PEL	Personal Exposure Limit
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weight Average
UNK	Unknown

Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

Revision Date: February 7, 2019

Disclaimer

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Section 3. Composition/Hazardous Ingredients

Component	CAS Registry #	Wt.%
Potassium phosphate, tribasic	7778-53-2	10 - 30
Tetrapotassium pyrophosphate	7320-34-5	5 - 10

Comments: If chemical identity and/or exact percentage of composition has been withheld, this information is considered to be a trade secret.

Section 4. First Aid Measures

Inhalation: Remove to fresh air and keep at rest in a position comfortable for breathing. Call a poison center or doctor/physician if you feel unwell.

Eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.

Skin: Wash with plenty of soap and water. Call a poison center or doctor/physician if you feel unwell.

Ingestion: DO NOT INDUCE VOMITING. Rinse mouth. Call a POISON CENTER or doctor/physician if you feel unwell.

Most Important Symptoms: N/D

Indication of Immediate Medical Attention and Special Treatment Needed, if Necessary: N/A

Section 5. Fire Fighting Measures

Flammability of the Product: Not flammable.

Suitable Extinguishing Media: Use extinguishing media suitable to surrounding fire.

Specific Hazards Arising from the Chemical: Product may emit toxic gases or fumes under fire conditions.

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Protective Equipment:

If product is involved in a fire, wear full protective clothing including a positive-pressure, NIOSH approved, self-contained breathing apparatus.

Section 6. Accidental Release Measures

Personal Precautions:

Use appropriate Personal Protective Equipment (PPE).

Environmental Precautions:

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.

Methods for Cleaning up:

Contain and recover liquid when possible. Flush spill area with water spray.

Other Statements:

None.

Section 7. Handling and Storage

Handling:

Wear appropriate Personal Protective Equipment (PPE) when handling this product. Do not get in eyes, or on skin and clothing. Wash thoroughly after handling. Do not ingest. Avoid breathing vapors, mist or dust.

Storage:

Store away from incompatible materials (see Section 10). Store at ambient temperatures. Keep container securely closed when not in use. Label precautions also apply to empty container. Recondition or dispose of empty containers in accordance with government regulations. For Industrial use only. Store above Freeze Point.

Section 8. Exposure Controls/Personal Protection

Exposure Limits

Component	Source	Exposure Limits
Potassium phosphate, tribasic	N/E	N/E
Tetrapotassium pyrophosphate	N/E	N/E

Engineering Controls:

Use only with adequate ventilation. The use of local ventilation is recommended to control emission near the source.

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Personal Protection

Eyes:

Wear chemical splash goggles or safety glasses with full-face shield. Maintain eyewash fountain in work area.

Skin:

Maintain quick-drench facilities in work area. Wear butyl rubber or neoprene gloves. Wash them after each use and replace as necessary. If conditions warrant, wear protective clothing such as boots, aprons, and coveralls to prevent skin contact.

Respiratory:

If misting occurs, use NIOSH approved organic vapor/acid gas dual cartridge respirator with a dust/mist prefilter in accordance with 29 CFR 1910.134.

Section 9. Physical and Chemical Properties

Physical State and Appearance:

Liquid, Colorless, Clear

Specific Gravity:

1.481 @ 20°C

pH:

9.2 @ 20°C, 100.0%

Freezing Point:

<-13°F

Flash Point:

N/D

Odor:

Mild

Melting Point:

N/A

Initial Boiling Point and Boiling Range:

N/D

Solubility in Water:

Complete

Evaporation Rate:

N/D

Vapor Density:

N/D

Molecular Weight:

N/D

Viscosity:

<100 CPS @ 20°C

Flammability (solid, gas):

N/D

Flammable Limits:

N/A

Autoignition Temperature:

N/A

Density:

12.35 LB/GA

Vapor Pressure:

N/D

% VOC:

N/D

Odor Threshold

N/D

n-octanol Partition Coefficient

N/D

Decomposition Temperature

N/D

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Section 10. Stability and Reactivity

Chemical Stability:

Stable at normal temperatures and pressures.

Incompatibility with Various Substances:

Strong oxidizers, Strong acids.

Hazardous Decomposition Products:

Oxides of carbon, Oxides of phosphorus.

Possibility of Hazardous Reactions:

None known.

Reactivity:

N/D

Conditions To Avoid:

N/D

Section 11. Toxicological Information

Acute Toxicity

Chemical Name	Exposure	Type of Effect	Concentration	Species
Tetrapotassium pyrophosphate	Oral	LD50	2980 MG/KG	Rat
	Dermal	LD50	>7940 MG/KG	Rabbit

Carcinogenicity Category

Component	Source	Code	Brief Description
Potassium phosphate, tribasic	N/E	N/E	N/E
Tetrapotassium pyrophosphate	N/E	N/E	N/E

Likely Routes of Exposure:

N/D

Symptoms

Inhalation: N/D

Eye Contact: N/D

Skin Contact: N/D

Ingestion: N/D

Skin Corrosion/Irritation:

N/D

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Serious Eye Damage/Eye Irritation:

N/D

Sensitization:

N/D

Germ Cell Mutagenicity:

N/D

Reproductive/Developmental Toxicity:

N/D

Specific Target Organ Toxicity

Single Exposure:

N/D

Repeated Exposure:

N/D

Aspiration Hazard:

N/D

Comments:

None.

Section 12. Ecological Information

Ecotoxicity

Species	Duration	Type of Effect	Test Results
Centodaphnia dubia	48h	LC50	1048 mg/l
Fathead Minnow	96h	LC50	1768 mg/l

Persistence and Biodegradability:

N/D

Bioaccumulative Potential:

N/D

Mobility In Soil:

N/D

Other Adverse Effects:

N/D

Comments:

None.

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Section 13. Disposal Considerations

Dispose of in accordance with local, state and federal regulations.

Section 14. Transport Information

Controlling Regulation	UN/NA#	Proper Shipping Name	Technical Name	Hazard Class	Packing Group
DOT	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
IMDG	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
ICAO	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
TDG	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
SCT	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A

Note: N/A

Section 15. Regulatory Information

Inventory Status

United States (TSCA): All ingredients listed.
Canada (DSL/NDL): All ingredients listed.

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Section 16. Other Information

HMIS Hazard Rating

Health: 1
Flammability: 0
Physical Hazard: 0
PPE: X

Notes: The PPE rating depends on circumstances of use. See Section 8 for recommended PPE. The Hazardous Material Information System (HMIS) is a voluntary, subjective alpha-numeric symbolic system for recommending hazard risk and personal protection equipment information. It is a subjective rating system based on the evaluator's understanding of the chemical associated risks. The end-user must determine if the code is appropriate for their use.

Abbreviations

Abbreviation	Definition
<	Less Than
>	Greater Than
ACGIH	American Conference of Governmental Industrial Hygienists
EHS	Environmental Health and Safety Dept
N/A	Not Applicable
N/D	Not Determined
N/E	Not Established
OSHA	Occupational Health and Safety Dept
PEL	Personal Exposure Limit
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weight Average
UNK	Unknown

Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

Revision Date: February 7, 2019

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Federal Regulations

SARA Title III Rules

Sections 311/312 Hazard Classes

Fire Hazard: No
Reactive Hazard: No
Release of Pressure: No
Acute Health Hazard: Yes
Chronic Health Hazard: No

Other Sections

Component	Section 313 Toxic Chemical	Section 302 EHS TPO	CERCLA RQ
Potassium phosphate, tribasic	N/A	N/A	N/A
Tetrapotassium pyrophosphate	N/A	N/A	N/A

Comments: None.

State Regulations

California Proposition 65: None known.

Special Regulations

Component	States
Potassium phosphate, tribasic	None.
Tetrapotassium pyrophosphate	None.

Compliance Information

NSF: N/A
Food Regulations: N/A
KOSHER: This product has not been evaluated for Kosher approval.
Halal: This product has not been evaluated for Halal approval.
FIFRA: N/A
Other: None
Comments: None.

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Disclaimer

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SAFETY DATA SHEET



1. Identification

Product identifier	BL1746
Other means of identification	
Product code	C-SERIES™ BL1746
Recommended use	Boiler Water Treatment
Recommended restrictions	None known.
Manufacturer/Importer/Supplier/Distributor information	
Manufacturer	
Company name	ChemTreat, Inc.
Address	5640 Cox Road Glen Allen, VA 23060 United States 800-648-4579 chemtreat.com productcompliance@chemtreat.com
Telephone	
Website	
E-mail	
Emergency phone number	800-424-9300

2. Hazard(s) identification

Physical hazards	Not classified.	
Health hazards	Skin corrosion/irritation Serious eye damage/eye irritation	Category 1B Category 1
Environmental hazards	Not classified.	
OSHA defined hazards	Not classified.	

Label elements



Signal word	Danger
Hazard statement	Causes severe skin burns and eye damage. Causes serious eye damage.
Precautionary statement	
Prevention	Do not breathe mist/vapors. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection.
Response	If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. Wash contaminated clothing before reuse.
Storage	Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	None.

3. Composition/information on ingredients

Chemical name	Common name and synonyms	CAS number	%
Sodium hydroxide		1310-73-2	3 - < 5
Other components below reportable levels			90 - 100

Material name: BL1746
C-SERIES™ BL1746 Version #: 01 Issue date: 05-08-2023

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US. OSHA Table Z-1 Permissible Exposure Limits (PEL) for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	PEL	2 mg/m3

US. ACGIH Threshold Limit Values (TLV)

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	IDLH	10 mg/m3

US. NIOSH: Pocket Guide to Chemical Hazards Recommended Exposure Limits (REL)

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear safety glasses with side shields (or goggles) and a face shield.
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves.
Other	Wear appropriate chemical resistant clothing.
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.
--------------------------------	---

9. Physical and chemical properties

Appearance	
Physical state	Liquid.
Form	Liquid.
Color	Colorless.
Odor	Mild
Odor threshold	Not available.
pH	12.5 - 14
Melting point/freezing point	28.40 °F (-2.00 °C)
Initial boiling point and boiling range	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	Not available.

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C-SERIES™ BL1746 Version #: 01 Issue date: 05-08-2023

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4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Most important symptoms/effects, acute and delayed	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim under observation. Symptoms may be delayed.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist/vapors. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling	Do not breathe mist/vapors. Do not get in eyes, on skin, or on clothing. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store locked up. Store in tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits	The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.
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Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	0 - 200 cps
Other information	
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Pounds per gallon	9.22
Specific gravity	1.09 - 1.11 @ 20°C

10. Stability and reactivity

Reactivity	Reacts violently with strong acids. This product may react with oxidizing agents.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Contact with incompatible materials. Do not mix with other chemicals.
Incompatible materials	Strong acids. Oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure		
Inhalation	May cause irritation to the respiratory system. Prolonged inhalation may be harmful.	
Skin contact	Causes severe skin burns.	
Eye contact	Causes serious eye damage.	
Ingestion	Causes digestive tract burns.	
Symptoms related to the physical, chemical and toxicological characteristics	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.	
Information on toxicological effects		
Acute toxicity	Not known.	
Components	Species	Test Results
Sodium hydroxide (CAS 1310-73-2)		
Acute		
Dermal		
LD50	Rabbit	1350 mg/kg
Oral		
LD50	Rat	140 - 340 mg/kg
Skin corrosion/irritation	Causes severe skin burns and eye damage.	
Serious eye damage/eye irritation	Causes serious eye damage.	
Respiratory or skin sensitization		
Respiratory sensitization	Not a respiratory sensitizer.	
Skin sensitization	This product is not expected to cause skin sensitization.	
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.	
Carcinogenicity	Not classifiable as to carcinogenicity to humans.	
IARC Monographs. Overall Evaluation of Carcinogenicity		
Not listed.		

Material name: BL1746
C-SERIES™ BL1746 Version #: 01 Issue date: 05-08-2023

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OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not regulated.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.
Chronic effects	Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.		
--------------------	--	--	--

Product	Species	Test Results
BL1746		
Aquatic		
Acute		
Crustacea	EC50	Daphnia > 752 mg/l, 48 hours (Estimated)
	LC50	Daphnia pulex > 100 mg/l, 48 hours (Estimated)
Fish	LC50	Fathead minnow (Pimephales promelas) > 100 mg/l, 96 hours (Estimated)
		Fish > 2717 mg/l, 96 hours (Estimated)
Components	Species	Test Results

Sodium hydroxide (CAS 1310-73-2)

Aquatic		
Acute		
Crustacea	EC50	Water flea (Ceriodaphnia dubia) >= 34.59 - <= 47.13 mg/l, 48 hours
Fish	LC50	Western mosquitofish (Gambusia affinis) 125 mg/l, 96 hours

Persistence and degradability No data is available on the degradability of any ingredients in the mixture.**Bioaccumulative potential** No data available.**Mobility in soil** No data available.**Other adverse effects** No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions	Dispose of this material and its container to hazardous or special waste collection point. Incinerate the material under controlled conditions in an approved incinerator. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	D002: Waste Corrosive material pH ≤2 or ≥12.5, or corrosive to steel The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT	
UN number	UN1824
UN proper shipping name	Sodium hydroxide solution

Material name: BL1746

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Transport hazard class(es)

Class	8
Subsidiary risk	-
Label(s)	8
Packing group	II
Environmental hazards	
Marine pollutant	No.
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	B2, IB2, N34, T7, TP2
Packaging exceptions	154
Packaging non bulk	202
Packaging bulk	242

IATA

UN number	UN1824
UN proper shipping name	Sodium hydroxide solution
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Environmental hazards	No.
ERG Code	8L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

Other information

Passenger and cargo aircraft	Allowed with restrictions.
Cargo aircraft only	Allowed with restrictions.

IMDG

UN number	UN1824
UN proper shipping name	SODIUM HYDROXIDE SOLUTION
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Environmental hazards	No.
Marine pollutant	No.
EmS	F-A, S-B
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

DOT



Material name: BL1746

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15. Regulatory information

US federal regulations	This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
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Toxic Substances Control Act (TSCA)

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D) Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Sodium hydroxide (CAS 1310-73-2) Listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical

Yes

Classified hazard categories Skin corrosion or irritation
Serious eye damage or eye irritation

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

Sodium hydroxide (CAS 1310-73-2)

California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to www.P65Warnings.ca.gov.

International inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Industrial Chemicals (AICIS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes

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Country(s) or region	Inventory name	On inventory (yes/no)*
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

Compliance Information: Halal

Compliance Information: Kosher

This product is certified by the Orthodox Unionas Kosher pareve

The following facilities are under the supervision of the Kashruth Division of the Orthodox Union (OU) and are Kosher as indicated below:

Ashland, VA

Eldridge, IA

Nederland, TX



Compliance Information: Food Regulations

FDA: All ingredients in this product are authorized in 21 CFR 173.310 for use as "Boiler Water Additives" where the steam may contact food.

16. Other information, including date of preparation or last revision

Issue date	05-08-2023
Version #	01
HMIS® ratings	Health: 3 Flammability: 0 Physical hazard: 0 Personal protection: B
Disclaimer	ChemTreat, Inc. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available. Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, ChemTreat, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ChemTreat, Inc. be responsible for damages of any nature whatsoever resulting from the use or reliance upon information. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.
Other information	Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

Material name: BL1746

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SAFETY DATA SHEET

1. Identification

Product identifier	BL1744
Other means of identification	
Product code	BL1744
Recommended use	Boiler Water Treatment
Recommended restrictions	None known.
Manufacturer/Importer/Supplier/Distributor information	
Manufacturer	
Company name	ChemTreat
Address	5640 Cox Road Glen Allen, VA 23060 United States 800-648-4579 Not available.
Telephone	
E-mail	
Emergency phone number	800-424-9300

2. Hazard(s) identification

Physical hazards	Not classified.	
Health hazards	Skin corrosion/irritation Serious eye damage/eye irritation	Category 1B Category 1
Environmental hazards	Not classified.	
OSHA defined hazards	Not classified.	
Label elements		



Signal word	Danger
Hazard statement	Causes severe skin burns and eye damage. Causes serious eye damage.
Precautionary statement	
Prevention	Do not breathe mist/vapors. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection.
Response	If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. Wash contaminated clothing before reuse.
Storage	Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	None.

3. Composition/information on ingredients

Chemical name	Common name and synonyms	CAS number	%
Sodium hydroxide		1310-73-2	3 - < 5
Other components below reportable levels			90 - 100

Material name: BL1744
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US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)		
Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	PEL	2 mg/m3
US. ACGIH Threshold Limit Values		
Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3
US. NIOSH: Pocket Guide to Chemical Hazards		
Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear safety glasses with side shields (or goggles) and a face shield.
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves.
Other	Wear appropriate chemical resistant clothing.
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.
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9. Physical and chemical properties

Appearance	
Physical state	Liquid.
Form	Liquid.
Color	Light Straw
Odor	Mild
Odor threshold	Not available.
pH	12 - 14
Melting point/freezing point	23.00 °F (-5.00 °C)
Initial boiling point and boiling range	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	Not available.

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4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Most important symptoms/effects, acute and delayed	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim under observation. Symptoms may be delayed.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist/vapors. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS. Avoid discharge into drains, water courses or onto the ground.
Environmental precautions	

7. Handling and storage

Precautions for safe handling	Do not breathe mist/vapors. Do not get in eyes, on skin, or on clothing. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store locked up. Store in tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits	The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.
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Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	0 - 200 cps
Other information	
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Pounds per gallon	9.81
Specific gravity	1.16 - 1.17 @ 20C
VOC	0 %w/w

10. Stability and reactivity

Reactivity	Reacts violently with strong acids. This product may react with oxidizing agents.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Contact with incompatible materials. Do not mix with other chemicals.
Incompatible materials	Strong acids. Oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure	
Inhalation	May cause irritation to the respiratory system. Prolonged inhalation may be harmful.
Skin contact	Causes severe skin burns.
Eye contact	Causes serious eye damage.
Ingestion	Causes digestive tract burns.
Symptoms related to the physical, chemical and toxicological characteristics	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.
Information on toxicological effects	
Acute toxicity	Not known.
Skin corrosion/irritation	Causes severe skin burns and eye damage.
Serious eye damage/eye irritation	Causes serious eye damage.
Respiratory or skin sensitization	
Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	Not classifiable as to carcinogenicity to humans.
IAARC Monographs. Overall Evaluation of Carcinogenicity	
Not listed.	
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)	
Not regulated.	
US. National Toxicology Program (NTP) Report on Carcinogens	
Not listed.	
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.

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Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.
Chronic effects	Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.		
Product	Species	Test Results	
BL1744			
Aquatic			
Acute			
Crustacea	LC50	Water flea (Ceriodaphnia dubia)	1768 mg/l, 48 hours
Fish	LC50	Fathead minnow (Pimephales promelas)	3536 mg/l, 96 hours
Persistence and degradability	No data is available on the degradability of any ingredients in the mixture.		
Bioaccumulative potential	No data available.		
Mobility in soil	No data available.		
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.		

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Incinerate the material under controlled conditions in an approved incinerator. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	D002: Waste Corrosive material [pH <=2 or >=12.5, or corrosive to steel] The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT	
UN number	UN3266
UN proper shipping name	Corrosive liquid, basic, inorganic, n.o.s. (Sodium hydroxide RQ = 2727 LBS)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Label(s)	8
Packing group	II
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	B2, IB2, T11, TP2, TP27
Packaging exceptions	154
Packaging non bulk	202
Packaging bulk	242
IATA	
UN number	UN3266
UN proper shipping name	Corrosive liquid, basic, inorganic, n.o.s. (Sodium hydroxide)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Environmental hazards	No.
ERG Code	8L

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SARA 311/312 Hazardous chemical	Yes
Classified hazard categories	Skin corrosion or irritation Serious eye damage or eye irritation
SARA 313 (TRI reporting)	Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List	Not regulated.
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)	Not regulated.
Safe Drinking Water Act (SDWA)	Not regulated.

US state regulations

California Proposition 65	California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to www.P65Warnings.ca.gov.
US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))	Sodium hydroxide (CAS 1310-73-2)

International inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

Compliance Information: Food Regulations	21 CFR 173.310
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16. Other information, including date of preparation or last revision

Issue date	03-03-2022
Version #	01
HMIS® ratings	Health: 3 Flammability: 0 Physical hazard: 0 Personal protection: B
Disclaimer	ChemTreat cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available. Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, ChemTreat, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ChemTreat, Inc. be responsible for damages of any nature whatsoever resulting from the use or reliance upon information. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.
Other information	Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

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Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed with restrictions.
Cargo aircraft only	Allowed with restrictions.
IMDG	
UN number	UN3266
UN proper shipping name	CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S. (Sodium hydroxide)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Environmental hazards	
Marine pollutant	No.
EmS	F-A, S-B
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not established.
DOT	



IATA: IMDG



15. Regulatory information

US federal regulations	This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
Toxic Substances Control Act (TSCA)	
TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)	Not regulated.
CERCLA Hazardous Substance List (40 CFR 302.4)	Sodium hydroxide (CAS 1310-73-2) Listed.
SARA 304 Emergency release notification	Not regulated.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)	Not regulated.
Superfund Amendments and Reauthorization Act of 1986 (SARA)	
SARA 302 Extremely hazardous substance	Not listed.

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SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name:	ChemTreat BL1794
Product Use:	Boiler Water Treatment
Supplier's Name:	ChemTreat, Inc.
Emergency Telephone Number:	(800)424-9300 (Toll Free)
Address (Corporate Headquarters):	5640 Cox Road Glen Allen, VA 23060
Telephone Number for Information:	(800)648-4579
Date of SDS:	February 7, 2019
Revision Date:	February 7, 2019
Revision Number:	19020701AN

Section 2. Hazard(s) Identification

Signal Word:	WARNING
GHS Classification(s):	Eye damage/irritation – Category 2b Skin corrosion/irritation – Category 2 Acute Toxicity Inhalation – Category 4 Acute Toxicity Oral – Category 4
Hazard Statement(s):	H320 Causes eye irritation. H315 Causes skin irritation. H332 Harmful if inhaled. H302 Harmful if swallowed.
Precautionary Statement(s):	

Prevention:	P264 Wash thoroughly after handling. P270 Do not eat, drink, or smoke when using this product. P261 Avoid breathing dust/fume/gas/mist/vapors/spray. P271 Use only outdoors or in a well-ventilated area. P280 Wear protective gloves/protective clothing/eye protection/face protection.
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**Response:**

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312 Call a POISON CENTER or doctor/physician if you feel unwell.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P332 + P313 If skin irritation develops or persists, get medical advice/attention.
P362 + P364 Take off contaminated clothing and wash it before reuse.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 If eye irritation persists, get medical advice/attention.

Storage: None.**Disposal:** None.**System of Classification Used:** Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).**Hazards Not Otherwise Classified:** None.**Section 3. Composition/Hazardous Ingredients**

Component	CAS Registry #	Wt.%
Sodium phosphate, tribasic	7601-54-9	1 - 5

Comments If chemical identity and/or exact percentage of composition has been withheld, this information is considered to be a trade secret.

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**Section 4. First Aid Measures**

Inhalation: Remove to fresh air and keep at rest in a position comfortable for breathing. Call a poison center or doctor/physician if you feel unwell.

Eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.

Skin: Wash with plenty of soap and water. Take off contaminated clothing and wash before re-use. If skin irritation occurs, seek medical advice/attention.

Ingestion: DO NOT INDUCE VOMITING. Rinse mouth. Call a POISON CENTER or doctor/physician.

Most Important Symptoms: N/D

Indication of Immediate Medical Attention and Special Treatment Needed, if Necessary: N/A

Section 5. Fire Fighting Measures

Flammability of the Product: Not flammable.

Suitable Extinguishing Media: Use extinguishing media suitable to surrounding fire.

Specific Hazards Arising from the Chemical: None known.

Protective Equipment: If product is involved in a fire, wear full protective clothing including a positive-pressure, NIOSH approved, self-contained breathing apparatus.

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**Section 6. Accidental Release Measures**

Personal Precautions: Use appropriate Personal Protective Equipment (PPE).

Environmental Precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.

Methods for Cleaning up: Contain and recover liquid when possible. Flush spill area with water spray.

Other Statements: If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and Storage

Handling: Wear appropriate Personal Protective Equipment (PPE) when handling this product. Do not get in eyes, or on skin and clothing. Wash thoroughly after handling. Do not ingest. Avoid breathing vapors, mist or dust.

Storage: Store away from incompatible materials (see Section 10). Store at ambient temperatures. Keep container securely closed when not in use. Label precautions also apply to empty container. Recondition or dispose of empty containers in accordance with government regulations. For Industrial use only. Store above Freeze Point.

Section 8. Exposure Controls/Personal Protection**Exposure Limits**

Component	Source	Exposure Limits
Sodium phosphate, tribasic	N/E	N/E

Engineering Controls: Use only with adequate ventilation. The use of local ventilation is recommended to control emission near the source.

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**Personal Protection**

Eyes: Wear chemical splash goggles or safety glasses with full-face shield. Maintain eyewash fountain in work area.

Skin: Maintain quick-drench facilities in work area. Wear butyl rubber or neoprene gloves. Wash them after each use and replace as necessary. If conditions warrant, wear protective clothing such as boots, aprons, and coveralls to prevent skin contact.

Respiratory: If misting occurs, use NIOSH approved organic vapor/acid gas dual cartridge respirator with a dust/mist prefilter in accordance with 29 CFR 1910.134.

Section 9. Physical and Chemical Properties

Physical State and Appearance: Liquid, Colorless, Clear

Specific Gravity: 1.040 @ 20°C

pH: 12.1 @ 20°C, 100.0%

Freezing Point: 37°F

Flash Point: N/D

Odor: Odorless

Melting Point: N/D

Initial Boiling Point and Boiling Range: 212°F

Solubility in Water: Complete

Evaporation Rate: <1

Vapor Density: N/D

Molecular Weight: N/A

Viscosity: N/A

Flammability (solid, gas): N/D

Flammable Limits: N/A

Autoignition Temperature: N/A

Density: 8.67 LB/GA

Vapor Pressure: Negligible

% VOC: 0

Odor Threshold N/D

n-octanol Partition Coefficient N/D

Decomposition Temperature N/D

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Section 10. Stability and Reactivity

Chemical Stability:	Stable at normal temperatures and pressures.
Incompatibility with Various Substances:	Strong oxidizers, Acids.
Hazardous Decomposition Products:	Oxides of phosphorus.
Possibility of Hazardous Reactions:	None known.
Reactivity:	N/D
Conditions To Avoid:	N/D

Section 11. Toxicological Information

Acute Toxicity

Chemical Name	Exposure	Type of Effect	Concentration	Species
Sodium phosphate, tribasic	Oral	LD50	7400 MG/KG	Rat

Carcinogenicity Category

Component	Source	Code	Brief Description
Sodium phosphate, tribasic	N/E	N/E	N/E

Likely Routes of Exposure: N/D

Symptoms

Inhalation:	N/D
Eye Contact:	N/D
Skin Contact:	N/D
Ingestion:	N/D

Skin Corrosion/Irritation: N/D

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Serious Eye Damage/Eye Irritation:	N/D
Sensitization:	N/D
Germ Cell Mutagenicity:	N/D
Reproductive/Developmental Toxicity:	N/D
Specific Target Organ Toxicity	
Single Exposure:	N/D
Repeated Exposure:	N/D
Aspiration Hazard:	N/D
Comments:	None.

Section 12. Ecological Information

Ecotoxicity

Species	Duration	Type of Effect	Test Results
Daphnia magna	50h	EC50	2158 mg/l
Bluegill Sunfish	96h	LC50	2682 mg/l
Rainbow Trout	96h	LC50	1463 mg/l
Caridodaphnia dubia	48h	LC50	>10000 mg/l
Fathead Minnow	96h	LC50	>10000 mg/l

Persistence and Biodegradability:	N/D
Bioaccumulative Potential:	N/D
Mobility In Soil:	N/D
Other Adverse Effects:	N/D
Comments:	None.

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Section 13. Disposal Considerations

Dispose of in accordance with local, state and federal regulations.
Not a RCRA-regulated hazardous waste when disposed in the original product form.

Section 14. Transport Information

Controlling Regulation	UN/NA#:	Proper Shipping Name:	Technical Name:	Hazard Class:	Packing Group:
DOT	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
IMDG	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
ICAO	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
TDG	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A

Note: N/A

Section 15. Regulatory Information

Inventory Status

United States (TSCA):	All ingredients listed.
Canada (DSL/NDL):	All ingredients listed.

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Federal Regulations

SARA Title III Rules

Sections 311/312 Hazard Classes

Fire Hazard:	No
Reactive Hazard:	No
Release of Pressure:	No
Acute Health Hazard:	Yes
Chronic Health Hazard:	No

Other Sections

Component	Section 313 Toxic Chemical	Section 302 EHS TPQ	CERCLA RQ
Sodium phosphate, tribasic	N/A	N/A	5000

Comments: None.

State Regulations

California Proposition 65: None known.

Special Regulations

Component	States
Sodium phosphate, tribasic	MN, NY, PA

Compliance Information

NSF:	N/A
Food Regulations:	FDA: All ingredients in this product are authorized in 21 CFR 173.310 for use as "Boiler Water Additives" where the steam may contact food.
KOSHER:	This product is certified by the Orthodox Union as kosher pareve. Only when prepared by the following ChemTreat facilities: Ashland, VA; Eldridge, IA; Nederland, TX.
Halal:	This product has not been evaluated for Halal approval.
FIFRA:	N/A
Other:	None
Comments:	None.

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Section 16. Other Information

HMIS Hazard Rating

Health: 1
Flammability: 0
Physical Hazard: 0
PPE: X

Notes:

The PPE rating depends on circumstances of use. See Section 8 for recommended PPE.
The Hazardous Material Information System (HMIS) is a voluntary, subjective alpha-numeric symbolic system for recommending hazard risk and personal protection equipment information. It is a subjective rating system based on the evaluator's understanding of the chemical associated risks. The end-user must determine if the code is appropriate for their use.

Abbreviations

Abbreviation	Definition
<	Less Than
>	Greater Than
ACGIH	American Conference of Governmental Industrial Hygienists
EHS	Environmental Health and Safety Dept
N/A	Not Applicable
N/D	Not Determined
N/E	Not Established
OSHA	Occupational Health and Safety Dept
PEL	Personal Exposure Limit
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weight Average
UNK	Unknown

Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

Revision Date: February 7, 2019

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Disclaimer

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SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name: ChemTreat BL1260
Product Use: Boiler Water Treatment
Supplier's Name: ChemTreat, Inc.
Emergency Telephone Number: (800)424-9300 (Toll Free)
Address (Corporate Headquarters): 5640 Cox Road
Glen Allen, VA 23060
Telephone Number for Information: (800)648-4579
Date of SDS: July 23, 2018
Revision Date: July 23, 2018
Revision Number: 18072301AN

Section 2. Hazard(s) Identification



Signal Word: **WARNING**

GHS Classification(s): Acute Toxicity Dermal – Category 5
Acute Toxicity Inhalation – Category 4
Acute Toxicity Oral – Category 4

Hazard Statement(s): H313 May be harmful in contact with skin.
H332 Harmful if inhaled.
H302 Harmful if swallowed.

Precautionary Statement(s):

Prevention: P260 Do not breathe dust/fume/gas/mist/vapors/spray.
P271 Use only outdoors or in a well-ventilated area.
P270 Do not eat, drink, or smoke when using this product.

Response: None.

Storage: None.

Disposal: None.

System of Classification Used: Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Hazards Not Otherwise Classified: None.

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Section 3. Composition/Hazardous Ingredients

Component	CAS Registry #	Wt.%
Carbohydrazide	497-18-7	5 - 10

Comments: If chemical identity and/or exact percentage of composition has been withheld, this information is considered to be a trade secret.

Section 4. First Aid Measures

Inhalation: Remove to fresh air and keep at rest in a position comfortable for breathing. Call a poison center or doctor/physician if you feel unwell.

Eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.

Skin: Wash with plenty of soap and water. Call a poison center or doctor/physician if you feel unwell.

Ingestion: DO NOT INDUCE VOMITING. Rinse mouth. Call a POISON CENTER or doctor/physician.

Most Important Symptoms: N/D

Indication of Immediate Medical Attention and Special Treatment Needed, if Necessary: N/A

Section 5. Fire Fighting Measures

Flammability of the Product: Not flammable.

Suitable Extinguishing Media: Use extinguishing media suitable to surrounding fire.

Specific Hazards Arising from the Chemical: Carbon monoxide, carbon dioxide, or hydrazine may be released in a fire.

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**Protective Equipment:**

If product is involved in a fire, wear full protective clothing including a positive-pressure, NIOSH approved, self-contained breathing apparatus.

Section 6. Accidental Release Measures**Personal Precautions:**

Use appropriate Personal Protective Equipment (PPE).

Environmental Precautions:

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.

Methods for Cleaning up:

Contain and recover liquid when possible. Flush spill area with water spray.

Other Statements:

None.

Section 7. Handling and Storage**Handling:**

Wear appropriate Personal Protective Equipment (PPE) when handling this product. Do not get in eyes, or on skin and clothing. Wash thoroughly after handling. Do not ingest. Avoid breathing vapors, mist or dust.

Storage:

Store away from incompatible materials (see Section 10). Store at ambient temperatures. Keep container securely closed when not in use. Label precautions also apply to empty container. Recondition or dispose of empty containers in accordance with government regulations. For Industrial use only. Do not freeze. Store above Freeze Point. If freezes, then mechanical mixing is required.

Section 8. Exposure Controls/Personal Protection**Exposure Limits**

Component	Source	Exposure Limits
Carbohydrazide	N/E	N/E

Engineering Controls:

Use only with adequate ventilation. The use of local ventilation is recommended to control emission near the source.

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**Personal Protection****Eyes:**

Wear chemical splash goggles or safety glasses with full-face shield. Maintain eyewash fountain in work area.

Skin:

Maintain quick-drench facilities in work area. Wear butyl rubber or neoprene gloves. Wash them after each use and replace as necessary. If conditions warrant, wear protective clothing such as boots, aprons, and coveralls to prevent skin contact.

Respiratory:

If misting occurs, use NIOSH approved organic vapor/acid gas dual cartridge respirator with a dust/mist prefilter in accordance with 29 CFR 1910.134.

Section 9. Physical and Chemical Properties**Physical State and Appearance:**

Liquid, Colorless, Clear

Specific Gravity:

1.026 @ 20°C

pH:

7.8 @ 20°C, 100.0%

Freezing Point:

41°F

Flash Point:

N/D

Odor:

Odorless

Melting Point:

N/A

Initial Boiling Point and Boiling Range:

N/D

Solubility in Water:

Complete

Evaporation Rate:

N/D

Vapor Density:

As Water

Molecular Weight:

N/D

Viscosity:

3 CPS @ 20°C

Flammability (solid, gas):

N/D

Flammable Limits:

N/A

Autoignition Temperature:

N/A

Density:

8.56 LB/GA

Vapor Pressure:

As Water

% VOC:

N/D

Odor Threshold

N/D

n-octanol Partition Coefficient

N/D

Decomposition Temperature

N/D

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**Section 10. Stability and Reactivity****Chemical Stability:**

Stable at normal temperatures and pressures.

Incompatibility with Various Substances:

Strong oxidizers, Strong acids.

Hazardous Decomposition Products:

Hydrazine, Carbon dioxide, Carbon monoxide.

Possibility of Hazardous Reactions:

None known.

Reactivity:

N/D

Conditions To Avoid:

N/D

Section 11. Toxicological Information**Acute Toxicity**

Chemical Name	Exposure	Type of Effect	Concentration	Species
N/D	N/D	N/D	N/D	N/D

Carcinogenicity Category

Component	Source	Code	Brief Description
Carbohydrazide	N/E	N/E	N/E

Likely Routes of Exposure:

N/D

Symptoms**Inhalation:**

N/D

Eye Contact:

N/D

Skin Contact:

N/D

Ingestion:

N/D

Skin Corrosion/Irritation:

N/D

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**Serious Eye Damage/Eye Irritation:**

N/D

Sensitization:

N/D

Germ Cell Mutagenicity:

N/D

Reproductive/Developmental Toxicity:

N/D

Specific Target Organ Toxicity**Single Exposure:**

N/D

Repeated Exposure:

N/D

Aspiration Hazard:

N/D

Comments:

None.

Section 12. Ecological Information**Ecotoxicity**

Species	Duration	Type of Effect	Test Results
Fathead Minnow	96h	LC50	159.32 mg/l
Ceriodaphnia dubia	48h	LC50	158.38 mg/l

Persistence and Biodegradability:

N/D

Bioaccumulative Potential:

N/D

Mobility In Soil:

N/D

Other Adverse Effects:

N/D

Comments:

None.

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Section 13. Disposal Considerations

Dispose of in accordance with local, state and federal regulations.

Section 14. Transport Information

Controlling Regulation	UN/NA#:	Proper Shipping Name:	Technical Name:	Hazard Class:	Packing Group:
DOT	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
MDG	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
ICAO	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
TDG	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
SCT	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A

Note: N/A

Section 15. Regulatory Information

Inventory Status

United States (TSCA): All ingredients listed.
Canada (DSL/NDL): All ingredients listed.

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Section 16. Other Information

HMIS Hazard Rating

Health: 1
Flammability: 0
Physical Hazard: 0
PPE: X

Notes: The PPE rating depends on circumstances of use. See Section 8 for recommended PPE. The Hazardous Material Information System (HMIS) is a voluntary, subjective alpha-numeric symbolic system for recommending hazard risk and personal protection equipment information. It is a subjective rating system based on the evaluator's understanding of the chemical associated risks. The end-user must determine if the code is appropriate for their use.

Abbreviations

Abbreviation	Definition
<	Less Than
>	Greater Than
ACGIH	American Conference of Governmental Industrial Hygienists
EHS	Environmental Health and Safety Dept
N/A	Not Applicable
N/D	Not Determined
N/E	Not Established
OSHA	Occupational Health and Safety Dept
PEL	Personal Exposure Limit
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weight Average
UNK	Unknown

Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

Revision Date: July 23, 2018

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Federal Regulations

SARA Title III Rules

Sections 311/312 Hazard Classes

Fire Hazard: No
Reactive Hazard: No
Release of Pressure: No
Acute Health Hazard: Yes
Chronic Health Hazard: No

Other Sections

Component	Section 313 Toxic Chemical	Section 302 EHS TPQ	CERCLA RQ
Carbohydrazide	N/A	N/A	N/A

Comments: None.

State Regulations

California Proposition 65:

This product contains chemical(s) known to the State of California to cause cancer and/or to cause birth defects or other reproductive harm: Hydrazine, <0.010%.

Special Regulations

Component	States
Carbohydrazide	None.

Compliance Information

NSF: N/A
Food Regulations: N/A
KOSHER: This product has not been evaluated for Kosher approval.
Halal: This product has not been evaluated for Halal approval.
FIFRA: N/A
Other: None
Comments: None.

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Disclaimer

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SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name: ChemTreat BL1559
Product Use: Steam Line Treatment
Supplier's Name: ChemTreat, Inc.
Emergency Telephone Number: (800)424-9300 (Toll Free)
Address (Corporate Headquarters): 5640 Cox Road
Glen Allen, VA 23060
Telephone Number for Information: (800)648-4579
Date of SDS: May 28, 2019
Revision Date: May 28, 2019
Revision Number: 19052804AN

Section 2. Hazard(s) Identification



Signal Word: DANGER

GHS Classification(s): Skin corrosion/irritation – Category 1b
Eye damage/irritation – Category 1
Flammable Liquids – Category 3
Reproductive Toxicity – Category 2
Sensitization Skin – Category 1
Acute Toxicity Inhalation – Category 4
Acute Toxicity Dermal – Category 3
Acute Toxicity Oral – Category 3

Hazard Statement(s): H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.
H226 Flammable liquid and vapor.
H317 May cause an allergic skin reaction.
H361 Suspected of damaging fertility or the unborn child.
H301 Toxic if swallowed.
H311 Toxic in contact with skin.
H332 Harmful if inhaled.

Precautionary Statement(s):

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Prevention:

P260 Do not breathe dust/fume/gas/mist/vapors/spray.
P264 Wash thoroughly after handling.
P270 Do not eat, drink, or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
P272 Contaminated work clothing should not be allowed out of the workplace.
P201 Obtain special instructions before use.
P263 Avoid contact during pregnancy and while nursing.
P264 Wash thoroughly after handling.
P241 If stored inside, use explosion-proof electrical/ventilating/lighting equipment.
P242 Use non-sparking tools.
P243 Take action to prevent static discharges.

Response:

P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER/doctor.
P363 Wash contaminated clothing before reuse.
P370 + P378 In case of fire: Use extinguishing media suitable to surrounding fire to extinguish.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.
P308 + P313 IF exposed or concerned: Get medical advice/attention.
P361 + P364 Take off immediately all contaminated clothing and wash it before reuse.

Storage:

P405 Store locked up.
P403 Store in a well-ventilated place.

Disposal:

P501 Dispose of contents and container in accordance with applicable local, regional, national, and/or international regulations.

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System of Classification Used: Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Hazards Not Otherwise Classified: None.

Section 3. Composition/Hazardous Ingredients

Component	CAS Registry #	Wt %
Cyclohexylamine	108-91-8	10 – 30
3-Methoxypropylamine	5332-73-0	10 – 30

Comments: If chemical identity and/or exact percentage of composition has been withheld, this information is considered to be a trade secret.

Section 4. First Aid Measures

Inhalation: Remove to fresh air and keep at rest in a position comfortable for breathing. Call a poison center or doctor/physician if you feel unwell.

Eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor/physician.

Skin: Immediately remove/take off all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before re-use. Immediately call a poison center or doctor/physician.

Ingestion: DO NOT INDUCE VOMITING. Rinse mouth. Immediately call a POISON CENTER or doctor/physician.

Most Important Symptoms: N/D

Indication of Immediate Medical Attention and Special Treatment Needed, if Necessary: N/A

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Section 5. Fire Fighting Measures

Flammability of the Product: Product does not sustain combustion as described in 49 CFR 173, Appendix H.

Suitable Extinguishing Media: Use extinguishing media suitable to surrounding fire.

Specific Hazards Arising from the Chemical: Product may emit toxic gases or fumes under fire conditions.

Protective Equipment: If product is involved in a fire, wear full protective clothing including a positive-pressure, NIOSH approved, self-contained breathing apparatus.

Section 6. Accidental Release Measures

Personal Precautions: Use appropriate Personal Protective Equipment (PPE).

Environmental Precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.

Methods for Cleaning up: Contain and recover liquid when possible. Flush spill area with water spray.

Other Statements: If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802. Reportable Quantity of the product is 49 Gal.

Section 7. Handling and Storage

Handling: Wear appropriate Personal Protective Equipment (PPE) when handling this product. Do not get in eyes, or on skin and clothing. Wash thoroughly after handling. Do not ingest. Avoid breathing vapors, mist or dust.

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Storage: Store away from incompatible materials (see Section 10). Store at ambient temperatures. Keep container securely closed when not in use. Label precautions also apply to empty container. Recondition or dispose of empty containers in accordance with government regulations. For Industrial use only. Protect from heat and sources of ignition. Store above Freeze Point.

Section 8. Exposure Controls/Personal Protection

Exposure Limits

Component	Source	Exposure Limits
Cyclohexylamine	ACGIH TLV	41 mg/m ³ TWA
3-Methoxypropylamine	N/E	N/E

Engineering Controls: Use only with adequate ventilation. The use of local ventilation is recommended to control emission near the source.

Personal Protection

Eyes: Wear chemical splash goggles or safety glasses with full-face shield. Maintain eyewash fountain in work area.

Skin: Maintain quick-drench facilities in work area. Wear butyl rubber or neoprene gloves. Wash them after each use and replace as necessary. If conditions warrant, wear protective clothing such as boots, aprons, and coveralls to prevent skin contact.

Respiratory: If misting occurs, use NIOSH approved organic vapor/acid gas dual cartridge respirator with a dust/mist prefilter in accordance with 29 CFR 1910.134.

Section 9. Physical and Chemical Properties

Physical State and Appearance: Liquid, Colorless, Clear
Specific Gravity: 0.964 @ 20°C
pH: 13.1 @ 20°C, 100.0%
Freezing Point: <-9°F
Flash Point: 132°F
Odor: Strong
Melting Point: N/A
Initial Boiling Point and Boiling Range: 212°F
Solubility in Water: Miscible

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Evaporation Rate: N/D
Vapor Density: N/D
Molecular Weight: N/D
Viscosity: <100 CPS @ 20°C
Flammability (solid, gas): N/D
Flammable Limits: N/A
Autoignition Temperature: N/A
Density: 8.04 LB/GA
Vapor Pressure: <18 mmHg @ 20C
% VOC: 50
Odor Threshold: N/D
n-octanol Partition Coefficient: N/D
Decomposition Temperature: N/D

Section 10. Stability and Reactivity

Chemical Stability: Stable at normal temperatures and pressures.

Incompatibility with Various Substances: Strong oxidizers, Acids.

Hazardous Decomposition Products: Oxides of carbon, Oxides of nitrogen.

Possibility of Hazardous Reactions: None known.

Reactivity: N/D

Conditions To Avoid: N/D

Section 11. Toxicological Information

Acute Toxicity

Chemical Name	Exposure	Type of Effect	Concentration	Species
Cyclohexylamine	Oral	LD50	156 MG/KG	Rat
	Dermal	LD50	277 MG/KG	Rabbit
3-Methoxypropylamine	Oral	LD50	6260 MG/KG	Rat
	Oral	LD50	0.69 G/KG	Rat
	Dermal	LD50	>2 G/KG	Rabbit
	Oral	LD50	690 MG/KG	Rat

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Carcinogenicity Category

Component	Source	Code	Brief Description
Cyclohexylamine	ACGIH	TLV-A4	Not classifiable as a human carcinogen.
3-Methoxypropylamine	N/E	N/E	N/E

Likely Routes of Exposure: N/D

Symptoms

Inhalation: N/D

Eye Contact: N/D

Skin Contact: N/D

Ingestion: N/D

Skin Corrosion/Irritation: N/D

Serious Eye Damage/Eye Irritation: N/D

Sensitization: N/D

Germ Cell Mutagenicity: N/D

Reproductive/Developmental Toxicity: N/D

Specific Target Organ Toxicity

Single Exposure: N/D

Repeated Exposure: N/D

Aspiration Hazard: N/D

Comments: None.

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Section 12. Ecological Information

Ecotoxicity

Species	Duration	Type of Effect	Test Results
Centropomus dubia	48h	LC50	519.63 mg/l
Daphnia pulex	48h	LC50	277 mg/l
Fathead Minnow	96h	LC50	650.75 mg/l
	48h	LC50	1025 mg/l
Myxid Shrimp	24h	LC50	406 mg/l
	48h	LC50	330 mg/l
Inland Silverside	24h	LC50	637 mg/l
	96h	LC50	470 mg/l

Persistence and Biodegradability: N/D

Bioaccumulative Potential: N/D

Mobility In Soil: N/D

Other Adverse Effects: N/D

Comments: None.

Section 13. Disposal Considerations

Dispose of in accordance with local, state and federal regulations. EPA ignitibility characteristic hazardous waste D001 when disposed of in the original product form. EPA corrosivity characteristic hazardous waste D002 when disposed of in the original product form.

Section 14. Transport Information

Controlling Regulation	UN/NA#:	Proper Shipping Name:	Technical Name:	Hazard Class:	Packing Group:
DOT	UN2734	AMINES, LIQUID, CORROSIVE, FLAMMABLE, N.O.S.	(CYCLOHEXYLAMINE AND 3-METHOXYPROPYLAMINE)	8, 3	PGII
Over 49 GA	RQ UN2734	AMINES, LIQUID, CORROSIVE, FLAMMABLE, N.O.S.	(CYCLOHEXYLAMINE AND 3-METHOXYPROPYLAMINE)	8, 3	PGII
IMDG	UN2734	AMINES, LIQUID, CORROSIVE, FLAMMABLE, N.O.S.	(CYCLOHEXYLAMINE AND 3-METHOXYPROPYLAMINE)	8, 3	PGII
ICAO	UN2734	AMINES, LIQUID, CORROSIVE, FLAMMABLE, N.O.S.	(CYCLOHEXYLAMINE AND 3-METHOXYPROPYLAMINE)	8, 3	PGII

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Controlling Regulation	UN/NA#:	Proper Shipping Name:	Technical Name:	Hazard Class:	Packing Group:
SCT	UN2734	AMINES, LIQUID, CORROSIVE, FLAMMABLE, N.O.S.	(CYCLOHEXYLAMINE AND 3-METHOXYPROPYLAMINE)	8, 3	PGII
TDG	UN2734	AMINES, LIQUID, CORROSIVE, FLAMMABLE, N.O.S.	(CYCLOHEXYLAMINE AND 3-METHOXYPROPYLAMINE)	8, 3	PGII

Note: N/A

Section 15. Regulatory Information

Inventory Status

United States (TSCA): All ingredients listed.
Canada (DSL/NDL): All ingredients listed.

Federal Regulations

SARA Title III Rules

Sections 311/312 Hazard Classes

Fire Hazard: Yes
Reactive Hazard: No
Release of Pressure: No
Acute Health Hazard: Yes
Chronic Health Hazard: No

Other Sections

Component	Section 313 Toxic Chemical	Section 302 EHS TPQ	CERCLA RQ
Cyclohexylamine	N/A	10000	N/A
3-Methoxypropylamine	N/A	N/A	100

Comments: None.



State Regulations

California Proposition 65: None known.

Special Regulations

Component	States
Cyclohexylamine	MA, MN, NJ, NY, PA, WA
3-Methoxypropylamine	MN, PA

Compliance Information

NSF: N/A
Food Regulations: N/A
KOSHER: This product has not been evaluated for Kosher approval.
Halal: This product has not been evaluated for Halal approval.
FIFRA: N/A
Other: None

Comments: None.

Section 16. Other Information

HMIS Hazard Rating

Health: 2
Flammability: 2
Physical Hazard: 0
PPE: X

Notes:

The PPE rating depends on circumstances of use. See Section 8 for recommended PPE.
The Hazardous Material Information System (HMIS) is a voluntary, subjective alpha-numeric symbolic system for recommending hazard risk and personal protection equipment information. It is a subjective rating system based on the evaluator's understanding of the chemical associated risks. The end-user must determine if the code is appropriate for their use.



Abbreviations

Abbreviation	Definition
<	Less Than
>	Greater Than
ACGIH	American Conference of Governmental Industrial Hygienists
EHS	Environmental Health and Safety Dept
N/A	Not Applicable
N/D	Not Determined
N/E	Not Established
OSHA	Occupational Health and Safety Dept
PEL	Personal Exposure Limit
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weight Average
UNK	Unknown

Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

Revision Date: May 28, 2019

Disclaimer

Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, ChemTreat, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ChemTreat, Inc. be responsible for damages of any nature whatsoever resulting from the use or reliance upon information. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.



SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name: ChemTreat BL1797
Product Use: Boiler Water Treatment
Supplier's Name: ChemTreat, Inc.
Emergency Telephone Number: (800)424-9300 (Toll Free)
Address (Corporate Headquarters): 5640 Cox Road
Glen Allen, VA 23060
Telephone Number for Information: (800)648-4579
Date of SDS: February 7, 2019
Revision Date: February 7, 2019
Revision Number: 19020701AN

Section 2. Hazard(s) Identification

Signal Word: DANGER

GHS Classification(s): Skin corrosion/irritation - Category 1b
Eye damage/irritation - Category 1
Acute Toxicity Dermal - Category 4
Acute Toxicity Inhalation - Category 4
Acute Toxicity Oral - Category 4

Hazard Statement(s): H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.
H312 Harmful in contact with skin.
H332 Harmful if inhaled.
H302 Harmful if swallowed.

Precautionary Statement(s):

Prevention: P260 Do not breathe dust/fume/gas/mist/vapors/spray.
P264 Wash thoroughly after handling.
P270 Do not eat, drink, or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.





Response: P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER/doctor.
P363 Wash contaminated clothing before reuse.

Storage: P405 Store locked up.

Disposal: P501 Dispose of contents and container in accordance with applicable local, regional, national, and/or international regulations.

System of Classification Used: Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Hazards Not Otherwise Classified: None.

Section 3. Composition/Hazardous Ingredients

Component	CAS Registry #	Wt.%
Sodium hexametaphosphate	10124-56-8	5 - 10
Sodium hydroxide	1310-73-2	1 - 5

Comments If chemical identity and/or exact percentage of composition has been withheld, this information is considered to be a trade secret.

Section 4. First Aid Measures

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a poison center or doctor/physician.

Eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor/physician.

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Skin: Immediately remove/take off all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before re-use. Immediately call a poison center or doctor/physician.

Ingestion: DO NOT INDUCE VOMITING. Rinse mouth. Call a POISON CENTER or doctor/physician.

Most Important Symptoms: N/D

Indication of Immediate Medical Attention and Special Treatment Needed, if Necessary: N/A

Section 5. Fire Fighting Measures

Flammability of the Product: Not flammable.

Suitable Extinguishing Media: Use extinguishing media suitable to surrounding fire.

Specific Hazards Arising from the Chemical: Use water spray to keep containers cool.

Protective Equipment: If product is involved in a fire, wear full protective clothing including a positive-pressure, NIOSH approved, self-contained breathing apparatus.

Section 6. Accidental Release Measures

Personal Precautions: Use appropriate Personal Protective Equipment (PPE).

Environmental Precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.

Methods for Cleaning up: Contain and recover liquid when possible. Flush spill area with water spray.

Other Statements: If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802. Reportable Quantity of the product is 2252 Gal.

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Section 7. Handling and Storage

Handling: Wear appropriate Personal Protective Equipment (PPE) when handling this product. Do not get in eyes, or on skin and clothing. Wash thoroughly after handling. Do not ingest. Avoid breathing vapors, mist or dust.

Storage: Store away from incompatible materials (see Section 10). Store at ambient temperatures. Keep container securely closed when not in use. Label precautions also apply to empty container. Recondition or dispose of empty containers in accordance with government regulations. For Industrial use only. Store above Freeze Point.

Section 8. Exposure Controls/Personal Protection

Exposure Limits

Component	Source	Exposure Limits
Sodium hexametaphosphate	N/E	N/E
Sodium hydroxide	ACGIH TLV	2 mg/m ³ Ceiling
	OSHA PEL	2 mg/m ³ TWA

Engineering Controls: Use only with adequate ventilation. The use of local ventilation is recommended to control emission near the source.

Personal Protection

Eyes: Wear chemical splash goggles or safety glasses with full-face shield. Maintain eyewash fountain in work area.

Skin: Maintain quick-drench facilities in work area. Wear butyl rubber or neoprene gloves. Wash them after each use and replace as necessary. If conditions warrant, wear protective clothing such as boots, aprons, and coveralls to prevent skin contact.

Respiratory: If misting occurs, use NIOSH approved organic vapor/acid gas dual cartridge respirator with a dust/mist prefilter in accordance with 29 CFR 1910.134.

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Section 9. Physical and Chemical Properties

Physical State and Appearance: Liquid, Colorless, Clear

Specific Gravity: 1.109 @ 20°C

pH: 13.2 @ 20°C, 100.0%

Freezing Point: 30°F

Flash Point: N/D

Odor: Odorless

Melting Point: N/A

Initial Boiling Point and Boiling Range: 212°F

Solubility in Water: Complete

Evaporation Rate: N/D

Vapor Density: N/D

Molecular Weight: N/D

Viscosity: <100 CPS @ 20°C

Flammability (solid, gas): N/D

Flammable Limits: N/A

Autoignition Temperature: N/A

Density: 9.25 LB/GA

Vapor Pressure: N/D

% VOC: N/D

Odor Threshold N/D

n-octanol Partition Coefficient N/D

Decomposition Temperature N/D

Section 10. Stability and Reactivity

Chemical Stability: Stable at normal temperatures and pressures.

Incompatibility with Various Substances: Strong oxidizers, Acids.

Hazardous Decomposition Products: Oxides of carbon.

Possibility of Hazardous Reactions: None known.

Reactivity: N/D

Conditions To Avoid: N/D

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Section 11. Toxicological Information

Acute Toxicity

Chemical Name	Exposure	Type of Effect	Concentration	Species
Sodium hexametaphosphate	Oral	LD50	3053 MG/KG	Rat
	Oral	LD50	4320 MG/KG	Mouse
	Dermal	LD50	>7940 MG/KG	Rabbit
Sodium hydroxide	Oral	LD50	300 MG/KG	Rat
	Dermal	LD50	1350 MG/KG	Rabbit

Carcinogenicity Category

Component	Source	Code	Brief Description
Sodium hexametaphosphate	N/E	N/E	N/E
Sodium hydroxide	N/E	N/E	N/E

Likely Routes of Exposure: N/D

Symptoms

Inhalation: N/D
Eye Contact: N/D
Skin Contact: N/D
Ingestion: N/D

Skin Corrosion/Irritation: N/D

Serious Eye Damage/Eye Irritation: N/D

Sensitization: N/D

Germ Cell Mutagenicity: N/D

Reproductive/Developmental Toxicity: N/D

Specific Target Organ Toxicity

Single Exposure: N/D
Repeated Exposure: N/D



Aspiration Hazard: N/D
Comments: None.

Section 12. Ecological Information

Ecotoxicity

Species	Duration	Type of Effect	Test Results
Fathead Minnow	96h	LC50	5548 mg/l
Ceriodaphnia dubia	48h	LC50	3536 mg/l

Persistence and Biodegradability: N/D

Bioaccumulative Potential: N/D

Mobility In Soil: N/D

Other Adverse Effects: N/D

Comments: Not tested.

Section 13. Disposal Considerations

Dispose of in accordance with local, state and federal regulations.
EPA corrosivity characteristic hazardous waste D002 when disposed of in the original product form.

Section 14. Transport Information

Controlling Regulation	UN/NA#	Proper Shipping Name:	Technical Name:	Hazard Class:	Packing Group:
DOT	UN1824	SODIUM HYDROXIDE SOLUTION	N/A	8	PGII
Over 2252 GA	RD UN1824	SODIUM HYDROXIDE SOLUTION	N/A	8	PGII
TDG	UN1824	SODIUM HYDROXIDE SOLUTION	N/A	8	PGII
IMDG	UN1824	SODIUM HYDROXIDE SOLUTION	N/A	8	PGII
ICAO	UN1824	SODIUM HYDROXIDE SOLUTION	N/A	8	PGII

Note: N/A



Section 15. Regulatory Information

Inventory Status

United States (TSCA): All ingredients listed.
Canada (DSL/NDL): All ingredients listed.

Federal Regulations

SARA Title III Rules

Sections 311/312 Hazard Classes

Fire Hazard: No
Reactive Hazard: No
Release of Pressure: No
Acute Health Hazard: Yes
Chronic Health Hazard: No

Other Sections

Component	Section 313 Toxic Chemical	Section 302 EHS TPQ	CERCLA RQ
Sodium hexametaphosphate	N/A	N/A	N/A
Sodium hydroxide	N/A	N/A	1000

Comments: None.

State Regulations

California Proposition 65: None known.

Special Regulations

Component	States
Sodium hexametaphosphate	MA, NY, PA
Sodium hydroxide	MA, MN, NY, PA, WA



Compliance Information

NSF: N/A
Food Regulations: FDA: All ingredients in this product are authorized in 21 CFR 173.310 for use as "Boiler Water Additives" where the steam may contact food.
KOSHER: This product has not been evaluated for Kosher approval.
Halal: This product has not been evaluated for Halal approval.
FIFRA: N/A
Other: None
Comments: None.

Section 16. Other Information

HMIS Hazard Rating

Health: 3
Flammability: 0
Physical Hazard: 1
PPE: X

Notes: The PPE rating depends on circumstances of use. See Section 8 for recommended PPE.
The Hazardous Material Information System (HMIS) is a voluntary, subjective alpha-numeric symbolic system for recommending hazard risk and personal protection equipment information. It is a subjective rating system based on the evaluator's understanding of the chemical associated risks. The end-user must determine if the code is appropriate for their use.

Abbreviations

Abbreviation	Definition
<	Less Than
>	Greater Than
ACGIH	American Conference of Governmental Industrial Hygienists
EHS	Environmental Health and Safety Dept
N/A	Not Applicable
N/D	Not Determined
N/E	Not Established
OSHA	Occupational Health and Safety Dept
PEL	Personal Exposure Limit



SAFETY DATA SHEET



Abbreviation	Definition
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weight Average
UNK	Unknown

Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

Revision Date: February 7, 2019

Disclaimer

Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, ChemTreat, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ChemTreat, Inc. be responsible for damages of any nature whatsoever resulting from the use or reliance upon information. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.

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Chemical name	Common name and synonyms	CAS number	%
5-chlor-2-methyl-4-isothiazolin-3-one		26172-55-4	< 0.1
Other components below reportable levels			90 - 100

4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Remove contaminated clothing immediately and wash skin with soap and water. In case of eczema or other skin disorders: Seek medical attention and take along these instructions.
Eye contact	Rinse with water. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	May cause an allergic skin reaction. Dermatitis. Rash.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO ₂).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures


Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Avoid breathing mist/vapors. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Prevent product from entering drains. Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.
Environmental precautions	Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS. Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling	Avoid breathing mist/vapors. Avoid contact with eyes, skin, and clothing. Provide adequate ventilation. Wear appropriate personal protective equipment. Avoid release to the environment. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store in tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

Material name: CT907
CT907 Version #: 01 Issue date: 06-10-2021

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1. Identification		
Product identifier	CT907	
Other means of identification		
Product code	CT907	
Recommended use	Not available.	
Recommended restrictions	None known.	
Manufacturer/Importer/Supplier/Distributor information		
Manufacturer		
Company name	ChemTreat	
Address	5640 Cox Road Glen Allen, VA 23060 United States 800-648-4579	
Telephone	Not available.	
E-mail	800-424-9300	
Emergency phone number		
2. Hazard(s) identification		
Physical hazards	Not classified.	
Health hazards	Sensitization, skin	Category 1A
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 3
	Hazardous to the aquatic environment, long-term hazard	Category 3
OSHA defined hazards	Not classified.	
Label elements		
		
Signal word	Warning	
Hazard statement	May cause an allergic skin reaction. Harmful to aquatic life. Harmful to aquatic life with long lasting effects.	
Precautionary statement		
Prevention	Avoid breathing mist/vapors. Contaminated work clothing must not be allowed out of the workplace. Avoid release to the environment. Wear protective gloves.	
Response	If on skin: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.	
Storage	Store away from incompatible materials.	
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.	
Hazard(s) not otherwise classified (HNOC)	None known.	
Supplemental information	7.03% of the mixture consists of component(s) of unknown acute dermal toxicity. 7.03% of the mixture consists of component(s) of unknown acute inhalation toxicity.	

3. Composition/information on ingredients

Mixtures	Chemical name	Common name and synonyms	CAS number	%
	Poly(oxyethylene) Octylphenyl Ether		9036-19-5	5 - < 10

Material name: CT907
CT907 Version #: 01 Issue date: 06-10-2021

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8. Exposure controls/personal protection

Occupational exposure limits	This mixture has no ingredients that have PEL, TLV, or other recommended exposure limit.
Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.
Individual protection measures, such as personal protective equipment	
Eye/face protection	Wear safety glasses with side shields (or goggles). Face shield is recommended.
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves.
Other	Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.

9. Physical and chemical properties

Appearance	
Physical state	Liquid.
Form	Liquid. Liquid
Color	Colorless
Odor	Mild
Odor threshold	Not available.
pH	7.2 100
Melting point/freezing point	30.20 °F (-1.00 °C)
Initial boiling point and boiling range	211.95 °F (99.97 °C) estimated
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	0.00001 hPa estimated
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Explosive properties	Not explosive.

Material name: CT907
CT907 Version #: 01 Issue date: 06-10-2021

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Oxidizing properties	Not oxidizing.
Percent volatile	92.56 % estimated
Pounds per gallon	8.45
Specific gravity	1.01 @ 20C

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	No adverse effects due to inhalation are expected.
Skin contact	May cause an allergic skin reaction.
Eye contact	Direct contact with eyes may cause temporary irritation.
Ingestion	Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical and toxicological characteristics

Information on toxicological effects

Acute toxicity	Not known.
Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation	Direct contact with eyes may cause temporary irritation.
Respiratory or skin sensitization	
Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	May cause an allergic skin reaction.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	Not classifiable as to carcinogenicity to humans.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)
Not regulated.
US. National Toxicology Program (NTP) Report on Carcinogens
Not listed.

Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.

12. Ecological information

Ecotoxicity	Harmful to aquatic life with long lasting effects.
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Material name: CT907 SDS US
CT907 Version #: 01 Issue date: 06-10-2021 4 / 7

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.
SARA 304 Emergency release notification
Not regulated.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)
Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance
Not listed.

SARA 311/312 Hazardous chemical	Yes
Classified hazard categories	Respiratory or skin sensitization
SARA 313 (TRI reporting)	
Not regulated.	

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Not regulated.
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.
Safe Drinking Water Act (SDWA)
Not regulated.

US state regulations

California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to www.P65Warnings.ca.gov.

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

Poly(oxyethylene) Octylphenyl Ether (CAS 9036-19-5)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

Compliance Information: Halal

Compliance Information: Kosher

This product is certified by the Orthodox Unionas Kosher pareve

Material name: CT907 SDS US
CT907 Version #: 01 Issue date: 06-10-2021 6 / 7

Product	Species	Test Results
CT907		
Aquatic		
Crustacea	LC50	Ceriodaphnia dubia 554.8 mg/l, 48 hours 427 mg/l, 48 hours Daphnia pulex 812 mg/l, 48 hours Opossum shrimp order (Mysida) 83.5 mg/l, 48 hours
Fish	IC25	Fathead minnow (Pimephales promelas) 89 mg/l, 7 days
	LC50	Fathead minnow (Pimephales promelas) 354 mg/l, 48 hours 168 mg/l, 96 hours 98.1 mg/l, 96 hours 278.4 mg/l, 96 hours
	LOEC	Sheepshead minnow (Cyprinodon variegatus) 125 mg/l, 7 days
	NOEC	Fathead minnow (Pimephales promelas) 63 mg/l, 7 days

Persistence and degradability No data is available on the degradability of any ingredients in the mixture.

Bioaccumulative potential No data available.

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Incinerate the material under controlled conditions in an approved incinerator. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code D002: Waste Corrosive material [pH <=2 or >=12.5, or corrosive to steel]
The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not established.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Toxic Substances Control Act (TSCA)

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
5-chlor-2-methyl-4-isothiazolin-3-one 1.0 % One-Time Export Notification only.
(CAS 26172-55-4)

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Eldridge IA
Ashland VA
Eldridge IA
Nederland TX



16. Other information, including date of preparation or last revision

Issue date	06-10-2021
Version #	01
HMIS® ratings	Health: 1 Flammability: 0 Physical hazard: 0 Personal protection: X

Disclaimer ChemTreat cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available. Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, ChemTreat, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ChemTreat, Inc. be responsible for damages of any nature whatsoever resulting from the use or reliance upon information. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.

Other information Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

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SAFETY DATA SHEET



1. Identification

Product identifier	CT907
Other means of identification	
Product code	CT907
Recommended use	Not available.
Recommended restrictions	None known.
Manufacturer/Importer/Supplier/Distributor information	
Manufacturer	
Company name	ChemTreat
Address	5640 Cox Road Glen Allen, VA 23060 United States 800-648-4579 Not available.
Telephone	
E-mail	
Emergency phone number	800-424-9300

2. Hazard(s) identification

Physical hazards	Not classified.	
Health hazards	Sensitization, skin	Category 1A
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 3
	Hazardous to the aquatic environment, long-term hazard	Category 3
OSHA defined hazards	Not classified.	
Label elements		



Signal word	Warning
Hazard statement	May cause an allergic skin reaction. Harmful to aquatic life. Harmful to aquatic life with long lasting effects.
Precautionary statement	
Prevention	Avoid breathing mist/vapors. Contaminated work clothing must not be allowed out of the workplace. Avoid release to the environment. Wear protective gloves.
Response	If on skin: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
Storage	Store away from incompatible materials.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	7.03% of the mixture consists of component(s) of unknown acute dermal toxicity. 7.03% of the mixture consists of component(s) of unknown acute inhalation toxicity.

3. Composition/information on ingredients

Chemical name	Common name and synonyms	CAS number	%
Poly(oxyethylene) Octylphenyl Ether		9036-19-5	5 - < 10

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8. Exposure controls/personal protection

Occupational exposure limits	This mixture has no ingredients that have PEL, TLV, or other recommended exposure limit.
Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.
Individual protection measures, such as personal protective equipment	
Eye/face protection	Wear safety glasses with side shields (or goggles). Face shield is recommended.
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves.
Other	Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.

9. Physical and chemical properties

Appearance	
Physical state	Liquid.
Form	Liquid. Liquid
Color	Colorless
Odor	Mild
Odor threshold	Not available.
pH	7.2-100
Melting point/freezing point	30.20 °F (-1.00 °C)
Initial boiling point and boiling range	211.95 °F (99.97 °C) estimated
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	0.00001 hPa estimated
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Explosive properties	Not explosive.

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Chemical name	Common name and synonyms	CAS number	%
5-chlor-2-methyl-4-isothiazolin-3-one		26172-55-4	< 0.1
Other components below reportable levels			90 - 100

4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Remove contaminated clothing immediately and wash skin with soap and water. In case of eczema or other skin disorders: Seek medical attention and take along these instructions.
Eye contact	Rinse with water. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	May cause an allergic skin reaction. Dermatitis. Rash.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO ₂).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Avoid breathing mist/vapors. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Prevent product from entering drains. Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.
Environmental precautions	Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS. Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling	Avoid breathing mist/vapors. Avoid contact with eyes, skin, and clothing. Provide adequate ventilation. Wear appropriate personal protective equipment. Avoid release to the environment. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store in tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

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Oxidizing properties	Not oxidizing.
Percent volatile	92.56 % estimated
Pounds per gallon	8.45
Specific gravity	1.01 @ 20C

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.
11. Toxicological information	
Information on likely routes of exposure	
Inhalation	No adverse effects due to inhalation are expected.
Skin contact	May cause an allergic skin reaction.
Eye contact	Direct contact with eyes may cause temporary irritation.
Ingestion	Expected to be a low ingestion hazard.
Symptoms related to the physical, chemical and toxicological characteristics	May cause an allergic skin reaction. Dermatitis. Rash.

Information on toxicological effects

Acute toxicity	Not known.
Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation	Direct contact with eyes may cause temporary irritation.
Respiratory or skin sensitization	
Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	May cause an allergic skin reaction.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	Not classifiable as to carcinogenicity to humans.
IARC Monographs. Overall Evaluation of Carcinogenicity	
Not listed.	
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)	
Not regulated.	
US. National Toxicology Program (NTP) Report on Carcinogens	
Not listed.	
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.

12. Ecological information

Ecotoxicity	Harmful to aquatic life with long lasting effects.
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Product	Species	Test Results
CT907		
Aquatic Crustacea	LC50	Ceriodaphnia dubia 554.8 mg/l, 48 hours
		427 mg/l, 48 hours
		Daphnia pulex 812 mg/l, 48 hours
		Opossum shrimp order (Mysida) 83.5 mg/l, 48 hours
Fish	IC25	Fathead minnow (Pimephales promelas) 89 mg/l, 7 days
		Fathead minnow (Pimephales promelas) 354 mg/l, 48 hours
	LC50	168 mg/l, 96 hours
		98.1 mg/l, 96 hours
		Sheepshead minnow (Cyprinodon variegatus) 278.4 mg/l, 96 hours
		125 mg/l, 7 days
	LOEC	Fathead minnow (Pimephales promelas)
	NOEC	Fathead minnow (Pimephales promelas) 63 mg/l, 7 days
Persistence and degradability	No data is available on the degradability of any ingredients in the mixture.	
Bioaccumulative potential	No data available.	
Mobility in soil	No data available.	
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.	

13. Disposal considerations		
Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Incinerate the material under controlled conditions in an approved incinerator. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.	
Local disposal regulations	Dispose in accordance with all applicable regulations.	
Hazardous waste code	D002: Waste Corrosive material [pH <=2 or >=12.5, or corrosive to steel] The waste code should be assigned in discussion between the user, the producer and the waste disposal company.	
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).	
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.	

14. Transport information		
DOT	Not regulated as dangerous goods.	
IATA	Not regulated as dangerous goods.	
IMDG	Not regulated as dangerous goods.	
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not established.	

15. Regulatory information		
US federal regulations	This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.	
Toxic Substances Control Act (TSCA)		
TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)		
	5-chlor-2-methyl-4-isothiazolin-3-one (CAS 26172-55-4)	1.0 % One-Time Export Notification only.

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Eldridge IA Ashland VA Eldridge IA Nederland TX	
	
16. Other information, including date of preparation or last revision	
Issue date	06-10-2021
Version #	01
HMIS® ratings	Health: 1 Flammability: 0 Physical hazard: 0 Personal protection: X
Disclaimer	ChemTreat cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available. Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, ChemTreat, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ChemTreat, Inc. be responsible for damages of any nature whatsoever resulting from the use or reliance upon information. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.
Other information	Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com




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CERCLA Hazardous Substance List (40 CFR 302.4)	
Not listed.	
SARA 304 Emergency release notification	
Not regulated.	
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)	
Not regulated.	
Superfund Amendments and Reauthorization Act of 1986 (SARA)	
SARA 302 Extremely hazardous substance	
Not listed.	
SARA 311/312 Hazardous chemical	Yes
Classified hazard categories	Respiratory or skin sensitization
SARA 313 (TRI reporting)	
Not regulated.	
Other federal regulations	
Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List	
Not regulated.	
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)	
Not regulated.	
Safe Drinking Water Act (SDWA)	Not regulated.
US state regulations	
California Proposition 65	
California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to www.P65Warnings.ca.gov.	
US, California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))	
Poly(oxyethylene) Octylphenyl Ether (CAS 9036-19-5)	

International Inventories		
Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes
*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)		
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).		

Compliance Information: Halal	
Compliance Information: Kosher	
This product is certified by the Orthodox Union as Kosher pareve	

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		SAFETY DATA SHEET			
1. Identification					
Product identifier		CL5680			
Other means of identification					
Product code		CL5680			
Recommended use		Cooling Water Treatment			
Recommended restrictions		None known.			
Manufacturer/Importer/Supplier/Distributor information					
Manufacturer					
Company name		ChemTreat, Inc.			
Address		5640 Cox Road Glen Allen, VA 23060 United States			
Telephone		800-648-4579			
Website		chemtreat.com			
E-mail		productcompliance@chemtreat.com			
Emergency phone number		800-424-9300			
2. Hazard(s) identification					
Physical hazards		Not classified.			
Health hazards		Skin corrosion/irritation		Category 1B	
		Serious eye damage/eye irritation		Category 1	
		Sensitization, skin		Category 1	
Environmental hazards		Not classified.			
OSHA defined hazards		Not classified.			
Label elements					
Signal word		Danger			
Hazard statement		Causes severe skin burns and eye damage. May cause an allergic skin reaction. Causes serious eye damage.			
Precautionary statement					
Prevention		Do not breathe mist/vapors. Wash thoroughly after handling. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection.			
Response		If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.			
Storage		Store locked up.			
Disposal		Dispose of contents/container in accordance with local/regional/national/international regulations.			
Hazard(s) not otherwise classified (HNOC)		None known.			
Supplemental information		None.			
3. Composition/information on ingredients					
Mixtures					
Material name: CL5680					
CL5680 Version #: 02 Revision date: 03-06-2023 Issue date: 03-25-2022					
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Material name: CL5680	SDS US
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Chemical name	Common name and synonyms	CAS number	%
Sodium hydroxide		1310-73-2	5 - < 10
Reactive Polyhydroxy Complex, RPC		proprietary	3 - < 5
Other components below reportable levels			80 - < 90
4. First-aid measures			
Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.		
Skin contact	Remove contaminated clothing immediately and wash skin with soap and water. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.		
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.		
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.		
Most important symptoms/effects, acute and delayed	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.		
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim under observation. Symptoms may be delayed.		
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.		

5. Fire-fighting measures	
Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.
6. Accidental release measures	
Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist/vapors. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage	
Precautions for safe handling	Do not breathe mist/vapors. Do not get in eyes, on skin, or on clothing. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store locked up. Store in tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

Material name: CL5680	SDS US
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Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	0.00001 hPa estimated
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	0 - 200 cps
Other information	
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Pounds per gallon	9.77
Specific gravity	1.16 - 1.17 @ 20C

10. Stability and reactivity	
Reactivity	Reacts violently with strong acids. This product may react with oxidizing agents.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Contact with incompatible materials. Do not mix with other chemicals.
Incompatible materials	Strong acids. Oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information	
Information on likely routes of exposure	
Inhalation	May cause irritation to the respiratory system. Prolonged inhalation may be harmful.
Skin contact	Causes severe skin burns. May cause an allergic skin reaction.
Eye contact	Causes serious eye damage.
Ingestion	Causes digestive tract burns.
Symptoms related to the physical, chemical and toxicological characteristics	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.
Information on toxicological effects	
Acute toxicity	Not known.
Skin corrosion/irritation	Causes severe skin burns and eye damage.
Serious eye damage/eye irritation	Causes serious eye damage.
Respiratory or skin sensitization	
Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	May cause an allergic skin reaction.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	Not classifiable as to carcinogenicity to humans.

Material name: CL5680	SDS US
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8. Exposure controls/personal protection
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Occupational exposure limits			
The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.			
US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)			
Components	Type	Value	
Reactive Polyhydroxy Complex, RPC	PEL	2 mg/m3	
Sodium hydroxide (CAS 1310-73-2)	PEL	2 mg/m3	
US. ACGIH Threshold Limit Values			
Components	Type	Value	Form
Reactive Polyhydroxy Complex, RPC	TWA	2 mg/m3	Inhalable fraction.
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3	
US. NIOSH: Pocket Guide to Chemical Hazards			
Components	Type	Value	
Reactive Polyhydroxy Complex, RPC	TWA	2 mg/m3	
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3	
Biological limit values			
No biological exposure limits noted for the ingredient(s).			
Appropriate engineering controls			
Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.			
Individual protection measures, such as personal protective equipment			
Eye/face protection			
Wear safety glasses with side shields (or goggles).			
Skin protection			
Hand protection			
Wear appropriate chemical resistant gloves.			
Other			
Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.			
Respiratory protection			
In case of insufficient ventilation, wear suitable respiratory equipment.			
Thermal hazards			
Wear appropriate thermal protective clothing, when necessary.			
General hygiene considerations			
Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.			

9. Physical and chemical properties	
Appearance	
Physical state	Liquid.
Form	Liquid.
Color	Brown.
Odor	Mild
Odor threshold	Not available.
pH	12.5 - 14
Melting point/freezing point	24.80 °F (-4.00 °C)
Initial boiling point and boiling range	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.

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IARC Monographs. Overall Evaluation of Carcinogenicity	
Not listed.	
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)	
Not regulated.	
US. National Toxicology Program (NTP) Report on Carcinogens	
Not listed.	
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.
Chronic effects	Prolonged inhalation may be harmful.

12. Ecological information			
Ecotoxicity		The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.	
Product	Species	Test Results	
CL5680			
Aquatic			
Crustacea	LC50	Ceriodaphnia dubia	7072 mg/l, 48 hours
Fish	LC50	Fathead minnow (Pimephales promelas)	> 10000 mg/l, 96 hours
Components	Species	Test Results	
Sodium hydroxide (CAS 1310-73-2)			
Aquatic			
Acute			
Crustacea	EC50	Water flea (Ceriodaphnia dubia)	34.59 - 47.13 mg/l, 48 hours
Fish	LC50	Western mosquitofish (Gambusia affinis)	125 mg/l, 96 hours
Persistence and degradability	No data is available on the degradability of any ingredients in the mixture.		
Bioaccumulative potential	No data available.		
Mobility in soil	No data available.		
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.		

13. Disposal considerations	
Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Incinerate the material under controlled conditions in an approved incinerator. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	D002: Waste Corrosive material [pH <=2 or >=12.5, or corrosive to steel] The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information	
DOT	
UN number	UN1760
UN proper shipping name	Corrosive liquids, n.o.s. (Sodium hydroxide)
Transport hazard class(es)	
Class	8
Subsidiary risk	-

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Label(s)	8
Packing group	II
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	B2, IB2, T11, TP2, TP27
Packaging exceptions	154
Packaging non bulk	202
Packaging bulk	242
IATA	
UN number	UN1760
UN proper shipping name	Corrosive liquid, n.o.s. (Sodium hydroxide)
Transport hazard class(es)	8
Class	-
Subsidiary risk	II
Packing group	No.
Environmental hazards	8L
ERG Code	Read safety instructions, SDS and emergency procedures before handling.
Special precautions for user	Other information
Passenger and cargo aircraft	Allowed with restrictions.
Cargo aircraft only	Allowed with restrictions.
IMDG	
UN number	UN1760
UN proper shipping name	CORROSIVE LIQUID, N.O.S. (Sodium hydroxide)
Transport hazard class(es)	8
Class	-
Subsidiary risk	II
Packing group	No.
Environmental hazards	F-A, S-B
Marine pollutant	Read safety instructions, SDS and emergency procedures before handling.
EmS	Not established.
Special precautions for user	Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
DOT	



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Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "no" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	03-25-2022
Revision date	03-06-2023
Version #	02
HMIS® ratings	Health: 3 Flammability: 0 Physical hazard: 0 Personal protection: X

Disclaimer
ChemTreat, Inc. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available. Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, ChemTreat, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ChemTreat, Inc. be responsible for damages of any nature whatsoever resulting from the use or reliance upon information. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.

Revision information
Transport Information: Material Transportation Information
Other information
Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

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15. Regulatory information

US federal regulations
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Toxic Substances Control Act (TSCA)
TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)
Sodium hydroxide (CAS 1310-73-2) Listed.

SARA 304 Emergency release notification
Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)
Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)
SARA 302 Extremely hazardous substance
Not listed.

SARA 311/312 Hazardous chemical
Yes
Classified hazard categories
Skin corrosion or irritation
Serious eye damage or eye irritation
Respiratory or skin sensitization

SARA 313 (TRI reporting)
Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.

Safe Drinking Water Act (SDWA)
Not regulated.

US state regulations

California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to www.P65Warnings.ca.gov.

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

Sodium hydroxide (CAS 1310-73-2)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes

Material name: CL5680 SDS US
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SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name:	Chemical Treatment CL206
Product Use:	Cooling Water and Reverse Osmosis Microbicide
Supplier's Name:	ChemTreat, Inc.
Emergency Telephone Number:	(800)424-9300 (Toll Free)
Address (Corporate Headquarters):	5640 Cox Road Glen Allen, VA 23060 (800)648-4579
Telephone Number for Information:	March 20, 2019
Date of SDS:	March 20, 2019
Revision Date:	19032001AN
Revision Number:	

Section 2. Hazard(s) Identification

Signal Word:	DANGER
GHS Classification(s):	Eye damage/irritation – Category 1 Skin corrosion/irritation – Category 1a Sensitization Skin – Category 1 Acute Toxicity Inhalation – Category 4 Acute Toxicity Oral – Category 4 Hazardous to the aquatic environment Acute – Category 2
Hazard Statement(s):	H318 Causes serious eye damage. H314 Causes severe skin burns and eye damage. H317 May cause an allergic skin reaction. H332 Harmful if inhaled. H302 Harmful if swallowed. H401 Toxic to aquatic life.
Precautionary Statement(s):	





Prevention:	P261 Avoid breathing dust/fume/gas/mist/vapors/spray. P264 Wash thoroughly after handling. P270 Do not eat, drink, or smoke when using this product. P271 Use only outdoors or in a well-ventilated area. P272 Contaminated work clothing should not be allowed out of the workplace. P280 Wear protective gloves/protective clothing/eye protection/face protection. P273 Avoid release into the environment.
Response:	P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth. P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. P303 + P361 + P353 IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower. P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor/physician. P333 + P313 If skin irritation or rash occurs: Get medical advice/attention. P363 Wash contaminated clothing before reuse.
Storage:	P405 Store locked up.
Disposal:	P501 Dispose of contents and container in accordance with applicable local, regional, national, and/or international regulations.

System of Classification Used: Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Hazards Not Otherwise Classified: None.

Section 3. Composition/Hazardous Ingredients

Component	CAS Registry #	Wt.%
2-2-Dibromo-3-nitropropionamide	10222-01-2	20

Comments If chemical identity and/or exact percentage of composition has been withheld, this information is considered to be a trade secret.



Section 4. First Aid Measures

Inhalation:	Remove to fresh air and keep at rest in a position comfortable for breathing. Call a poison center or doctor/physician if you feel unwell.
Eyes:	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor/physician.
Skin:	Immediately remove/take off all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before re-use. Immediately call a poison center or doctor/physician.
Ingestion:	DO NOT INDUCE VOMITING. Rinse mouth. Call a POISON CENTER or doctor/physician.
Most Important Symptoms:	N/D
Indication of Immediate Medical Attention and Special Treatment Needed, if Necessary:	Probable mucosal damage may contraindicate the use of gastric lavage. Have the product container, label or MSDS with you when calling a poison control center or doctor, or when going for treatment.

Section 5. Fire Fighting Measures

Flammability of the Product:	Not flammable.
Suitable Extinguishing Media:	Use extinguishing media suitable to surrounding fire.
Specific Hazards Arising from the Chemical:	Product may emit toxic gases or fumes under fire conditions.
Protective Equipment:	If product is involved in a fire, wear full protective clothing including a positive-pressure, NIOSH approved, self-contained breathing apparatus.



Section 6. Accidental Release Measures

Personal Precautions:	Use appropriate Personal Protective Equipment (PPE).
Environmental Precautions:	This pesticide is toxic to fish and aquatic organisms. Do not discharge effluent containing this product into lakes, ponds, streams, estuaries, oceans or public waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit, and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.
Methods for Cleaning up:	Contain and recover liquid when possible. Flush spill area with water spray.
Other Statements:	None.

Section 7. Handling and Storage

Handling:	Wear appropriate Personal Protective Equipment (PPE) when handling this product. Do not get in eyes, or on skin and clothing. Wash thoroughly after handling. Do not ingest. Avoid breathing vapors, mist or dust.
Storage:	Store away from incompatible materials (see Section 10). Store at ambient temperatures. Keep container securely closed when not in use. Label precautions also apply to empty container. Recondition or dispose of empty containers in accordance with government regulations. For industrial use only. Do not store above 95°F. Store above Freeze Point. Do not store or handle in aluminum, steel, copper, or their alloys.



Section 8. Exposure Controls/Personal Protection

Exposure Limits		
Component	Source	Exposure Limits
2-2-Dibromo-3-nitropropionamide	N/E	N/E

Engineering Controls: Use only with adequate ventilation. The use of local ventilation is recommended to control emission near the source.

Personal Protection

Eyes: Wear chemical splash goggles or safety glasses with full-face shield. Maintain eyewash fountain in work area.

Skin: Maintain quick-drench facilities in work area. Wear butyl rubber or neoprene gloves. Wash them after each use and replace as necessary. If conditions warrant, wear protective clothing such as boots, aprons, and coveralls to prevent skin contact.

Respiratory: If misting occurs, use NIOSH approved organic vapor/acid gas dual cartridge respirator with a dust/mist prefilter in accordance with 29 CFR 1910.134.

Section 9. Physical and Chemical Properties

Physical State and Appearance:	Liquid, Colorless, Clear
Specific Gravity:	1.225 @ 20°C
pH:	2.2 @ 20°C, 100.0%
Freezing Point:	<-11°F
Flash Point:	212°F
Odor:	Strong
Melting Point:	N/D
Initial Boiling Point and Boiling Range:	>158°F
Solubility in Water:	Appreciable
Evaporation Rate:	N/D
Vapor Density:	N/D
Molecular Weight:	N/D
Viscosity:	N/A
Flammability (solid, gas):	N/D
Flammable Limits:	N/A
Autoignition Temperature:	N/A
Density:	10.20 LB/GA



Vapor Pressure: N/D
% VOC: 0
Odor Threshold: N/D
n-octanol Partition Coefficient: N/D
Decomposition Temperature: N/D

Section 10. Stability and Reactivity

Chemical Stability: Stable at normal temperatures and pressures.

Incompatibility with Various Substances: Strong oxidizers, Strong bases, Aluminum/aluminum alloys.

Hazardous Decomposition Products: Dibromoacetonitrile, Cyanogen bromide, Carbon dioxide, Bromine, Toxic vapors/fumes/gases.

Possibility of Hazardous Reactions: None known.

Reactivity: N/D

Conditions To Avoid: N/D

Section 11. Toxicological Information

Acute Toxicity

Chemical Name	Exposure	Type of Effect	Concentration	Species
Chemical Treatment CL206	Oral	LD50	510 MG/KG	Rat
	Inhalation	LC50	1.25 MG/L	Rat
	Dermal	LD50	>2000 MG/KG	Rabbit

Carcinogenicity Category

Component	Source	Code	Brief Description
2-2-Dibromo-3-nitripropionamide	N/E	N/E	N/E

Likely Routes of Exposure: N/D

Symptoms

Inhalation: N/D
Eye Contact: N/D

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Section 13. Disposal Considerations

PESTICIDE DISPOSAL: Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL: Non-refillable container. Do not reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by procedures approved by state and local authorities.

Section 14. Transport Information

Controlling Regulation	UN/NA#:	Proper Shipping Name:	Technical Name:	Hazard Class:	Packing Group:
DOT	UN3265	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.	(2,2-DIBROMO-3-NITRILOPROPIONAMIDE)	8	PGIII
IMDG	UN3265	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.	(2,2-DIBROMO-3-NITRILOPROPIONAMIDE)	8	PGIII
ICAO	UN3265	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.	(2,2-DIBROMO-3-NITRILOPROPIONAMIDE)	8	PGIII
TDG	UN3265	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.	(2,2-DIBROMO-3-NITRILOPROPIONAMIDE)	8	PGIII

Note: N/A

Section 15. Regulatory Information

Inventory Status

United States (TSCA): All ingredients listed or exempt.
Canada (DSL/NDL): All ingredients listed or exempt.

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Skin Contact: N/D
Ingestion: N/D
Skin Corrosion/Irritation: N/D
Serious Eye Damage/Eye Irritation: N/D
Sensitization: N/D
Germ Cell Mutagenicity: N/D
Reproductive/Developmental Toxicity: N/D
Specific Target Organ Toxicity
Single Exposure: N/D
Repeated Exposure: N/D
Aspiration Hazard: N/D
Comments: None.

Section 12. Ecological Information

Ecotoxicity

Species	Duration	Type of Effect	Test Results
Daphnia magna	48h	LC50	6.2 mg/l
Bluegill Sunfish	96h	LC50	6.5 mg/l
Rainbow Trout	96h	LC50	5 mg/l
Fathead Minnow	96h	LC50	6.8 mg/l
Ceriodaphnia dubia	48h	LC50	5.733 mg/l
Sheepshead Minnow	96h	LC50	7 mg/l

Persistence and Biodegradability: N/D
Bioaccumulative Potential: N/D
Mobility In Soil: N/D
Other Adverse Effects: N/D
Comments: Based on active ingredient

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Federal Regulations

SARA Title III Rules

Sections 311/312 Hazard Classes

Fire Hazard: No
Reactive Hazard: No
Release of Pressure: No
Acute Health Hazard: Yes
Chronic Health Hazard: No

Other Sections

Component	Section 313 Toxic Chemical	Section 302 EHS TPC	CERCLA RQ
2-2-Dibromo-3-nitripropionamide	No	N/A	N/A

Comments: None.

State Regulations

California Proposition 65: None known.

Special Regulations

Component	States
2-2-Dibromo-3-nitripropionamide	None.

Compliance Information

NSF: Certified to NSF/ANSI Standard 60 NSF as a membrane cleaner. This product is designed to be used off-line and flushed out prior to using the system for drinking water. This product ships as NSF from: Ashland, VA; Eldridge, IA; Nederland, TX

Food Regulations: N/A

KOSHER: This product is certified by the Orthodox Union as Kosher for Passover and year-round use. Only when prepared by the following ChemTreat facilities: Ashland, VA; Eldridge, IA; Nederland, TX.

Halal: This product has not been evaluated for Halal approval.

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FIFRA: Registered pesticide under 40 CFR 152.10, Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), EPA Registration Number: 464-426-15300.

Other: None

Comments: None.

Section 16. Other Information

HMIS Hazard Rating

Health: 3
Flammability: 1
Physical Hazard: 1
PPE: X

Notes: The PPE rating depends on circumstances of use. See Section 8 for recommended PPE. The Hazardous Material Information System (HMIS) is a voluntary, subjective alpha-numeric symbolic system for recommending hazard risk and personal protection equipment information. It is a subjective rating system based on the evaluator's understanding of the chemical associated risks. The end-user must determine if the code is appropriate for their use.

Abbreviations

Abbreviation	Definition
<	Less Than
>	Greater Than
ACGIH	American Conference of Governmental Industrial Hygienists
EHS	Environmental Health and Safety Dept
N/A	Not Applicable
N/D	Not Determined
NE	Not Established
OSHA	Occupational Health and Safety Dept
PEL	Personal Exposure Limit
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weight Average
UNK	Unknown

Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

Revision Date: March 20, 2019

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Disclaimer

Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, ChemTreat, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ChemTreat, Inc. be responsible for damages of any nature whatsoever resulting from the use or reliance upon information. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.

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SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name: ChemTreat BL1302
Product Use: Boiler Water Treatment
Supplier's Name: ChemTreat, Inc.
Emergency Telephone Number: (800)424-9300 (Toll Free)
Address (Corporate Headquarters): 5640 Cox Road
 Glen Allen, VA 23060
Telephone Number for Information: (800)648-4579
Date of SDS: August 13, 2019
Revision Date: August 13, 2019
Revision Number: 19081301AN

Section 2. Hazard(s) Identification

Signal Word: DANGER

GHS Classification(s): Skin corrosion/irritation – Category 1b
 Eye damage/irritation – Category 1
 Acute Toxicity Oral – Category 4

Hazard Statement(s): H314 Causes severe skin burns and eye damage.
 H318 Causes serious eye damage.
 H302 Harmful if swallowed.

Precautionary Statement(s):

Prevention: P260 Do not breathe dust/fume/gas/mist/vapors/spray.
 P264 Wash thoroughly after handling.
 P270 Do not eat, drink, or smoke when using this product.
 P271 Use only outdoors or in a well-ventilated area.
 P280 Wear protective gloves/protective clothing/eye protection/face protection.



Response:

P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
 P301 + P330 + P331 IF SWALLOWED: Rinse mouth.
 Do NOT induce vomiting.
 P303 + P361 + P353 IF ON SKIN (or hair):
 Remove/take off immediately all contaminated clothing.
 Rinse skin with water/shower.
 P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
 P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P310 Immediately call a POISON CENTER/doctor.
 P363 Wash contaminated clothing before reuse.

Storage:

P405 Store locked up.

Disposal:

P501 Dispose of contents and container in accordance with applicable local, regional, national, and/or international regulations.

System of Classification Used: Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Hazards Not Otherwise Classified: None.

Section 3. Composition/Hazardous Ingredients

Component	CAS Registry #	Wt%
Sodium hydroxide	1310-73-2	10 - 30

Comments

If chemical identity and/or exact percentage of composition has been withheld, this information is considered to be a trade secret.

Section 4. First Aid Measures

Inhalation:

Call a POISON CENTER or doctor/physician if you feel unwell.

Eyes:

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor/physician.

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Skin: Immediately remove/take off all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before re-use. Immediately call a poison center or doctor/physician.

Ingestion: DO NOT INDUCE VOMITING. Rinse mouth. Call a POISON CENTER or doctor/physician.

Most Important Symptoms: N/D

Indication of Immediate Medical Attention and Special Treatment Needed, If Necessary: N/A

Section 5. Fire Fighting Measures

Flammability of the Product: Not flammable.

Suitable Extinguishing Media: Use extinguishing media suitable to surrounding fire.

Specific Hazards Arising from the Chemical: Use water spray to keep containers cool.

Protective Equipment: If product is involved in a fire, wear full protective clothing including a positive-pressure, NIOSH approved, self-contained breathing apparatus.

Section 6. Accidental Release Measures

Personal Precautions: Use appropriate Personal Protective Equipment (PPE).

Environmental Precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.

Methods for Cleaning up: Contain and/or absorb spill with inert material then place in suitable container.

Other Statements: If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802. Reportable Quantity of the product is 376 Gal.



Section 9. Physical and Chemical Properties

Physical State and Appearance: Liquid, Colorless, Clear

Specific Gravity: 1.277 @ 20°C

pH: 14.0 @ 20°C, 100.0%

Freezing Point: <-13°F

Flash Point: N/D

Odor: Mild

Melting Point: N/A

Initial Boiling Point and Boiling Range: 212°F

Solubility in Water: Complete

Evaporation Rate: N/A

Vapor Density: As Water

Molecular Weight: N/D

Viscosity: N/A

Flammability (solid, gas): N/D

Flammable Limits: N/A

Autoignition Temperature: N/A

Density: 10.65 LB/GA

Vapor Pressure: As Water

% VOC: 0

Odor Threshold: N/D

n-octanol Partition Coefficient: N/D

Decomposition Temperature: N/D

Section 10. Stability and Reactivity

Chemical Stability: Stable at normal temperatures and pressures.

Incompatibility with Various Substances: Strong oxidizers, Acids, Aluminum/aluminum alloys, Tin, Zinc.

Hazardous Decomposition Products: Hydrogen, Oxides of sodium.

Possibility of Hazardous Reactions: None known.

Reactivity: N/D

Conditions To Avoid: N/D



Section 7. Handling and Storage

Handling: Wear appropriate Personal Protective Equipment (PPE) when handling this product. Do not get in eyes, or on skin and clothing. Wash thoroughly after handling. Do not ingest. Avoid breathing vapors, mist or dust.

Storage: Store away from incompatible materials (see Section 10). Store at ambient temperatures. Keep container securely closed when not in use. Label precautions also apply to empty container. Recondition or dispose of empty containers in accordance with government regulations. For Industrial use only. Store above Freeze Point.

Section 8. Exposure Controls/Personal Protection

Exposure Limits

Component	Source	Exposure Limits
Sodium hydroxide	ACGIH TLV	2 mg/m ³ Ceiling
	OSHA PEL	2 mg/m ³ TWA

Engineering Controls: Use only with adequate ventilation. The use of local ventilation is recommended to control emission near the source.

Personal Protection

Eyes: Wear chemical splash goggles or safety glasses with full-face shield. Maintain eyewash fountain in work area.

Skin: Maintain quick-drench facilities in work area. Wear butyl rubber or neoprene gloves. Wash them after each use and replace as necessary. If conditions warrant, wear protective clothing such as boots, aprons, and coveralls to prevent skin contact.

Respiratory: If misting occurs, use NIOSH approved organic vapor/acid gas dual cartridge respirator with a dust/mist prefilter in accordance with 29 CFR 1910.134.



Section 11. Toxicological Information

Acute Toxicity

Chemical Name	Exposure	Type of Effect	Concentration	Species
Sodium hydroxide	Oral	LD50	300 MG/KG	Rat
	Dermal	LD50	1350 MG/KG	Rabbit
ChemTreat BL1302	N/D	N/D	N/D	N/D

Carcinogenicity Category

Component	Source	Code	Brief Description
Sodium hydroxide	N/E	N/E	N/E

Likely Routes of Exposure: N/D

Symptoms

Inhalation: N/D

Eye Contact: N/D

Skin Contact: N/D

Ingestion: N/D

Skin Corrosion/Irritation: N/D

Serious Eye Damage/Eye Irritation: N/D

Sensitization: N/D

Germ Cell Mutagenicity: N/D

Reproductive/Developmental Toxicity: N/D

Specific Target Organ Toxicity

Single Exposure: N/D

Repeated Exposure: N/D

Aspiration Hazard: N/D

Comments: None.



Section 12. Ecological Information

Ecotoxicity

Species	Duration	Type of Effect	Test Results
Bluegill Sunfish	96h	LC50	198 mg/l
Mosquito fish	96h	LC50	250 mg/l
Ceriodaphnia dubia	48h	LC50	4923 mg/l

Persistence and Biodegradability: N/D

Bioaccumulative Potential: N/D

Mobility in Soil: N/D

Other Adverse Effects: N/D

Comments: None.

Section 13. Disposal Considerations

Dispose of in accordance with local, state and federal regulations.
EPA corrosivity characteristic hazardous waste D002 when disposed of in the original product form.

Section 14. Transport Information

Controlling Regulation	UN/NA#	Proper Shipping Name	Technical Name	Hazard Class	Packing Group
DOT	UN1824	SODIUM HYDROXIDE SOLUTION	N/A	8	PGII
Over 375 GA	RO UN1824	SODIUM HYDROXIDE SOLUTION	N/A	8	PGII
IMDG	UN1824	SODIUM HYDROXIDE SOLUTION	N/A	8	PGII
TDG	UN1824	SODIUM HYDROXIDE SOLUTION	N/A	8	PGII
ICAO	UN1824	SODIUM HYDROXIDE SOLUTION	N/A	8	PGII

Note: N/A

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ChemTreat BL1302



Compliance Information

NSF: N/A

Food Regulations: FDA: All ingredients in this product are authorized in 21 CFR 173.310 for use as "Boiler Water Additives" where the steam may contact food.
FDA: Generally Recognized as Safe (GRAS) by the FDA at 21 CFR 184.1763.

KOSHER: This product is certified by the Orthodox Union as kosher pareve.
Only when prepared by the following ChemTreat facilities:
Ashland, VA; Eldridge, IA; Nederland, TX; Fontana, CA.

Halal: This product has not been evaluated for Halal approval.

FIFRA: N/A

Other: None

Comments: None.

Section 16. Other Information

HMIS Hazard Rating

Health: 3
Flammability: 0
Physical Hazard: 1
PPE: X

Notes: The PPE rating depends on circumstances of use. See Section 8 for recommended PPE.
The Hazardous Material Information System (HMIS) is a voluntary, subjective alpha-numeric symbolic system for recommending hazard risk and personal protection equipment information. It is a subjective rating system based on the evaluator's understanding of the chemical associated risks. The end-user must determine if the code is appropriate for their use.

Abbreviations

Abbreviation	Definition
<	Less Than
>	Greater Than
ACGIH	American Conference of Governmental Industrial Hygienists

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ChemTreat BL1302



Section 15. Regulatory Information

Inventory Status

United States (TSCA): All ingredients listed.
Canada (DSL/NDSL): All ingredients listed.

Federal Regulations

SARA Title III Rules

Sections 311/312 Hazard Classes

Fire Hazard: No
Reactive Hazard: No
Release of Pressure: No
Acute Health Hazard: Yes
Chronic Health Hazard: No

Other Sections

Component	Section 313 Toxic Chemical	Section 302 EHS TPO	CERCLA RQ
Sodium hydroxide	N/A	N/A	1000

Comments: None.

State Regulations

California Proposition 65: None known.

Special Regulations

Component	States
Sodium hydroxide	MA, MN, NY, PA, WA

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ChemTreat BL1302



Abbreviation	Definition
EHS	Environmental Health and Safety Dept
N/A	Not Applicable
N/D	Not Determined
N/E	Not Established
OSHA	Occupational Health and Safety Dept
PEL	Personal Exposure Limit
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weight Average
UNK	Unknown

Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

Revision Date: August 13, 2019

Disclaimer

Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, ChemTreat, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ChemTreat, Inc. be responsible for damages of any nature whatsoever resulting from the use or reliance upon information. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.

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ChemTreat BL1302

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ChemTreat BL1302



SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name: Green Magic® GM1000
Product Use: Cleaner
Supplier's Name: ChemTreat, Inc.
Emergency Telephone Number: (800)424-9300 (Toll Free)
Address (Corporate Headquarters): 5640 Cox Road
Glen Allen, VA 23060
Telephone Number for Information: (800)648-4579
Date of SDS: March 9, 2018
Revision Date: March 9, 2018
Revision Number: 18030901AN

Section 2. Hazard(s) Identification

Signal Word: None

GHS Classification(s): Non-Hazardous Substance

Hazard Statement(s): Non-Hazardous Substance

Precautionary Statement(s): No significant health risks are expected from exposures under normal conditions of use.

Prevention: None.

Response: None.

Storage: None.

Disposal: None.

System of Classification Used: Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Hazards Not Otherwise Classified: None.

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Green Magic® GM1000



Section 6. Accidental Release Measures

Personal Precautions: Use appropriate Personal Protective Equipment (PPE).

Environmental Precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.

Methods for Cleaning up: Contain spill and salvage as much material as possible by pumping to salvage tank or drum. Pick up remaining material with a suitable absorbent.

Other Statements: None.

Section 7. Handling and Storage

Handling: Wear appropriate Personal Protective Equipment (PPE) when handling this product. Do not get in eyes, or on skin and clothing. Wash thoroughly after handling. Do not ingest. Avoid breathing vapors, mist or dust.

Storage: Store away from incompatible materials (see Section 10). Store at ambient temperatures. Keep container securely closed when not in use. Label precautions also apply to empty container. Recondition or dispose of empty containers in accordance with government regulations. For Industrial use only. Keep from freezing. Store above Freezing Point.

Section 8. Exposure Controls/Personal Protection

Exposure Limits

Component	Source	Exposure Limits
Components not listed are either non hazardous or in concentration of less than 1%	N/E	N/E

Engineering Controls: Use only with adequate ventilation. The use of local ventilation is recommended to control emission near the source.

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Section 3. Composition/Hazardous Ingredients

Component	CAS Registry #	Wt. %
Components not listed are either non hazardous or in concentration of less than 1%	N/A	N/A

Comments: If chemical identity and/or exact percentage of composition has been withheld, this information is considered to be a trade secret.

Section 4. First Aid Measures

Inhalation: Call a POISON CENTER or doctor/physician if you feel unwell.

Eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.

Skin: Call a poison center or doctor/physician if you feel unwell.

Ingestion: Rinse mouth. Call a poison center or doctor/physician if you feel unwell.

Most Important Symptoms: N/D

Indication of Immediate Medical Attention and Special Treatment Needed, if Necessary: N/A

Section 5. Fire Fighting Measures

Flammability of the Product: Not flammable.

Suitable Extinguishing Media: Use extinguishing media suitable to surrounding fire.

Specific Hazards Arising from the Chemical: Use water spray to keep containers cool.

Protective Equipment: If product is involved in a fire, wear full protective clothing including a positive-pressure, NIOSH approved, self-contained breathing apparatus.

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Green Magic® GM1000



Personal Protection

Eyes: Safety glasses are recommended if risk of eye contact.

Skin: Wear butyl rubber or neoprene gloves. Wash them after each use and replace as necessary. If conditions warrant, wear protective clothing such as boots, aprons, and coveralls to prevent skin contact.

Respiratory: If misting occurs, use NIOSH approved organic vapor/acid gas dual cartridge respirator with a dust/mist prefilter in accordance with 29 CFR 1910.134.

Section 9. Physical and Chemical Properties

Physical State and Appearance: Liquid, Green, Clear

Specific Gravity: 1.160 @ 20°C

pH: 5.5 @ 20°C, 1.0%

Freezing Point: <-4°F

Flash Point: N/A

Odor: Moderate

Melting Point: N/A

Initial Boiling Point and Boiling Range: 212°F

Solubility in Water: Soluble

Evaporation Rate: N/D

Vapor Density: N/D

Molecular Weight: N/D

Viscosity: N/D

Flammability (solid, gas): N/D

Flammable Limits: N/A

Autoignition Temperature: N/A

Density: 9.68 LB/GA

Vapor Pressure: N/D

% VOC: 0

Odor Threshold: N/D

n-octanol Partition Coefficient: N/D

Decomposition Temperature: N/D

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Section 10. Stability and Reactivity

Chemical Stability:	Stable at normal temperatures and pressures.
Incompatibility with Various Substances:	Strong oxidizers, Strong bases.
Hazardous Decomposition Products:	Oxides of carbon, Hydrocarbons.
Possibility of Hazardous Reactions:	None known.
Reactivity:	N/D
Conditions To Avoid:	N/D

Section 11. Toxicological Information

Acute Toxicity

Chemical Name	Exposure	Type of Effect	Concentration	Species
N/D	N/D	N/D	N/D	N/D

Carcinogenicity Category

Component	Source	Code	Brief Description
Components not listed are either non hazardous or in concentration of less than 1%	N/E	N/E	N/E

Likely Routes of Exposure: N/D

Symptoms

Inhalation:	N/D
Eye Contact:	N/D
Skin Contact:	N/D
Ingestion:	N/D

Skin Corrosion/Irritation: N/D

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Serious Eye Damage/Eye Irritation:	N/D
Sensitization:	N/D
Germ Cell Mutagenicity:	N/D
Reproductive/Developmental Toxicity:	N/D
Specific Target Organ Toxicity	
Single Exposure:	N/D
Repeated Exposure:	N/D
Aspiration Hazard:	N/D
Comments:	None.

Section 12. Ecological Information

Ecotoxicity

Species	Duration	Type of Effect	Test Results
Ceriodaphnia dubia	48h	LC50	5176 mg/l
Fathead Minnow	96h	LC50	884 mg/l
Oncorhynchus Mykiss	96h	LC50	915 mg/l

Persistence and Biodegradability: N/D

Bioaccumulative Potential: N/D

Mobility In Soil: N/D

Other Adverse Effects: N/D

Comments: None.

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Section 13. Disposal Considerations

Dispose of in accordance with local, state and federal regulations.

Section 14. Transport Information

Controlling Regulation	UN/NA#	Proper Shipping Name:	Technical Name:	Hazard Class:	Packing Group:
DOT	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
IMDG	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
TDG	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
ICAO	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
SCT	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A

Note: N/A

Section 15. Regulatory Information

Inventory Status

United States (TSCA):	All ingredients listed.
Canada (DSL/NDL):	All ingredients listed.

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Federal Regulations

SARA Title III Rules

Sections 311/312 Hazard Classes

Fire Hazard:	No
Reactive Hazard:	No
Release of Pressure:	No
Acute Health Hazard:	No
Chronic Health Hazard:	No

Other Sections

Component	Section 313 Toxic Chemical	Section 302 EHS TPQ	CERCLA RQ
Components not listed are either non hazardous or in concentration of less than 1%	N/A	N/A	N/A

Comments: None.

State Regulations

California Proposition 65: None known.

Special Regulations

Component	States
Components not listed are either non hazardous or in concentration of less than 1%	None.

International Regulations

Canada

WHMIS Classification: N/A

Controlled Product Regulations (CPR): N/A

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Compliance Information

NSF: N/A

Food Regulations: N/A

KOSHER: This product has not been evaluated for Kosher approval.

Halal: This product has not been evaluated for Halal approval.

FIFRA: N/A

Other: None

Comments: None.

Section 16. Other Information

HMIS Hazard Rating

Health: 0

Flammability: 0

Physical Hazard: 0

PPE: X

Notes: The PPE rating depends on circumstances of use. See Section 8 for recommended PPE. The Hazardous Material Information System (HMIS) is a voluntary, subjective alpha-numeric symbolic system for recommending hazard risk and personal protection equipment information. It is a subjective rating system based on the evaluator's understanding of the chemical associated risks. The end-user must determine if the code is appropriate for their use.

Abbreviations

Abbreviation	Definition
<	Less Than
>	Greater Than
ACGIH	American Conference of Governmental Industrial Hygienists
EHS	Environmental Health and Safety Dept
N/A	Not Applicable
N/D	Not Determined
N/E	Not Established
OSHA	Occupational Health and Safety Dept
PEL	Personal Exposure Limit
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value

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SAFETY DATA SHEET

according to the Globally Harmonized System and US regulation

Dissolvine E-39

Version 2 Revision Date 01/02/2018 Print Date 07/11/2019 US / Z8

1. IDENTIFICATION

Product name : Dissolvine E-39

Product Use Description : Specific use(s): Chelating agent

Company : Nouryon
Functional Chemicals B.V.
Velperweg 76
Amhem 6824 BM
NL

Telephone : +31263664433

Fax : +31263665830

E-mail address : sds_chelates@nouryon.com

Emergency telephone : 24 hours: +31 57 06 79211, CHEMTREC-USA: 1-800-424-9300, CHEMTREC outside USA +1-703-527-3887, CANUTEC-CANADA: 1-613-996-6666, 化学事故应急响应电话: 国家化学事故应急响应中心 +86 532 8388 9090

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	liquid
Color	light yellow
Odor	Slightly ammonia like

GHS Classification

Corrosive to Metals, Category 1

Acute toxicity, Category 4, Inhalation

Eye irritation, Category 2A

Specific target organ systemic toxicity - repeated exposure, Category 2, Inhalation, Respiratory Tract

GHS label elements

Hazard pictograms :

Signal Word : Warning

Hazard Statements : H290 May be corrosive to metals.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H373 May cause damage to organs (Respiratory Tract)

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Precautionary Statements

through prolonged or repeated exposure if inhaled.

Prevention:
P234 Keep only in original container.
P260 Do not breathe mist, vapors or spray.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear eye protection/ face protection.

Response:
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P314 Get medical advice/ attention if you feel unwell.
P337 + P313 If eye irritation persists: Get medical advice/ attention.

P390 Absorb spillage to prevent material damage.

Storage:
P400 Store in corrosive resistant container with a resistant inner liner.

Disposal:
P501 Dispose of contents/container in accordance with local regulation.

Carcinogenicity:

IARC : Group 2B: Possibly carcinogenic to humans
Nitrolicacetic acid, trisodium salt 5064-31-3

OSHA : Group 2B: Possibly carcinogenic to humans
No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

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3. COMPOSITION/INFORMATION ON INGREDIENTS

Common Name : Ethylenediaminetetraacetic acid, tetrasodium salt; Aqueous solution
Pure substance/mixture : Mixture

Hazardous ingredients

Chemical name	CAS-No.	Classification	Concentration [% W/W]
Ethylenediaminetetraacetic acid, tetrasodium salt	64-02-8	Acute Tox. 4; H302 Acute Tox. 4; H332 Eye Irrit. 2A; H319 STOT RE 2; H373	>= 30 - < 50
Sodium hydroxide	1310-73-2	Mit. Corr. 1; H290 Skin Corr. 1A; H314 Eye Dam. 1; H318 Aquatic Acute 3; H402	>= 0.5 - < 1.9
Nitriotriacetic acid, trisodium salt	5064-31-3	Acute Tox. 4; H302 Eye Irrit. 2A; H319 Carc. 2; H351	>= 0.1 - < 1

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

General advice : Move out of dangerous area.
Consult a physician.
Show this material safety data sheet to the doctor in attendance.

Inhalation : If breathed in, move person into fresh air.
Consult a physician after significant exposure.

Skin contact : Take off contaminated clothing and shoes immediately.
Rinse immediately with plenty of water.

Eye contact : Rinse with plenty of water.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
Obtain medical attention.

Ingestion : Clean mouth with water and drink afterwards plenty of water.
Never give anything by mouth to an unconscious person.
Obtain medical attention.

Notes to physician

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7. HANDLING AND STORAGE

Handling

Advice on safe handling : For personal protection see section 8.
Avoid formation of aerosol.
Do not breathe vapors or spray mist.
Avoid contact with skin, eyes and clothing.
Smoking, eating and drinking should be prohibited in the application area.
Provide sufficient air exchange and/or exhaust in work rooms.
Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

Storage

Requirements for storage areas and containers : Prevent unauthorized access.
Keep container tightly closed in a dry and well-ventilated place.
Store in closed dark containers made of anti-corrosive material.
Keep only in original container.

Other data : No decomposition if stored and applied as directed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Ingredients with workplace control parameters

Ingredients	CAS-No.	Value	Control parameters	Update	Basis	Form of exposure
Sodium hydroxide	1310-73-2	CEL	2 mg/m3	1994-09-01	ACGIH	
		C	2 mg/m3	2013-03-01	ACGIH	
	Further information	URT Irr: Upper Respiratory Tract Irritation eye Irr: Eye Irritation skin Irr: Skin Irritation				
		C	2 mg/m3	2013-10-08	NIOSH REL	
		TWA	2 mg/m3	1997-08-04	OSHA Z-1	
		C	2 mg/m3	1989-01-19	OSHA PO	
		C	2 mg/m3	2014-11-26	CAL PEL	

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Symptoms : The symptoms and effects are as expected from the hazards as shown in section 2. No specific product related symptoms are known.

Risks : Causes serious eye irritation.
Harmful if inhaled.
May cause damage to organs through prolonged or repeated exposure if inhaled.

Treatment : Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Specific hazards during fire fighting / Specific hazards arising from the chemical : Water spray may be ineffective unless used by experienced firefighters.
Do not allow run-off from fire fighting to enter drains or water courses.

Combustion products : Nitrogen oxides (NOx)

Special protective equipment for fire-fighters : In the event of fire, wear self-contained breathing apparatus.

Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

See also Section 9. Physical and chemical properties: Safety data

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions : Use personal protective equipment.
Wear respiratory protection.
Ensure adequate ventilation.

Emergency measures on accidental release : Evacuate personnel to safe areas.
Only qualified personnel equipped with suitable protective equipment may intervene.
Prevent unauthorized persons entering the zone.

Environmental precautions : Do not flush into surface water or sanitary sewer system.
If the product contaminates rivers and lakes or drains inform respective authorities.

Methods for cleaning up / Methods for containment : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Keep in suitable, closed containers for disposal.

Reference to other sections : For disposal considerations see section 13.
For personal protection see section 8.

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ACGIH: American Conference of Governmental Industrial Hygienists
BEI: Biological Exposure Index
MAC: Maximum Allowable Concentration
NIOSH: National Institute for Occupational Safety and Health
OEL: Occupational exposure limit.
STEL: Short term exposure limit
TWA: Time Weighted Average

Hazardous substance

Substance name	CAS-No.	Value	Control parameters	Basis	Update
Sodium hydroxide	1310-73-2	Immediately Dangerous to Life or Health Concentration Value	10 mg/m3	US IDLH	1995-03-01
	Further information	Immediately Dangerous to Life or Health Concentrations (IDLH)			

Appropriate engineering controls

Effective exhaust ventilation system
Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protective equipment

Eye/face protection : Tightly fitting safety goggles

Skin and body protection : Protective suit

Respiratory protection : In the case of vapor or aerosol formation use a respirator with an approved filter.
Filter A

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.
When using do not eat or drink.
When using do not smoke.
Wash hands before breaks and at the end of workday.

Environmental exposure controls

General advice : Do not flush into surface water or sanitary sewer system.
If the product contaminates rivers and lakes or drains inform respective authorities.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form : liquid

Color : light yellow

Odor : Slightly ammonia like

Odor Threshold : not determined

Safety data

pH : 11 - 12 1% (water)

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Dissolvine E-39

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Melting point	: Not applicable		
Boiling point/boiling range	: 105 - 110 °C		
Flash point	: not (in)flammable	Product is not flammable (aqueous)	
Evaporation rate	: No data available		
Flammability (solid, gas)	: Not applicable		
Flammability (liquids)	: Not classified as a flammability hazard		
Lower explosion limit	: Not applicable		
Upper explosion limit	: Not applicable		
Vapor pressure	: similar to water		
Relative vapor density	: similar to water		
Relative density	: 1.15 - 1.38		
Bulk density	: Not applicable		
Water solubility	: completely miscible		
Solubility in other solvents	: No data available		
Partition coefficient: n-octanol/water	: log Pow: < 0		
Autoignition temperature	: Not applicable		
Decomposition temperature	: No data available		
Viscosity, dynamic	: ca. 19 mPa.s at 20 °C		
Viscosity, kinematic	: 13.80 - 16.50 mm ² /s at 20 °C		
Explosive properties	: Not explosive		
Oxidizing properties	: Not classified as oxidizing.		
Corrosive to metals	: Corrosive to metals		
This material safety datasheet only contains information relating to safety and does not replace any product information or product specification.			

10. STABILITY AND REACTIVITY

Conditions to avoid	: None known.
Materials to avoid	: Copper Aluminum Zinc Copper alloys Nickel
Hazardous decomposition	: Carbon oxides

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Dissolvine E-39

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products	nitrogen oxides (NOx)		
Thermal decomposition	: No data available		
Reactivity	: Stable under normal conditions.		
Chemical stability	: Stable under recommended storage conditions.		
Hazardous reactions	: No dangerous reaction known under conditions of normal use.		

11. TOXICOLOGICAL INFORMATION

PRODUCT INFORMATION:	
Hazard Summary	
Acute toxicity	: Harmful if inhaled.
Skin corrosion/irritation	: Not classified based on available information.
Serious eye damage/eye irritation	: Causes serious eye irritation.
Respiratory or skin sensitization	: Respiratory sensitization: Not classified based on available information. Skin sensitization: Not classified based on available information.
Germ cell mutagenicity	: Not classified based on available information.
Carcinogenicity	: Not classified based on available information.
Reproductive toxicity	: Not classified based on available information.
STOT-single exposure	: Not classified based on available information.
STOT-repeated exposure	: May cause damage to organs through prolonged or repeated exposure if inhaled.
Aspiration hazard	: Not classified based on available information.
Potential Health Effects	
Inhalation	: Inhalation of aerosols may cause irritation to mucous membranes. Thermal decomposition can lead to release of irritating gases and vapors. Harmful if inhaled.
Skin	: May cause skin irritation.
Eyes	: Causes serious eye irritation.
Ingestion	: May be harmful if swallowed.
Aggravated Medical Condition	: None known.
Symptoms of Overexposure	: The symptoms and effects are as expected from the hazards as shown in section 2. No specific product related symptoms

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Dissolvine E-39

Version 2	Revision Date 01/02/2018	Print Date 07/11/2019	US / Z8
are known.			
Toxicology Assessment			
Further information	:	May cause damage to organs through prolonged or repeated exposure.	
Test result			
Acute oral toxicity	:	Acute toxicity estimate: 4,506 mg/kg Method: Calculation method	
Acute inhalation toxicity	:	Acute toxicity estimate : 3.8 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: Calculation method	
Skin irritation	:	Result: No skin irritation Method: OECD Test Guideline 439	
Eye irritation	:	Result: Eye irritation	
Target Organ Systemic Toxicant - Repeated exposure	:	Routes of exposure: Inhalation Target Organs: Respiratory Tract The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.	
Carcinogenicity:			
IARC	:	Group 2B: Possibly carcinogenic to humans Nitrilotriacetic acid, trisodium salt Group 2B: Possibly carcinogenic to humans	5064-31-3
OSHA	:	No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.	
NTP	:	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.	

TOXICOLOGY DATA FOR THE INGREDIENTS:

Toxicology Assessment	
Component: Sodium hydroxide	
CMR effects	: Mutagenicity: In vivo tests did not show mutagenic effects, Tests on bacterial or mammalian cell cultures did not show mutagenic effects.
Component: Nitrilotriacetic acid, trisodium salt	
CMR effects	: Carcinogenicity: Limited evidence of a carcinogenic effect.
Test result	

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Version 2	Revision Date 01/02/2018	Print Date 07/11/2019	US / Z8
Component: Ethylenediaminetetraacetic acid, tetrasodium salt			
Acute oral toxicity	: LD50: 1,780 mg/kg Species: Rat Method: OECD Test Guideline 401		
Acute inhalation toxicity	: LC50 (Rat): > 1 - 5 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: OECD Test Guideline 412 Read-across (Analogy)		
Skin irritation	: Species: Rabbit Result: No skin irritation Method: OECD Test Guideline 404 Read-across (Analogy)		
Eye irritation	: Species: Rabbit Result: Eye irritation Method: OECD Test Guideline 405		
Sensitization	: Maximization Test Species: Guinea pig Result: Does not cause skin sensitization. Method: OECD Test Guideline 406 Read-across (Analogy)		
Germ cell mutagenicity Genotoxicity in vitro	: Result: negative Method: Mutagenicity (Salmonella typhimurium - reverse mutation assay) Read-across (Analogy)		
Genotoxicity in vivo	: Chromosome aberration test in vivo Species: Mouse Method: OECD Test Guideline 474 Result: negative Read-across (Analogy)		
Carcinogenicity	: Species: Rat Application Route: Ingestion Result: Not classified due to data which are conclusive although insufficient for classification. Read-across (Analogy)		
Reproductive toxicity	: Species: Rat NOAEL: F1: > 250 mg/kg. Read-across (Analogy), Literature data.		
Target Organ Systemic Toxicant - Single exposure	: Based on available data, the classification criteria are not met.		
Target Organ Systemic	: Routes of exposure: Inhalation		

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Toxicant - Repeated exposure	Target Organs: Respiratory Tract The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.		
Aspiration toxicity	: Not classified due to data which are conclusive although insufficient for classification.		
Component: Sodium hydroxide			
Skin irritation	: Result: Causes severe burns.		
Eye irritation	: Result: Risk of serious damage to eyes.		
Sensitization	: Result: Does not cause skin sensitization.		
Germ cell mutagenicity Genotoxicity in vitro	: In vitro tests did not show mutagenic effects		
Component: Nitritotriacetic acid, trisodium salt			
Acute oral toxicity	: LD50: 1,740 mg/kg Species: Rat Method: OECD Test Guideline 401		
Acute inhalation toxicity	: LC50 (Rat): > 5 mg/l Exposure time: 4 h Test atmosphere: dust/mist Assessment: The substance or mixture has no acute inhalation toxicity Literature data.		
Skin irritation	: Species: Rabbit Result: No skin irritation		
Eye irritation	: Result: Irritating to eyes.		
Sensitization	: Buehler Test Species: Guinea pig Result: Does not cause skin sensitization. Method: OECD Test Guideline 406		
Germ cell mutagenicity Genotoxicity in vitro	: Chromosome aberration test in vitro Result: negative Method: OECD Test Guideline 473 Literature data.		
Genotoxicity in vivo	: Chromosome aberration test in vivo Species: Mouse Result: negative Literature data.		
Reproductive toxicity	: Species: Rat NOAEL: > 450 mg/kg. Method: OECD Test Guideline 416 Literature data.		
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Version 2	Revision Date 01/02/2018	Print Date 07/11/2019	US / Z8
Toxicity to fish (Chronic toxicity)	: Exposure time: 72 h Species: algae : NOEC: > 25.7 mg/l Exposure time: 35 d Species: Dario rerio (zebra fish) Test Type: flow-through test Method: OECD Test Guideline 210 Read-across (Analogy)		
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	: NOEC: > 25 mg/l Exposure time: 21 d Species: Daphnia magna (Water flea) Read-across (Analogy)		
Elimination information (persistence and degradability)			
Bioaccumulation	: Not expected considering the low log Pow value.		
Mobility	: Adsorption to the solid soil particles is not expected.		
Biodegradability	: Not readily biodegradable, but will degrade after a longer period.		
Further information on ecology			
Biochemical Oxygen Demand (BOD)	: No data available		
Component: Sodium hydroxide			
Ecotoxicity effects			
Toxicity to daphnia and other aquatic invertebrates	: EC50: 40.4 mg/l Exposure time: 48 h Species: Ceriodaphnia (water flea) Test Type: Immobilization		
Elimination information (persistence and degradability)			
Bioaccumulation	: Does not bioaccumulate.		
Mobility	: Can be leached out from soil.		
Distribution among environmental compartments	: Transport to air is not expected.		
Biodegradability	: Result: Not applicable inorganic		
Further information on ecology			
Biochemical Oxygen Demand (BOD)	: Not applicable		
Component: Nitritotriacetic acid, trisodium salt			
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Version 2	Revision Date 01/02/2018	Print Date 07/11/2019	US / Z8
Target Organ Systemic Toxicant - Single exposure	: Not classified due to data which are conclusive although insufficient for classification.		
Target Organ Systemic Toxicant - Repeated exposure	: Not classified due to data which are conclusive although insufficient for classification.		
Aspiration toxicity	: Not classified due to data which are conclusive although insufficient for classification.		
12. ECOLOGICAL INFORMATION			
PRODUCT INFORMATION:			
Ecotoxicology Assessment			
Additional ecological information	: None known.		
Further information on ecology			
Hazardous to the ozone layer			
Regulation	: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances		
Remarks	: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).		
INGREDIENTS:			
Ecotoxicology Assessment			
Component: Sodium hydroxide			
Chronic aquatic toxicity	: This product has no known ecotoxicological effects.		
Test result			
Component: Ethylenediaminetetraacetic acid, tetrasodium salt			
Ecotoxicity effects			
Toxicity to fish	: LC50: > 100 mg/l Exposure time: 96 h Species: Fish		
Toxicity to daphnia and other aquatic invertebrates	: EC50: 140 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) Method: DIN 38412 Read-across (Analogy)		
Toxicity to algae	: EC50: > 100 mg/l		
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Version 2	Revision Date 01/02/2018	Print Date 07/11/2019	US / Z8
Ecotoxicity effects			
Toxicity to fish	: LC50: > 100 mg/l Exposure time: 96 h Species: Pimephales promelas (fathead minnow)		
Toxicity to daphnia and other aquatic invertebrates	: EC50: > 100 mg/l Exposure time: 96 h Species: Gammarus fasciatus (freshwater shrimp)		
Toxicity to algae	: EC50: > 100 mg/l Exposure time: 72 h Species: Desmodesmus subspicatus (green algae) Method: OECD Test Guideline 201		
Toxicity to fish (Chronic toxicity)	: NOEC: > 54 mg/l Exposure time: 30 d Species: Pimephales promelas (fathead minnow) Literature data.		
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	: NOEC: 9.3 mg/l Exposure time: 147 d Species: Gammarus fasciatus (freshwater shrimp)		
Elimination information (persistence and degradability)			
Bioaccumulation	: Bioaccumulation is unlikely.		
Mobility	: Adsorption to the solid soil particles is not expected.		
Biodegradability	: Result: Readily biodegradable.		
Further information on ecology			
Biochemical Oxygen Demand (BOD)	: No data available		
13. DISPOSAL CONSIDERATIONS			
Product	: Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container. Hazardous waste Dispose of contents/container in accordance with local regulation.		
Contaminated packaging	: Empty remaining contents. Dispose of as unused product.		
14. TRANSPORT INFORMATION			
International Regulations			
IATA-DGR UN/ID No.	: UN 3267		
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Proper shipping name	: Corrosive liquid, basic, organic, n.o.s. (Ethylenediaminetetraacetic acid, tetrasodium salt)		
Class	: 8		
Packing group	: III		
Labels	: 8		
Packing instruction (cargo aircraft)	: 856		
Packing instruction (passenger aircraft)	: 852		
Packing instruction (LQ)	: Y841		
Environmentally hazardous	: no		
IMDG-Code			
UN number	: UN 3267		
Proper shipping name	: CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (Ethylenediaminetetraacetic acid, tetrasodium salt)		
Class	: 8		
Packing group	: III		
Labels	: 8		
EmS Code	: F-A, S-B		
Marine pollutant	: no		

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

Domestic regulation

49 CFR

Not regulated as a dangerous good

15. REGULATORY INFORMATION

Notification status

DSL	: YES. All components of this product are on the Canadian DSL
AICS	: YES. On the inventory, or in compliance with the inventory
ENCs	: YES. On the inventory, or in compliance with the inventory
ISHL	: YES. On the inventory, or in compliance with the inventory
KECI	: YES. On the inventory, or in compliance with the inventory
PICCS	: YES. On the inventory, or in compliance with the inventory
IECSC	: YES. On the inventory, or in compliance with the inventory
TCSI	: YES. On the inventory, or in compliance with the inventory
TSCA	: YES. All chemical substances in this product are either listed on the TSCA Inventory or in compliance with a TSCA Inventory exemption.

For explanation of abbreviations, see section 16.

TSCA list

TSCA 5(a)(2)	: No substances are subject to a Significant New Use Rule.
TSCA 12(b)	: No substances are subject to TSCA 12(b) export notification requirements.

EPCRA - Emergency Planning and Community Right-to-Know

CERCLA Reportable Quantity

Ingredients	CAS-No.	Component RQ (lbs)
Sodium hydroxide	1310-73-2	1000 lbs

SARA 304 Extremely Hazardous Substances Reportable Quantity

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H314	:	Causes severe skin burns and eye damage.	
H318	:	Causes serious eye damage.	
H319	:	Causes serious eye irritation.	
H332	:	Harmful if inhaled.	
H351	:	Suspected of causing cancer.	
H373	:	May cause damage to organs through prolonged or repeated exposure if inhaled.	
H402	:	Harmful to aquatic life.	
Full text of other abbreviations			
ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)	
CAL PEL	:	California permissible exposure limits for chemical contaminants (Title 8, Article 107)	
NIOSH REL	:	USA. NIOSH Recommended Exposure Limits	
OSHA P0	:	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000	
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants	
ACGIH / C	:	Ceiling limit	
ACGIH / CEIL	:	Threshold Limit Value - Ceiling (TLV-C)	
CAL PEL / C	:	Ceiling	
NIOSH REL / C	:	Ceiling value not be exceeded at any time.	
OSHA P0 / C	:	Ceiling limit	
OSHA Z-1 / TWA	:	8-hour time weighted average	

AICS - Australian Inventory of Chemical Substances; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; CPR - Controlled Products Regulations; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; ENS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ERcX - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act (United States); UN - United Nations;

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This material does not contain any components with a section 304 EHS RQ.			
SARA 311/312 Hazards	: Corrosive to Metals Acute toxicity (any route of exposure) Serious eye damage or eye irritation Specific target organ toxicity (single or repeated exposure)		
SARA 302	: This material does not contain any components with a section 302 EHS TPQ.		
SARA 313	: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.		
Clean Air Act			
This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).			
This product does not contain any chemicals subject to disclosure and listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).			

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM Intermediate or Final VOC's (40 CFR 60.489).

Clean Water Act

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

Sodium hydroxide 1310-73-2 1 - 5 %

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

Sodium hydroxide 1310-73-2 1 - 5 %

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

US State Regulations

Massachusetts Right To Know

Sodium hydroxide 1310-73-2 1 - 5 %
Nitritotriacetic acid, trisodium salt 5064-31-3 0.1 - 1 %

Pennsylvania Right To Know

Ethylenediaminetetraacetic acid, tetrasodium salt 64-02-8 30 - 50 %
Sodium hydroxide 1310-73-2 1 - 5 %

New Jersey Right To Know

Ethylenediaminetetraacetic acid, tetrasodium salt 64-02-8 30 - 50 %
Sodium hydroxide 1310-73-2 1 - 5 %

California Prop. 65

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

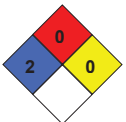
16. OTHER INFORMATION

Full text of H-Statements

H290	: May be corrosive to metals.
H302	: Harmful if swallowed.

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UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System			
Further information			
HMIS Classification	: Health Hazard: 2 Chronic Health Hazard: * Flammability: 0 Physical hazards: 0		
NFPA Classification	: Health Hazard: 2 Fire Hazard: 0 Reactivity Hazard: 0		
			

Notification status explanation

REACH	1907/2006 (EU)
DSL	Canadian Domestic Substances List (DSL)
AICS	Australia Inventory of Chemical Substances (AICS)
ENCs	Japan. ENCS - Existing and New Chemical Substances Inventory
ISHL	Japan. ISHL - Inventory of Chemical Substances
KECI	Korea. Korean Existing Chemicals Inventory (KECI)
PICCS	Philippines Inventory of Chemicals and Chemical Substances (PICCS)
IECSC	China. Inventory of Existing Chemical Substances in China (IECSC)
TCSI	Taiwan Chemical Substance Inventory (TCSI)
TSCA	United States TSCA Inventory

Further information

Revision Date	01/02/2018
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The information in this material safety data sheet should be provided to all who will use, handle, store, transport or otherwise be exposed to this product. The user must determine the appropriate measures that need to be implemented for the use and handling of this product in the context of the user's operations and use of this product. The information contained herein supersedes all previously issued bulletins on the subject matter covered. If the date on this document is more than three years old, call to make certain that this sheet is current. No warranty is made as to the product's merchantability or fitness for any particular purpose, or that any suggested use will not infringe any patent. User must determine for himself, by preliminary tests or otherwise, the suitability of this product for his purposes, including mixing with other products. Nothing contained herein shall be construed as granting or extending any license under any patent.

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.



SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name: ChemTreat CL240
Product Use: Defoamer
Supplier's Name: ChemTreat, Inc.
Emergency Telephone Number: (800)424-9300 (Toll Free)
Address (Corporate Headquarters): 5640 Cox Road
Glen Allen, VA 23060
Telephone Number for Information: (800)648-4579
Date of SDS: July 19, 2019
Revision Date: July 19, 2019
Revision Number: 19071902AN

Section 2. Hazard(s) Identification

Signal Word: None

GHS Classification(s): Non-Hazardous Substance

Hazard Statement(s): Non-Hazardous Substance

Precautionary Statement(s): No significant health risks are expected from exposures under normal conditions of use.

Prevention: None.

Response: None.

Storage: None.

Disposal: None.

System of Classification Used: Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Hazards Not Otherwise Classified: None.

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Section 3. Composition/Hazardous Ingredients

Component	CAS Registry #	Wt. %
Components not listed are either non hazardous or in concentration of less than 1%	N/A	N/A

Comments If chemical identity and/or exact percentage of composition has been withheld, this information is considered to be a trade secret.

Section 4. First Aid Measures

Inhalation: Call a POISON CENTER or doctor/physician if you feel unwell.

Eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.

Skin: Call a poison center or doctor/physician if you feel unwell.

Ingestion: Rinse mouth. Call a poison center or doctor/physician if you feel unwell.

Most Important Symptoms: N/D

Indication of Immediate Medical Attention and Special Treatment Needed, if Necessary: N/A

Section 5. Fire Fighting Measures

Flammability of the Product: Not flammable.

Suitable Extinguishing Media: Use extinguishing media suitable to surrounding fire.

Specific Hazards Arising from the Chemical: Product may emit toxic gases or fumes under fire conditions.

Protective Equipment: If product is involved in a fire, wear full protective clothing including a positive-pressure, NIOSH approved, self-contained breathing apparatus.

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Section 6. Accidental Release Measures

Personal Precautions: Use appropriate Personal Protective Equipment (PPE).

Environmental Precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.

Methods for Cleaning up: Contain and recover liquid when possible. Flush spill area with water spray.

Other Statements: None.

Section 7. Handling and Storage

Handling: Wear appropriate Personal Protective Equipment (PPE) when handling this product. Do not get in eyes, or on skin and clothing. Wash thoroughly after handling. Do not ingest. Avoid breathing vapors, mist or dust.

Storage: Store away from incompatible materials (see Section 10). Store at ambient temperatures. Keep container securely closed when not in use. Label precautions also apply to empty container. Recondition or dispose of empty containers in accordance with government regulations. For Industrial use only. Do not freeze. Store above Freeze Point. If freezes, then product is unusable.

Section 8. Exposure Controls/Personal Protection

Exposure Limits

Component	Source	Exposure Limits
Components not listed are either non hazardous or in concentration of less than 1%	N/E	N/E

Engineering Controls: Use only with adequate ventilation. The use of local ventilation is recommended to control emission near the source.

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Personal Protection

Eyes: Safety glasses are recommended if risk of eye contact.

Skin: Wear butyl rubber or neoprene gloves. Wash them after each use and replace as necessary. If conditions warrant, wear protective clothing such as boots, aprons, and coveralls to prevent skin contact.

Respiratory: If misting occurs, use NIOSH approved organic vapor/acid gas dual cartridge respirator with a dust/mist prefilter in accordance with 29 CFR 1910.134.

Section 9. Physical and Chemical Properties

Physical State and Appearance: Liquid, White, Opaque

Specific Gravity: 1.006 @ 20°C

pH: 5.9 @ 20°C, 100.0%

Freezing Point: 34°F

Flash Point: N/A

Odor: Mild

Melting Point: N/A

Initial Boiling Point and Boiling Range: 212°F

Solubility in Water: Dispersible

Evaporation Rate: N/D

Vapor Density: N/D

Molecular Weight: N/D

Viscosity: 1200 - 3200 CPS @ 20°C

Flammability (solid, gas): N/D

Flammable Limits: N/A

Autoignition Temperature: N/A

Density: 8.39 LB/GA

Vapor Pressure: N/D

% VOC: 0

Odor Threshold N/D

n-octanol Partition Coefficient N/D

Decomposition Temperature N/D

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Section 10. Stability and Reactivity

Chemical Stability:	Stable at normal temperatures and pressures.
Incompatibility with Various Substances:	Strong acids, Strong oxidizers.
Hazardous Decomposition Products:	Oxides of carbon, Oxides of silicon.
Possibility of Hazardous Reactions:	None known.
Reactivity:	N/D
Conditions To Avoid:	N/D

Section 11. Toxicological Information

Acute Toxicity

Chemical Name	Exposure	Type of Effect	Concentration	Species
N/D	N/D	N/D	N/D	N/D

Carcinogenicity Category

Component	Source	Code	Brief Description
Components not listed are either non hazardous or in concentration of less than 1%	N/E	N/E	N/E

Likely Routes of Exposure: N/D

Symptoms

Inhalation:	N/D
Eye Contact:	N/D
Skin Contact:	N/D
Ingestion:	N/D

Skin Corrosion/Irritation: N/D

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Serious Eye Damage/Eye Irritation:	N/D
Sensitization:	N/D
Germ Cell Mutagenicity:	N/D
Reproductive/Developmental Toxicity:	N/D
Specific Target Organ Toxicity	
Single Exposure:	N/D
Repeated Exposure:	N/D
Aspiration Hazard:	N/D
Comments:	None.

Section 12. Ecological Information

Ecotoxicity

Species	Duration	Type of Effect	Test Results
Daphnia magna	48h	LC50	6000 mg/l
Fathead Minnow	96h	LC50	8600 mg/l
Sheepshead Minnow	96h	LC50	>1000 mg/l
Myxid Shrimp	48h	LC50	>1000 mg/l

Persistence and Biodegradability:	N/D
Bioaccumulative Potential:	N/D
Mobility In Soil:	N/D
Other Adverse Effects:	N/D
Comments:	None.

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Section 13. Disposal Considerations

Dispose of in accordance with local, state and federal regulations.
Not a RCRA-regulated hazardous waste when disposed in the original product form.

Section 14. Transport Information

Controlling Regulation	UN/NA#:	Proper Shipping Name:	Technical Name:	Hazard Class:	Packing Group:
DOT	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
IMDG	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
TDG	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A
ICAO	N/A	COMPOUND, INDUSTRIAL WATER TREATMENT, LIQUID	N/A	N/A	N/A

Note: N/A

Section 15. Regulatory Information

Inventory Status

United States (TSCA):	All ingredients listed.
Canada (DSL/NDL):	All ingredients listed.

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Federal Regulations

SARA Title III Rules

Sections 311/312 Hazard Classes

Fire Hazard:	No
Reactive Hazard:	No
Release of Pressure:	No
Acute Health Hazard:	No
Chronic Health Hazard:	No

Other Sections

Component	Section 313 Toxic Chemical	Section 302 EHS TPQ	CERCLA RQ
Components not listed are either non hazardous or in concentration of less than 1%	N/A	N/A	N/A

Comments: None.

State Regulations

California Proposition 65: None known.

Special Regulations

Component	States
Components not listed are either non hazardous or in concentration of less than 1%	None.

Compliance Information

NSF:	N/A
Food Regulations:	N/A
KOSHER:	This product has not been evaluated for Kosher approval.
Halal:	This product has not been evaluated for Halal approval.
FIFRA:	N/A
Other:	None
Comments:	None.

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Section 16. Other Information

HMIS Hazard Rating

Health: 0
Flammability: 0
Physical Hazard: 0
PPE: X

Notes:

The PPE rating depends on circumstances of use. See Section 8 for recommended PPE.
The Hazardous Material Information System (HMIS) is a voluntary, subjective alpha-numeric symbolic system for recommending hazard risk and personal protection equipment information. It is a subjective rating system based on the evaluator's understanding of the chemical associated risks. The end-user must determine if the code is appropriate for their use.

Abbreviations

Abbreviation	Definition
<	Less Than
>	Greater Than
ACGIH	American Conference of Governmental Industrial Hygienists
EHS	Environmental Health and Safety Dept
N/A	Not Applicable
N/D	Not Determined
N/E	Not Established
OSHA	Occupational Health and Safety Dept
PEL	Personal Exposure Limit
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weight Average
UNK	Unknown

Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

Revision Date: July 19, 2019

Disclaimer

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SAFETY DATA SHEET

1. Identification

Product identifier CN202
Other means of identification None.
Recommended use Cleaner
Recommended restrictions None known.
Manufacturer/Importer/Supplier/Distributor information
Manufacturer
Company name ChemTreat, Inc.
Address 5640 Cox Road
Glen Allen, VA 23060
United States
Telephone 800-648-4579
Website chemtreat.com
E-mail productcompliance@chemtreat.com
Emergency phone number 800-424-9300

2. Hazard(s) identification

Physical hazards Not classified.
Health hazards Not classified.
Environmental hazards Not classified.
OSHA defined hazards Not classified.
Label elements
Hazard symbol None.
Signal word None.
Hazard statement The mixture does not meet the criteria for classification.
Precautionary statement
Prevention Not available.
Response Not available.
Storage Not available.
Disposal Not available.
Hazard(s) not otherwise classified (HNOC) None known.
Supplemental information None.

3. Composition/information on ingredients

Mixtures

The manufacturer lists no ingredients as hazardous to health according to OSHA 29 CFR 1910.1200.

4. First-aid measures

Inhalation Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact Wash off with soap and water. Get medical attention if irritation develops and persists.
Eye contact Rinse with water. Get medical attention if irritation develops and persists.
Ingestion Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed Direct contact with eyes may cause temporary irritation.
Indication of immediate medical attention and special treatment needed Treat symptomatically.

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General information Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions Move containers from fire area if you can do so without risk.
Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.
Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.
Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.
Environmental precautions Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling Do not get in eyes, on skin, or on clothing. Avoid prolonged exposure.
Conditions for safe storage, including any incompatibilities Store in tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.
Biological limit values No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles).
Skin protection
Hand protection Wear appropriate chemical resistant gloves.
Other Wear suitable protective clothing.
Respiratory protection In case of insufficient ventilation, wear suitable respiratory equipment.
Thermal hazards Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance
Physical state Liquid.

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Form	Liquid.
Color	Green
Odor	Moderate
Odor threshold	Not available.
pH	8.5 - 10.5 (100% Dilution)
Melting point/freezing point	33.80 °F (1.00 °C)
Initial boiling point and boiling range	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	0 - 200 cps
Other information	
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Pounds per gallon	8.51
Specific gravity	1 - 1.03 @ 20C

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Prolonged inhalation may be harmful.
Skin contact	2-Butoxy ethanol may be absorbed through the skin in toxic amounts if contact is repeated and prolonged. These effects have not been observed in humans.
Eye contact	Direct contact with eyes may cause temporary irritation.
Ingestion	Expected to be a low ingestion hazard.
Symptoms related to the physical, chemical and toxicological characteristics	Direct contact with eyes may cause temporary irritation.

Information on toxicological effects

Acute toxicity	Not known.
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14. Transport information

DOT	Not regulated as dangerous goods.
IATA	Not regulated as dangerous goods.
IMDG	Not regulated as dangerous goods.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not established.

15. Regulatory information

US federal regulations	This product is not known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
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Toxic Substances Control Act (TSCA)	
TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)	Not regulated.
CERCLA Hazardous Substance List (40 CFR 302.4)	Not listed.
SARA 304 Emergency release notification	Not regulated.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)	Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance	
	Not listed.
SARA 311/312 Hazardous chemical	No
SARA 313 (TRI reporting)	Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List	
	Not regulated.
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)	
	Not regulated.
Safe Drinking Water Act (SDWA)	Not regulated.

US state regulations

California Proposition 65	
California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to www.P65Warnings.ca.gov . This product contains trace amounts of myrcene (CAS 123-35-3), which is known in the state of California to cause cancer.	

International inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes
*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s) A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).		

16. Other information, including date of preparation or last revision

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Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation	Direct contact with eyes may cause temporary irritation.
Respiratory or skin sensitization	
Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	Not classifiable as to carcinogenicity to humans.
IARC Monographs. Overall Evaluation of Carcinogenicity	Not listed.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)	Not regulated.
US. National Toxicology Program (NTP) Report on Carcinogens	Not listed.
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.
Chronic effects	Prolonged inhalation may be harmful. May be harmful if absorbed through skin. 2-Butoxy ethanol may be absorbed through the skin in toxic amounts if contact is repeated and prolonged. These effects have not been observed in humans.

12. Ecological information

Ecotoxicity	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
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Product	Species	Test Results
CN202		
Aquatic		
Acute		
Crustacea	EC50 Daphnia	> 11815 mg/l, 48 hours (Estimated)
	LC50 Daphnia pulex	> 100 mg/l, 48 hours (Estimated)
Fish	LC50 Fathead minnow (Pimephales promelas)	> 100 mg/l, 96 hours (Estimated)
	Fish	> 21428 mg/l, 96 hours (Estimated)

Persistence and degradability	No data is available on the degradability of any ingredients in the mixture.
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Bioaccumulative potential

Mobility in soil	No data available.
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Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.
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13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

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HMIS® ratings	Health: 0 Flammability: 0 Physical hazard: 0 Personal protection: B
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Disclaimer	ChemTreat, Inc. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available. Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, ChemTreat, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ChemTreat, Inc. be responsible for damages of any nature whatsoever resulting from the use or reliance upon information. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.
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Other information	Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com
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FOR ANY EMERGENCY, 24 HOURS / 7 DAYS, CALL: 1-800-654-6911 (OUTSIDE
USA: 1-423-780-2970)
FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC®: 1-800-424-9300 (OUTSIDE
USA: 1-703-527-3887)
FOR ALL SDS QUESTIONS & REQUESTS, CALL: 1-800-511-MSDS (OUTSIDE
USA: 1-423-780-2347)

PRODUCT NAME: **DryTec Calcium Hypochlorite Granular**
EPA Registration Number: 1258-427

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Arch Chemicals, Inc.
1200 Bluegrass Lakes Parkway
Alpharetta, GA 30004

REVISION DATE: 02/08/2016
SUPERCEDES: 06/02/2015
MSDS Number: 000000023097
SYNONYMS: none
CHEMICAL FAMILY: Hypochlorite
DESCRIPTION / USE: Sanitizer and Oxidizer/Water treatment
chemical
FORMULA: Not Applicable/Mixture

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Oxidizing solids : Category 2
Acute toxicity (Oral) : Category 4
Skin corrosion : Category 1B
Serious eye damage : Category 1
Acute toxicity (Inhalation) : Category 3
Specific target organ toxicity - single exposure : Category 3 (Respiratory system)

GHS label elements

Hazard pictograms : 

DryTec Calcium Hypochlorite Granular
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Signal word : Danger
Hazard statements : H272 May intensify fire; oxidizer.
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H331 Toxic if inhaled.
H335 May cause respiratory irritation.
Precautionary statements : **Prevention:**
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P220 Keep/Store away from clothing/ combustible materials.
P221 Take any precaution to avoid mixing with combustibles.
P260 Do not breathe vapours.
P264 Wash hands thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
P301 + P312 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER/doctor.
P363 Wash contaminated clothing before reuse.
P370 + P378 In case of fire: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide to extinguish.
Storage:
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
Disposal:
P501 Dispose of contents/container in accordance with local regulation.

Other hazards
None known.

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SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

CAS OR CHEMICAL NAME	CAS #	% RANGE
CALCIUM HYPOCHLORITE	7778-54-3	60 - 80
SODIUM CHLORIDE	7647-14-5	10 - 20
CALCIUM CHLORATE	10137-74-3	0 - 5
CALCIUM CHLORIDE	10043-52-4	0 - 5
CALCIUM HYDROXIDE	1305-62-0	0 - 4
CALCIUM CARBONATE	471-34-1	0 - 5
Water	7732-18-5	5.5 - 10

SECTION 4. FIRST AID MEASURES

General Advice: Call a poison control center or doctor for treatment advice. For 24-hour emergency medical assistance, call Arch Chemical Emergency Action Network at 1-800-654-6911. Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

Inhalation: IF INHALED: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

Skin Contact: IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Eye Contact: IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Ingestion: IF SWALLOWED: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

Notes to Physician: Probable mucosal damage may contraindicate the use of gastric lavage.

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SECTION 5. FIREFIGHTING MEASURES

Flammability Summary (OSHA): This product is chemically reactive with many substances. Any contamination of the product with other substances by spill or otherwise may result in a chemical reaction and fire. This product is a strong oxidizer which is capable of intensifying a fire once started. Product is not known to be flammable, combustible or pyrophoric.

Flammable Properties

Flash Point: Not applicable
Autoignition Temperature: Not applicable
Extinguishing Media: Water only. Do not use dry extinguishers containing ammonium compounds.

Fire Fighting Instructions: Use water to cool containers exposed to fire. See Section 6 for protective equipment for fire fighting.

Upper Flammable / Explosive Limit, % in air: Not applicable
Lower Flammable / Explosive Limit, % in air: Not applicable

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Protection for Emergency Situations: Response to a large quantity spill (100 pounds or greater) or when dusting or decomposition gas exposure could occur requires the use of a positive pressure full face supplied air respirator or self contained breathing apparatus (SCBA), chemical resistant gloves, coveralls and boots. In case of fire, this personal protective equipment should be used in addition to normal fire fighter equipment.

Spill Mitigation Procedures
Air Release:

Vapors may be suppressed by the use of water fog. All water utilized to assist in fume suppression, decontamination or fire suppression may be contaminated and must be contained before disposal and/or treatment.

Water Release: This product is heavier than water. This material is soluble in water. Monitor all exit water for available chlorine and pH. Advise local authorities of any contaminated water release.

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Land Release: Contact 1-800-654-6911 immediately. DANGER: All spills of this product should be treated as contaminated. Contaminated product may initiate a chemical reaction that may spontaneously ignite any combustible material present, resulting in a fire of great intensity. In case of a spill, separate all spilled product from packaging, debris and other material. Using a clean broom or shovel, place all spilled product into plastic bags, and place those bags into a clean, dry disposal container, properly marked and labeled. Disposal containers made of plastic or metal are recommended. Do not seal disposal containers tightly. Immediately remove all product in disposal containers to an isolated area outdoors. Place all damaged packaging material in a disposal container of water to assure decontamination (i.e. removal of all product) before disposal. Place all undamaged packaging in a clean, dry container properly marked and labeled. Call for disposal procedures.

Additional Spill Information : Hazardous concentrations in air may be found in local spill area and immediately downwind. Remove all sources of ignition. Stop source of spill as soon as possible and notify appropriate personnel. Dispose of spill residues per guidelines under Section 13, Disposal Consideration. This material may be neutralized for disposal; you are requested to contact Arch Chemicals at 1-800-654-6911 before beginning any such procedure. FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC: 1-800-424-9300 REPORTABLE QUANTITY: 10 lbs. (as calcium hypochlorite) per 40 CFR 302.4.

SECTION 7. HANDLING AND STORAGE

Handling: Avoid inhalation of dust and fumes. Do not take internally. Avoid contact with skin, eyes and clothing. Upon contact with skin or eyes, wash off with water. Remove contaminated clothing and wash before reuse.

Storage: Keep product tightly sealed in original containers. Store product in a cool, dry, well-ventilated area. Store away from combustible or flammable products. Keep product packaging clean and free of all contamination, including, e.g. other pool treatment products, acids, organic materials, nitrogen-containing compounds, dry powder fire extinguishers (containing mono-ammonium phosphate), oxidizers, all corrosive liquids, flammable or combustible materials, etc.

Shelf Life Limitations: Do not store product where the average daily temperature exceeds 95° F. Storage above this temperature may result in rapid decomposition, evolution of chlorine gas and heat sufficient to ignite combustible products. Shelf life (that is, the period of time before the product goes below stated label strength) is determined by storage time and temperatures. Store in a cool, dry and well ventilated area. Prolonged storage at elevated temperatures will significantly shorten the shelf life. Storage in a climate controlled storage area or building is recommended in those areas where extremes of high temperature occur.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: solid
Form: free flowing, granular
Color: off-white
Odor: Chlorine-like
Molecular Weight: (Active ingredient)143.00 g/mol
pH : 10.4 - 10.8 (1% solution in neutral, distilled water) (@ 25 Deg. C)
Boiling Point: Not applicable
Melting point/freezing point: Not applicable
Density: 0.8g/cc

Vapor Pressure: (@ 25 Deg. C) Not applicable
Vapor Density: Not applicable
Viscosity: Not applicable
Fat Solubility: no data available
Solubility in Water: 18 % (@ 25 Deg. C) Product also contains calcium hydroxide and calcium carbonate which will leave a residue.

Partition coefficient n-octanol/water: no data available
Evaporation Rate: Not applicable
Oxidizing: Oxidizing
Volatiles, % by vol.: Not applicable
VOC Content: This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489). This product does not contain any VOC exemptions listed under the U.S. Clean Air Act Section 450.

HAP Content: Not applicable

SECTION 10. STABILITY AND REACTIVITY

Stability and Reactivity Summary: Product is not sensitive to mechanical shock or impact. Product is not sensitive to electrical static discharge. Product will not undergo hazardous polymerization. Product is an NFPA Class 3 oxidizer which can cause a severe increase in fire intensity. Not pyrophoric. Not an organic peroxide. If subjected to excessive temperatures, the product may undergo rapid decomposition, evolution of chlorine gas, and heat sufficient to ignite combustible substances. If product is exposed to small amounts of water, it can react violently to produce heat and toxic gases and spatter. Use copious amounts of water for fires involving this product. Do not store next to heat source, in direct sunlight, or elevated storage temperature. Do not store where the daily average temperature exceeds 95 °F. Prevent ingress of humidity and moisture into container or package. Always close the lid.

Conditions to Avoid: This product is chemically reactive with many substances, including, e.g., other pool treatment products, acids, organics,

Chemical Incompatibility:

Incompatible Materials for Storage: Do not allow product to come in contact with other materials, including e.g. other pool treatment products, acids, organic materials, nitrogen-containing compounds, dry powder fire extinguishers (containing mono-ammonium phosphate), oxidizers, all corrosive liquids, flammable or combustible materials, etc. A chemical reaction with such substances can cause a fire of great intensity.

Do Not Store At temperatures Above: Average daily temperature of 35° C / 95° F. Storage above this temperature may result in rapid decomposition, evolution of chlorine gas and heat sufficient to ignite combustible products.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ventilation: Local exhaust ventilation or other engineering controls are normally required when handling or using this product to keep airborne exposures below the TLV, PEL or other recommended exposure limit.

Protective Equipment for Routine Use of Product

Respiratory Protection : Wear a NIOSH approved respirator if levels above the exposure limits are possible.

Respirator Type : A NIOSH approved full-face air purifying respirator equipped with combination chlorine/P100 cartridges. Air purifying respirators should not be used in oxygen deficient or IDLH atmospheres or if exposure concentrations exceed ten (10) times the published limit.

Skin Protection : Wear impervious gloves to avoid skin contact. A full impervious suit is recommended if exposure is possible to a large portion of the body. A safety shower should be provided in the immediate work area.

Eye Protection: Use chemical goggles. Emergency eyewash should be provided in the immediate work area.

Protective Clothing Type: Neoprene, Nitrile, Natural rubber (This includes: gloves, boots, apron, protective suit)

Components with workplace control parameters

Components (CAS-No.)	Value	Control parameters	Basis (Update)
CALCIUM HYPOCHLORITE (7778-54-3)	TWA	1 mg/m3	ARCH OEL*
CALCIUM HYPOCHLORITE (7778-54-3)	Conc	37 - 48 mg/m3	NIOSH/GUIDE IDLH
CALCIUM HYDROXIDE (1305-62-0)	TWA	5 mg/m3	ACGIH (02 2014)

ARCH OEL: Arch Recommended Occupational Exposure Guideline.

nitrogen-containing compounds, dry powder fire extinguishers (containing mono-ammonium phosphate), oxidizers, corrosive flammable or combustible materials. Do not allow product to contact any foreign matter, including other water treatment products. Contamination or improper use may cause a fire of great intensity, explosion or the release of toxic gases. If product is exposed to small amounts of water, it can react violently to produce heat and toxic gases and spatter.

Hazardous Decomposition Products: Chlorine
Decomposition Temperature: 170 - 180 °C - , 338 - 356 °F-

SECTION 11. TOXICOLOGICAL INFORMATION

Component Animal Toxicology

Oral LD50 value:

CALCIUM HYPOCHLORITE	LD50 (65% calcium hypochlorite)	850 mg/kg	Rat
SODIUM CHLORIDE	LD50 = 3,000 mg/kg	Rat	
CALCIUM CHLORIDE	LD50 = 1,000 mg/kg	Rat	
CALCIUM HYDROXIDE	LD50 = 7,340 mg/kg	Rat	

Component Animal Toxicology

Dermal LD50 value:

CALCIUM HYPOCHLORITE	LD50 (65% calcium hypochlorite)	> 2,000 mg/kg	Rabbit
SODIUM CHLORIDE	LD50 > 10,000 mg/kg	Rabbit	
CALCIUM CHLORIDE	LD50 = 2,630 mg/kg	Rat	
CALCIUM HYDROXIDE	no data available		

Component Animal Toxicology

Inhalation LC50 value:

CALCIUM HYPOCHLORITE	Inhalation LC50 1 h (65% calcium hypochlorite), (Nose Only) =	2.04 mg/l
	Rat	
	Inhalation LC50 4 h (65% calcium hypochlorite), (Nose Only) =	0.51 mg/l
	Rat	
SODIUM CHLORIDE	Inhalation LC50 1 h >	42 mg/l
	Rat	
CALCIUM CHLORIDE	no data available	
CALCIUM HYDROXIDE	no data available	

Product Animal Toxicity

Oral LD50 value LD50 approximately 800 mg/kg Rat
Dermal LD50 value LD50 > 2,000 mg/kg Rabbit
Inhalation LC50 value Inhalation LC50 1.00 h (Nose Only) > 2.04 mg/l Rat Inhalation LC50 4 h (Nose Only) > 0.51 mg/l Rat Inhalation LC50 1 h (Nose Only) > 2.04 mg/l Rat Inhalation LC50 4 h (Nose Only) > 0.51 mg/l Rat

Skin Irritation: DRY MATERIAL CAUSES MODERATE SKIN IRRITATION., WET MATERIAL CAUSES SKIN BURNS.
Eye Irritation: Corrosive to eyes.
Skin Sensitization: This material is not known or reported to be a skin or respiratory sensitizer.
Acute Toxicity: This product is corrosive to all tissues contacted and upon inhalation, may cause irritation to mucous membranes and respiratory tract. The dry material is irritating to the skin. However when wet, it will produce burns to the skin.
Subchronic / Chronic Toxicity: There are no known or reported effects from repeated exposure except those secondary to burns.
Reproductive and Developmental Toxicity: Calcium hypochlorite has been tested for teratogenicity in laboratory animals. Results of this study have shown that calcium hypochlorite is not a teratogen.

CALCIUM CHLORIDE Not known or reported to cause reproductive or developmental toxicity.

Mutagenicity: Calcium hypochlorite has been tested in the Dominant lethal assay in male mice, and it did not induce a dominant lethal response. Calcium hypochlorite has been reported to produce mutagenic activity in two in vitro assays. It has, however, been shown to lack the capability to produce mutations in animals based on results from the micronucleus assay. In vitro assays frequently are inappropriate to judge the mutagenic potential of bactericidal chemicals due to a high degree of cellular toxicity. The concentration which produces mutations in these in vitro assays is significantly greater than the concentrations used for disinfection. Based on high cellular toxicity in in vitro assays and the lack of mutagenicity in animals, the risk of genetic damage to humans is judged not significant.

CALCIUM CHLORIDE This product was determined to be non-mutagenic in the Ames assay. It was also shown to be non-clastogenic in the chromosomal aberration test.

Carcinogenicity: This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP or EPA. One hundred mice were exposed dermally 3 times a week for 18 months to a solution of calcium hypochlorite. Histopathological examination failed to show an increased incidence of tumors. IARC (International Agency for Research on Cancer) reviewed studies conducted with several hypochlorite salts. IARC has classified hypochlorite salts as having inadequate evidence for carcinogenicity to humans and animals. IARC therefore considers hypochlorite salts to be not classifiable as to their carcinogenicity to humans (Group 3 Substance).

CALCIUM CHLORIDE This chemical is not known or reported to be carcinogenic by any reference source including IARC,

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OSHA, NTP, or EPA.

SECTION 12. ECOLOGICAL INFORMATION

Overview: Highly toxic to fish and other aquatic organisms.

Ecological Toxicity Values for: CALCIUM HYPOCHLORITE

Bluegill	-	(nominal, static) 96 h LC50 0.088 mg/l
Rainbow trout (Salmo gairdneri)	-	(nominal, static) 96 h LC50 0.16 mg/l
Daphnia magna	-	(nominal, static) 48 h LC50 0.11 mg/l
Bobwhite quail	-	Dietary LC50 > 5,000 ppm
Mallard ducklings	-	Dietary LC50 > 5,000 ppm
Bobwhite quail	-	Oral LD50 3,474 mg/kg

Ecological Toxicity Values for: CALCIUM CHLORIDE

Bluegill	-	(nominal, static) 96 h LC50 = 10,650 mg/l
Mosquito fish	-	(nominal, static) 96 h LC50 = 13,400 mg/l
Pimephales promelas (fathead minnow)	-	(nominal, static) 96 h LC50 = 4,630 mg/l
Daphnia magna	-	(nominal, static) 48 h LC50 = 2,770 mg/l
Ceriodaphnia dubia	-	(nominal, static) 48 h LC50 = 1,830 mg/l
Nitzschia linearis (diatom)	-	(nominal, static) 5 day LC50 = 3,130 mg/l

SECTION 13. DISPOSAL CONSIDERATIONS

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THE MATERIAL. THE USER OF THE MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL, RESIDUES AND CONTAINERS IN COMPLIANCE WITH ALL RELEVANT LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING TREATMENT, STORAGE AND DISPOSAL FOR HAZARDOUS AND NONHAZARDOUS WASTES.

Waste Disposal Summary : If this product becomes a waste, it meets the criteria of a hazardous waste as defined under 40 CFR 261 and would have the following EPA hazardous waste number: D001. If this product becomes a waste, it will be a hazardous waste which is subject to the Land Disposal restrictions under 40 CFR 268 and must be managed accordingly.

Disposal Methods : As a hazardous solid waste it should be disposed of in accordance with local, state and federal regulations.

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Potential US EPA Waste Codes : D001

SECTION 14. TRANSPORT INFORMATION

DOT
 UN number : 2880
 Description of the goods : Calcium hypochlorite, hydrated mixtures
 Class : 5.1
 Packing group : II
 Labels : 5.1
 Emergency Response : 140
 Guidebook Number :
TDG
 UN number : 2880
 Description of the goods : CALCIUM HYPOCHLORITE, HYDRATED MIXTURE
 Class : 5.1
 Packing group : II
 Labels : 5.1
IATA
 UN number : 2880
 Description of the goods : Calcium hypochlorite, hydrated mixture
 Class : 5.1
 Packing group : II
 Labels : 5.1
 Packing instruction (cargo aircraft) : 562
 Packing instruction (passenger aircraft) : 558
 Packing instruction (passenger aircraft) : Y544
IMDG-CODE
 UN number : 2880
 Description of the goods : CALCIUM HYPOCHLORITE, HYDRATED MIXTURE
 Class : 5.1
 Packing group : II
 Labels : 5.1
 EmS Number 1 : F-H
 EmS Number 2 : S-Q
 Marine pollutant : yes

SECTION 15. REGULATORY INFORMATION

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This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals.

Signal word : DANGER!
Hazard statements : Causes substantial but temporary eye injury.
 Corrosive. Causes skin burns.
 Corrosive. Causes irreversible eye damage.
 This pesticide is toxic to fish.

EPCLA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Calcium hypochlorite	7778-54-3	10	13

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Air Act

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM Intermediate or Final VOC's (40 CFR 60.489).

Clean Water Act

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

Calcium hypochlorite 7778-54-3

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The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

Calcium hypochlorite 7778-54-3

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

US State Regulations

Massachusetts Right To Know

Calcium hypochlorite 7778-54-3
Calcium carbonate 471-34-1
Calcium chlorate 10137-74-3
Calcium dihydroxide 1305-62-0

Pennsylvania Right To Know

Calcium hypochlorite 7778-54-3
Sodium chloride 7647-14-5
Calcium carbonate 471-34-1
Calcium chlorate 10137-74-3
Calcium chloride 10043-52-4
Calcium dihydroxide 1305-62-0

New Jersey Right To Know

Calcium hypochlorite 7778-54-3
Sodium chloride 7647-14-5
Calcium carbonate 471-34-1
Calcium chlorate 10137-74-3
Calcium chloride 10043-52-4
Calcium dihydroxide 1305-62-0

California Prop 65

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

The components of this product are reported in the following inventories:

TSCA : This is an EPA registered pesticide.

Inventories

AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

SECTION 16. OTHER INFORMATION

SECTIONS REVISED: 1
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Major References : Available upon request.

THIS MATERIAL SAFETY DATA SHEET (MSDS) HAS BEEN PREPARED IN COMPLIANCE WITH THE FEDERAL OSHA HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200. THE INFORMATION IN THIS MSDS SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. ARCH CHEMICALS BELIEVES THIS INFORMATION TO BE RELIABLE AND UP TO DATE AS OF THE DATE OF PUBLICATION BUT, MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS MSDS IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT ARCH CHEMICALS MSDS CONTROL AT THE PHONE NUMBER ON THE FRONT PAGE TO MAKE CERTAIN THAT THIS DOCUMENT IS CURRENT. .

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SAFETY DATA SHEET

Issue Date 13-Jan-2023

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Version 1

1. Identification

Product identifier

Product Name DPD Free Chlorine Reagent

Other means of identification

Product Code(s) 2105528

Detailed information about the manufacturer, supplier, and/or importer

Manufacturer Address
Hach Company, P.O.Box 389, Loveland, CO 80539, USA, +1(970) 669-3050

Recommended use of the chemical and restrictions on use

Recommended Use Water Analysis, Determination of chlorine

Restrictions on use Consumer use

Emergency telephone number

+1(303) 623-5716 - 24 Hour Service

2. Hazard(s) identification

Classification of the substance or mixture

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2A
Specific target organ toxicity (repeated exposure)	Category 2

Label elements

Signal word Warning

Hazard statements

H315 - Causes skin irritation
H319 - Causes serious eye irritation
H373 - May cause damage to organs through prolonged or repeated exposure

Precautionary statements

P280 - Wear protective gloves/protective clothing/eye protection/face protection
P302 + P352 - IF ON SKIN: Wash with plenty of water and soap
P332 + P313 - If skin irritation occurs: Get medical advice/attention
P362 + P364 - Take off contaminated clothing and wash it before reuse
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P337 + P313 - If eye irritation persists: Get medical advice/attention

2105528 - DPD Free Chlorine Reagent

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P260 - Do not breathe dust/fume/gas/mist/vapors/spray
P314 - Get medical advice/attention if you feel unwell
P501 - Dispose of contents/ container to an approved waste disposal plant



Other hazards which do not result in classification

No information available.

3. Composition/information on ingredients

Substance

Not applicable

Mixture

Product Code(s) 2105528

Chemical nature No information available.

Chemical name	CAS No	Weight-%
Carboxylate Salt	-	60 - 70%
Phosphoric acid, disodium salt	7558-79-4	30 - 40%
Salt of N,N-Diethyl-p-Phenylenediamine	-	1 - 5%
Disodium EDTA	139-33-3	1 - 5%

4. First-aid measures

Description of necessary first aid measures

General advice Show this safety data sheet to the doctor in attendance.

Inhalation Remove to fresh air. Get medical attention immediately if symptoms occur.

Skin contact Wash off immediately with soap and plenty of water for at least 15 minutes. Get medical attention if irritation develops and persists.

Eye contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. Do not rub affected area. Get medical attention if irritation develops and persists.

Ingestion Rinse mouth. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Call a physician.

For emergency responders

Self-protection of the first aider Avoid contact with skin, eyes or clothing. Wear personal protective clothing (see section 8).

Most important symptoms/effects, acute and delayed

Symptoms May cause redness and tearing of the eyes. Burning sensation.

Indication of immediate medical attention and special treatment needed, if necessary

Note to physicians Treat symptomatically.

5. Fire-fighting measures

Suitable Extinguishing Media	Product itself does not burn.
Large Fire	CAUTION: Use of water spray when fighting fire may be inefficient.
Unsuitable extinguishing media	Do not scatter spilled material with high pressure water streams.
Specific hazards arising from the chemical	No information available.
Hazardous combustion products	Carbon monoxide, Carbon dioxide, Phosphorus oxides, Nitrogen oxides.
Special protective actions for fire-fighters	Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Avoid contact with skin, eyes or clothing.

Methods and material for containment and cleaning up

Methods for cleaning up Take up mechanically, placing in appropriate containers for disposal.

Methods for containment Prevent further leakage or spillage if safe to do so.

Other information Refer to protective measures listed in Sections 7 and 8.

Environmental precautions

Environmental precautions Prevent further leakage or spillage if safe to do so.

7. Handling and storage

Precautions for safe handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice. Ensure adequate ventilation. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse.

General hygiene considerations Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Avoid contact with skin, eyes or clothing.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place.

Incompatible materials Strong acids. Strong bases. Strong oxidizing agents.

8. Exposure controls/personal protection

Control parameters

Occupational exposure limits This product, as supplied, does not contain any hazardous materials with occupational

Specific Gravity	1.76
Partition coefficient	log K _{ow} ~ 0
Soil Organic Carbon-Water Partition Coefficient	log K _{oc} ~ 0
Autoignition temperature	No data available
Decomposition temperature	110 °C / 230 °F
Dynamic viscosity	Not applicable
Kinematic viscosity	Not applicable

Solubility(ies)

Water solubility

Water solubility classification	Water solubility	Water Solubility Temperature
Completely soluble	> 10000 mg/L	25 °C / 77 °F

Solubility in other solvents

Acid	Soluble	> 1000 mg/L	25 °C / 77 °F

Other information

Metal Corrosivity

Steel Corrosion Rate	No data available
Aluminum Corrosion Rate	No data available

Volatile Organic Compounds (VOC) Content
Not applicable

Chemical name	CAS No	Volatile organic compounds (VOC) content	CAA (Clean Air Act)
Carboxylate Salt	-	No data available	-
Phosphoric acid, disodium salt	7558-79-4	No data available	-
Salt of N,N-Diethyl-p-Phenylenediamine	-	Not applicable	-
Disodium EDTA	139-33-3	No data available	-

Explosive properties

Upper explosion limit	No data available
Lower explosion limit	No data available

Flammable properties

Flash point	Not applicable
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Flammability Limit in Air
Upper flammability limit:
Lower flammability limit:

No data available
No data available

Oxidizing properties

No data available.

Other information

VOC content	No information available
Bulk density	No information available

exposure limits established by the region specific regulatory bodies

Biological occupational exposure limits This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies

Appropriate engineering controls

Engineering controls Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

Individual protection measures, such as personal protective equipment

Eye/face protection If splashes are likely to occur, wear safety glasses with side-shields.

Skin and body protection Avoid contact with eyes, skin and clothing. Wash contaminated clothing before reuse. Wear suitable protective clothing. Long sleeved clothing.

Hand protection Gloves must be inspected prior to use. The selected protective gloves have to satisfy the specifications of EU Directive 2016/425 and the standard EN 374 derived from it. Chemical resistant gloves made of butyl rubber or nitrile rubber category III according to EN 374-1:2016. Barrier creams may help to protect the exposed areas of skin. Wear suitable gloves. Impervious gloves.

Gloves			
Duration of contact	PPE - Glove material	Glove thickness	Break through time
Short term	Wear protective nitrile rubber gloves	0.20 mm	>30 minutes
Long term (repeated)	Wear protective Viton™ gloves	0.70 mm	>480 minutes

Respiratory protection No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

General hygiene considerations Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Avoid contact with skin, eyes or clothing.

9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance	powder		
Physical state	Solid		
Color	White to light pink	White to brown	Odorless No data available
Odor threshold			
Property	Values		Remarks - Method
Molecular weight	No data available		
pH	6.35		1% @ 20°C
Melting point / freezing point	110 °C / 230 °F		
Initial boiling point and boiling range	No data available		
Evaporation rate	Not applicable		
Vapor pressure	Not applicable		
Relative vapor density	No data available		

10. Stability and reactivity

Reactivity	No information available.
Stability	Stable under normal conditions.
Possibility of hazardous reactions	None under normal processing.
Hazardous polymerization	None under normal processing.
Conditions to avoid	None known based on information supplied.
Incompatible materials	Strong acids. Strong bases. Strong oxidizing agents.

Hazardous Decomposition Products Carbon dioxide, Carbon monoxide, Phosphorus oxides, Nitrogen oxides.

11. Toxicological information

Information on likely routes of exposure

Product Information

Inhalation	May cause irritation of respiratory tract.
Eye contact	Causes serious eye irritation. May cause redness, itching, and pain.
Skin contact	Causes skin irritation.
Ingestion	Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms	Redness. May cause redness and tearing of the eyes.
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Acute toxicity

Numerical measures of toxicity

Substance
Test data reported below.

Oral Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Salt of N,N-Diethyl-p-Phenylenediamine (1 - 5%) CAS#: -	Rat LD ₅₀	695 mg/kg	None reported	None reported	Outside testing
Disodium EDTA (1 - 5%) CAS#: 139-33-3	Rat LD ₅₀	2000 mg/kg	None reported	None reported	RTECS

Inhalation (Dust/Mist) Exposure Route

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral)	21,786.80 mg/kg
ATEmix (inhalation-dust/mist)	136.40 mg/l

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation

Classification based on data available for ingredients. Causes skin irritation.

Mixture

No data available.

Substance

Test data reported below.

Chemical name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
Phosphoric acid, disodium salt (30 - 40%) CAS#: 7558-79-4	Standard Draize Test	Rabbit	500 mg	24 hours	Skin irritant	RTECS
Disodium EDTA (1 - 5%) CAS#: 139-33-3	Standard Draize Test	Rabbit	500 mg	20 hours	Not corrosive or irritating to skin	ECHA

Serious eye damage/eye irritation

Classification based on data available for ingredients. Causes serious eye irritation.

Mixture

No data available.

Substance

Test data reported below.

Chemical name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
Phosphoric acid, disodium salt (30 - 40%) CAS#: 7558-79-4	Standard Draize Test	Rabbit	500 mg	24 hours	Eye irritant	RTECS
Disodium EDTA (1 - 5%) CAS#: 139-33-3	Standard Draize Test	Rabbit	50 mg	None reported	Mild eye irritant	ECHA

Respiratory or skin sensitization

Based on available data, the classification criteria are not met.

Mixture

No data available.

Substance

No data available.

Germ cell mutagenicity

Based on available data, the classification criteria are not met.

Mixture *in vitro* Data

No data available.

Substance *in vitro* Data

Test data reported below.

Chemical name	Test	Cell Strain	Reported dose	Exposure time	Results	Key literature references and sources for data
Disodium EDTA (1 - 5%) CAS#: 139-33-3	Cytogenetic analysis	Hamster lung	200 mg/L	None reported	Positive test result for mutagenicity	RTECS

Mixture *in vivo* Data

No data available.

Substance *in vivo* Data

No data available.

Carcinogenicity

Based on available data, the classification criteria are not met.

Mixture

No data available.

Crustacea

Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Salt of N,N-Diethyl-p-Phenylenediamine (1 - 5%) CAS#: -	48 Hours	<i>Daphnia magna</i>	EC ₅₀	10.8 mg/L	Internal Data

Algae

Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Disodium EDTA (1 - 5%) CAS#: 139-33-3	72 Hours	None reported	EC ₅₀	300 mg/L	ECHA

Aquatic Chronic Toxicity

No data available.

Persistence and degradability

Mixture

No data available.

Bioaccumulation

Mixture

No data available.

Partition coefficient

log K_{ow} ~ 0

Mobility

Soil Organic Carbon-Water Partition Coefficient

log K_{oc} ~ 0

Other adverse effects

No information available.

13. Disposal considerations

Disposal methods

Waste from residues/unused products Dispose of waste in accordance with environmental legislation.

Contaminated packaging Do not reuse empty containers.

14. Transport information

Note: No special precautions necessary.

IMDG

Not regulated

IATA

Not regulated

ADR

Not regulated

DOT

Not regulated

Additional information

Substance

No data available.

Chemical name	CAS No	ACGIH	IARC	NTP	OSHA
Carboxylate Salt	-	-	-	-	-
Phosphoric acid, disodium salt	7558-79-4	-	-	-	-
Salt of N,N-Diethyl-p-Phenylenediamine	-	-	-	-	-
Disodium EDTA	139-33-3	-	-	-	-

Legend

ACGIH (American Conference of Governmental Industrial Hygienists)	Does not apply
IARC (International Agency for Research on Cancer)	Does not apply
NTP (National Toxicology Program)	Does not apply
OSHA	Does not apply

Reproductive toxicity

Based on available data, the classification criteria are not met.

Mixture

No data available.

Substance

No data available.

STOT - single exposure

Based on available data, the classification criteria are not met.

Mixture

No data available.

Substance

No data available.

STOT - repeated exposure

May cause damage to organs through prolonged or repeated exposure.

Mixture

No data available.

Substance

No data available.

Aspiration hazard

Based on available data, the classification criteria are not met.

12. Ecological information

Ecotoxicity The environmental impact of this product has not been fully investigated.

Unknown aquatic toxicity 0 % of the mixture consists of component(s) of unknown hazards to the aquatic environment

Mixture

Aquatic Acute Toxicity

No data available.

Aquatic Chronic Toxicity

No data available.

Substance

Aquatic Acute Toxicity

Test data reported below.

Fish

Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Disodium EDTA (1 - 5%) CAS#: 139-33-3	96 hours	<i>Lepomis macrochirus</i>	LC ₅₀	159 mg/L	Vendor SDS

15. Regulatory information

Regulatory information

National regulations

Chemical Control Order and Priority Chemical List Not applicable

International Regulations

The Montreal Protocol on Substances that Deplete the Ozone Layer Not applicable

The Stockholm Convention on Persistent Organic Pollutants Not applicable

The Rotterdam Convention Not applicable

International Inventories

PICCS	Complies.
TSCA	Complies.
DSL/NDSL	Complies.
EINECS/ELINCS	Complies.
ENCS	Complies.
IECSC	Complies.
KECL - Existing substances	Complies.
AICS	Complies.
NZIoC	Contact supplier for inventory compliance status.

PICCS - Philippines Inventory of Chemicals and Chemical Substances
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
AICS - Australian Inventory of Chemical Substances
NZIoC - New Zealand Inventory of Chemicals

16. Other information

Issue Date 13-Jan-2023

Revision Date 02-Feb-2023

Prepared By Hach Product Compliance Department

Key or legend to abbreviations and acronyms used in the safety data sheet

ACGIH	ACGIH (American Conference of Governmental Industrial Hygienists)
IMDG	International Maritime Dangerous Goods (IMDG)
IATA	International Air Transport Association (IATA)
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ATSDR	Agency for Toxic Substances and Disease Registry (ATSDR)
CHEMVIEW	U.S. Environmental Protection Agency ChemView Database
EFSA	European Food Safety Authority (EFSA)
EPA	EPA (Environmental Protection Agency)
EPA_AEGL	Acute Exposure Guideline Level(s) (AEGL(s))
EPA_FIFRA	U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
EPA_HPVP	U.S. Environmental Protection Agency High Production Volume Chemicals

FOOD, JOURN not translate code	Food Research Journal
HSDB not translate code	Hazardous Substance Database
IUCLID not translate code	International Uniform Chemical Information Database (IUCLID)
JAPAN_GHS not translate code	National Institute of Technology and Evaluation (NITE)
NICNAS not translate code	Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
NIOSH not translate code	NIOSH (National Institute for Occupational Safety and Health)
NLM_CIP not translate code	National Library of Medicine's ChemID Plus (NLM CIP)
NLM_PUBMED not translate code	National Library of Medicine's PubMed database (NLM PUBMED)
NTP not translate code	National Toxicology Program (NTP)
NZ_CCID not translate code	New Zealand's Chemical Classification and Information Database (CCID)
OECD_EHSP not translate code	Organization for Economic Co-operation and Development Environment, Health, and Safety Publications
OECD_HPVP not translate code	Organization for Economic Co-operation and Development High Production Volume Chemicals Program
OECD_SIDS not translate code	Organization for Economic Co-operation and Development Screening Information Data Set
WHO not translate code	World Health Organization
ACGIH	ACGIH (American Conference of Governmental Industrial Hygienists)
ATSDR	ATSDR (Agency for Toxic Substances and Disease Registry)
CCRIS	CCRIS (Chemical Carcinogenesis Research Information System)
CDC	CDC (Center for Disease Control)
CEPA	CEPA (Canadian Environmental Protection Agency)
CICAD	CICAD (Concise International Chemical Assessment Documents)
ECHA	ECHA (The European Chemicals Agency)
EEA	EEA (European Environment Agency)
EPA	EPA (Environmental Protection Agency)
ERMA	ERMA (New Zealand's Environmental Risk Management Authority)
ECOSARS	Estimation through ECOSARS v1.11 part of the Estimation Programs Interface (EPI) Suite™
FDA	FDA (Food & Drug Administration)
GESTIS	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)
HSDB	HSDB (Hazardous Substances Data Bank)
INERIS	INERIS (The National Industrial Environment and Risks Institute)
IPCS INCHEM	IPCS INCHEM (International Programme on Chemical Safety)
IUCLID	IUCLID (The International Uniform Chemical Information Database)
NITE	Japan National Institute of Technology and Evaluation (NITE)
NIH	NIH (National Institutes of Health)
NIOSH	NIOSH (National Institute for Occupational Safety and Health)
LOLI	LOLI (List of Lists - An International Chemical Regulatory Database)
NDF	no data
NICNAS	Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
NIOSH IDLH	Immediately Dangerous to Life or Health
OSHA	OSHA (Occupational Safety and Health Administration of the US Department of Labor)
PEEN	PEEN (Pan European Ecological Network)
RTECS	RTECS (Registry of Toxic Effects of Chemical Substances)
SIDS	SIDS (Screening Information Dataset) for High Volume Chemicals
SYKE	The Finnish Environment Institute (SYKE)
USDA	USDA (United States Department of Agriculture)
USDC	USDC (United States Department of Commerce)
WHO	WHO (World Health Organization)

Legend - Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
MAC	Maximum Allowable Concentration	Ceiling	Ceiling Limit Value
X	Listed	Vacated	These values have no official status. The only binding levels of contaminants are those listed in the final OSHA PEL. These lists are for reference purposes only. Please note that some reference state regulations of these "liberated" exposure limits in their state regulations.

**SAFETY DATA SHEET**

Issue Date 16-Sep-2019 Revision Date 01-Jun-2022 Version 4.9 Page 1 / 14

1. IDENTIFICATION

Product identifier	
Product Name	DPD Total Chlorine Reagent
Other means of identification	
Product Code(s)	1406499
Safety data sheet number	M00110
HMRIC #	HMIRA Registry Number 9936 Filed 2016-04-11
Recommended use of the chemical and restrictions on use	
Recommended Use	Water Analysis. Indicator for total chlorine.
Uses advised against	Consumer use.
Restrictions on use	For Laboratory Use Only.

Details of the supplier of the safety data sheet

Manufacturer Address
Hach Company, P.O.Box 389, Loveland, CO 80539, USA, +1(970) 669-3050

Emergency telephone number
+1(303) 623-5716 - 24 Hour Service

2. HAZARDS IDENTIFICATION**Classification****Regulatory Status**

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2A
Specific target organ toxicity (repeated exposure)	Category 1

Hazards not otherwise classified (HNOC)

Not applicable

Label elements**Signal word**

Danger

SKN*	Skin designation	SKN+	Skin sensitization
RSP+	Respiratory sensitization	**	Hazard Designation
C	Carcinogen	R	Reproductive toxicant
M	Mutagen		
Prepared By	Hach Product Compliance Department		
Issue Date	13-Jan-2023		
Revision Date	02-Feb-2023		

Disclaimer

USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

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End of Safety Data Sheet

Product Code(s) 1406499
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**Hazard statements**

H315 - Causes skin irritation
H319 - Causes serious eye irritation
H372 - Causes damage to organs through prolonged or repeated exposure

Precautionary statements

P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
P332 + P313 - If skin irritation occurs: Get medical attention
P362 - Take off contaminated clothing and wash before reuse
P280 - Wear protective gloves, protective clothing, eye protection, and face protection
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P337 + P313 - If eye irritation persists: Get medical attention
P260 - Do not breathe dust/fume/gas/mist/vapors/spray
P270 - Do not eat, drink or smoke when using this product
P314 - Get medical advice/attention if you feel unwell
P501 - Dispose of contents/ container to an approved waste disposal plant

Other Hazards Known

May be harmful if swallowed

3. COMPOSITION/INFORMATION ON INGREDIENTS**Substance**

Not applicable

Mixture

Chemical Family Mixture.
Chemical nature Mixture of inorganic salts.

Percent ranges are used where confidential product information is applicable.

Chemical name	CAS No	Percent Range	HMRIC #
Carboxylate Salt	-	40 - 50%	-
Phosphoric acid, disodium salt	7558-79-4	20 - 30%	-
Potassium Iodide (KI)	7681-11-0	20 - 30%	-
Salt of N,N-Diethyl-p-Phenylenediamine	-	1 - 5%	-

4. FIRST AID MEASURES**Description of first aid measures**

General advice	Show this safety data sheet to the doctor in attendance.
Inhalation	Get medical attention immediately if symptoms occur. Remove to fresh air.
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. Do not rub affected area. Get medical attention if irritation develops and

Product Code(s) 1406499
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persists.

Skin contact Wash off immediately with soap and plenty of water for at least 15 minutes. Get medical attention if irritation develops and persists.

Ingestion Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Call a physician.

Self-protection of the first aider Avoid contact with skin, eyes or clothing.

Most important symptoms and effects, both acute and delayed

Symptoms Burning sensation.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media Caution: Use of water spray when fighting fire may be inefficient.

Specific hazards arising from the chemical No information available.

Hazardous combustion products Carbon monoxide, Carbon dioxide, Iodine compounds, Phosphorus oxides, Potassium oxides, Sodium monoxide, Nitrogen oxides.

Special protective equipment for fire-fighters Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. ACCIDENTAL RELEASE MEASURES

U.S. Notice Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance. Outside of the US, only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.

Personal precautions, protective equipment and emergency procedures

Personal precautions Evacuate personnel to safe areas. Ensure adequate ventilation. Avoid contact with skin, eyes or clothing. Use personal protective equipment as required.

Other Information Refer to protective measures listed in Sections 7 and 8.

Environmental precautions

Environmental precautions Prevent further leakage or spillage if safe to do so.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

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Methods for cleaning up Take up mechanically, placing in appropriate containers for disposal.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

Reference to other sections See section 8 for more information. See section 13 for more information.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Ensure adequate ventilation. Take off contaminated clothing and wash before reuse. Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place.

Flammability class Not applicable

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical name	ACGIH TLV	OSHA PEL	NIOSH
Potassium iodide (KI) CAS#: 7681-11-0	TWA: 0.01 ppm Inhalable fraction and vapor	NDF	NDF

Appropriate engineering controls

Engineering Controls Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Respiratory protection No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

Hand Protection Impervious gloves. Wear suitable gloves. Gloves must be inspected prior to use. The selected protective gloves have to satisfy the specifications of EU Directive 2016/425 and the standard EN 374 derived from it. Chemical resistant gloves made of butyl rubber or nitrile rubber category III according to EN 374-1:2016.

Eye/face protection If splashes are likely to occur, wear safety glasses with side-shields.

Skin and body protection Long sleeved clothing. Wear suitable protective clothing.

General Hygiene Considerations Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product.

Environmental exposure controls Local authorities should be advised if significant spillages cannot be contained. Do not allow into any sewer, on the ground or into any body of water.

Thermal hazards None under normal processing.

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9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Solid	Color	White to light pink
Appearance	powder		White to brown
Odor	Odorless	Odor threshold	Not applicable

Property Values Remarks - Method

Molecular weight Not applicable

pH 6.35 1% @ 20°C

Melting point/freezing point 145 °C / 293 °F

Boiling point / boiling range No data available

Evaporation rate Not applicable

Vapor pressure Not applicable

Relative vapor density No data available

Specific gravity (water = 1 / air = 1) 1.79

Partition Coefficient (n-octanol/water) log K_{ow} ~ 0

Soil Organic Carbon-Water Partition Coefficient log K_{oc} ~ 0

Autoignition temperature No data available

Decomposition temperature No data available

Dynamic viscosity Not applicable

Kinematic viscosity Not applicable

Solubility(ies)

Water solubility

Water solubility classification	Water solubility	Water Solubility Temperature
Soluble	> 1000 mg/L	25 °C / 77 °F

Solubility in other solvents

Chemical Name	Solubility classification	Solubility	Solubility Temperature
None reported	No information available	No data available	No information available

Other information

Metal Corrosivity

Steel Corrosion Rate 0.97 mm/yr / 0.04 in/yr
Aluminum Corrosion Rate 0.15 mm/yr / 0.01 in/yr

Volatile Organic Compounds (VOC) Content
Not applicable

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Chemical name	CAS No	Volatile organic compounds (VOC) content	CAA (Clean Air Act)
Carboxylate Salt	-	No data available	-
Phosphoric acid, disodium salt	7558-79-4	No data available	-
Potassium iodide (KI)	7681-11-0	Not applicable	-
Salt of N,N-Diethyl-p-Phenylenediamine	-	Not applicable	-

Explosive properties

Upper explosion limit No information available
Lower explosion limit No information available

Flammable properties

Flash point Not applicable

Flammability Limit in Air

Upper flammability limit: No data available
Lower flammability limit: No data available

Oxidizing properties

Bulk density No data available

10. STABILITY AND REACTIVITY

Reactivity

Not applicable.

Chemical stability

Stable under normal conditions.

Explosion data

Sensitivity to Mechanical Impact None.
Sensitivity to Static Discharge None.

Possibility of hazardous reactions

None under normal processing.

Hazardous polymerization

None under normal processing.

Conditions to avoid

None known based on information supplied.

Incompatible materials

Strong acids. Strong bases. Strong oxidizing agents.

Hazardous decomposition products

None under normal use conditions. Carbon dioxide, Carbon monoxide, Iodine compounds, Phosphorus oxides, Potassium oxide, Nitrogen oxides.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

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Product Information

Inhalation	May cause irritation of respiratory tract.
Eye contact	Irritating to eyes. Causes serious eye irritation.
Skin contact	Causes skin irritation.
Ingestion	Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.
Symptoms	Redness. May cause redness and tearing of the eyes.

Acute toxicity
Based on available data, the classification criteria are not met

Product Acute Toxicity Data
Test data reported below.

Oral Exposure Route

Endpoint type	Reported dose	Toxicological effects	Key literature references and sources for data
Rat LD ₅₀	4700 mg/kg	Behavioral effects Flaccid muscle tone Lethargy Prostration Eye Chromodacryorrhea a Ptosis Gastrointestinal Abnormalities of the gastrointestinal tract Diarrhea Liver Abnormalities of the liver Lungs, Thorax, or Respiration Abnormalities of the lungs Dyspnea Red or brown staining of the nose/mouth area Nutritional and Gross Metabolic Soiling of the anogenital area Wetness of the anogenital area Reproductive Skin and Appendages Piloerection	Outside testing

Inhalation (Gas) Exposure Route

Inredient Acute Toxicity Data

Test data reported below.

Oral Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Potassium iodide (KI) (20 - 30%) CAS#: 7681-11-0	Rat LD ₅₀	2779 mg/kg	None reported	None reported	RTECS (Registry of Toxic Effects of Chemical Substances)
Salt of N,N-Diethyl-p-Phenylenediamine (1 - 5%) CAS#:-	Rat LD ₅₀	695 mg/kg	None reported	None reported	Outside testing

Unknown Acute Toxicity
0% of the mixture consists of ingredient(s) of unknown toxicity.

Acute Toxicity Estimations (ATE)

ATEmix (oral)	No information available
ATEmix (dermal)	No information available
ATEmix (inhalation-dust/mist)	No information available
ATEmix (inhalation-vapor)	No information available
ATEmix (inhalation-gas)	No information available

Skin corrosion/irritation
Classification based on data available for ingredients. Irritating to skin.

Product Skin Corrosion/Irritation Data
No data available.

Ingredient Skin Corrosion/Irritation Data
Test data reported below.

Chemical name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
Phosphoric acid, disodium salt (20 - 30%) CAS#: 7558-79-4	Standard Draize Test	Rabbit	500 mg	24 hours	Skin irritant	RTECS (Registry of Toxic Effects of Chemical Substances)

Serious eye damage/irritation
Classification based on data available for ingredients. Irritating to eyes.

Product Serious Eye Damage/Eye Irritation Data
No data available.

Ingredient Eye Damage/Eye Irritation Data
Test data reported below.

Chemical name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
Phosphoric acid, disodium salt (20 - 30%) CAS#: 7558-79-4	Standard Draize Test	Rabbit	500 mg	24 hours	Eye irritant	RTECS (Registry of Toxic Effects of Chemical Substances)

Respiratory or skin sensitization
Based on available data, the classification criteria are not met.

Product Sensitization Data
No data available.

Ingredient Sensitization Data
Test data reported below.

Skin Sensitization Exposure Route

Chemical name	Test method	Species	Results	Key literature references and sources for data
Potassium iodide (KI) (20 - 30%) CAS#: 7681-11-0	Patch test	Human	Not confirmed to be a skin sensitizer	ERMA (New Zealands Environmental Risk Management Authority)

STOT - single exposure
Based on available data, the classification criteria are not met.

Product Specific Target Organ Toxicity Single Exposure Data
No data available.

Ingredient Specific Target Organ Toxicity Single Exposure Data
Test data reported below.

Oral Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Potassium iodide (KI) (20 - 30%) CAS#: 7681-11-0	Mouse LD ₅₀	1862 mg/kg	None reported	Lungs, Thorax, or Respiration Dyspnea	RTECS (Registry of Toxic Effects of Chemical Substances)

STOT - repeated exposure
Causes damage to organs through prolonged or repeated exposure.

Product Specific Target Organ Toxicity Repeat Dose Data
No data available.

Ingredient Specific Target Organ Toxicity Repeat Exposure Data
Test data reported below.

Oral Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Potassium iodide (KI) (20 - 30%) CAS#: 7681-11-0	Rat NOAEL	0.5 mg/kg	90 days	None reported	ECHA (The European Chemicals Agency)

Carcinogenicity
Based on available data, the classification criteria are not met.

Product Carcinogenicity Data
No data available.

Ingredient Carcinogenicity Data
No data available.

Chemical name	CAS No	ACGIH	IARC	NTP	OSHA
Carboxylate Salt	-	-	-	-	-
Phosphoric acid, disodium salt	7558-79-4	-	-	-	-
Potassium iodide (KI)	7681-11-0	-	-	-	-
Salt of N,N-Diethyl-p-Phenylenediamine	-	-	-	-	-

Legend

ACGIH (American Conference of Governmental Industrial Hygienists)	Does not apply
IARC (International Agency for Research on Cancer)	Does not apply
NTP (National Toxicology Program)	Does not apply
OSHA (Occupational Safety and Health Administration of the US Department of Labor)	Does not apply

Germ cell mutagenicity
Based on available data, the classification criteria are not met.

Product Germ Cell Mutagenicity *in vitro* Data
No data available.

Ingredient Germ Cell Mutagenicity *in vitro* Data
Test data reported below.

Chemical name	Test	Cell Strain	Reported dose	Exposure time	Results	Key literature references and sources for data
Potassium iodide (KI) (20 - 30%) CAS#: 7681-11-0	Cytogenetic analysis	Rat ascites tumor	500 mg/kg	None reported	Positive test result for mutagenicity	RTECS (Registry of Toxic Effects of Chemical Substances)

Product Germ Cell Mutagenicity *in vivo* Data
No data available.

Ingredient Germ Cell Mutagenicity *in vivo* Data
No data available.

Reproductive toxicity
Based on available data, the classification criteria are not met.

Product Reproductive Toxicity Data
No data available.

Ingredient Reproductive Toxicity Data
Test data reported below.

Oral Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Potassium iodide (KI) (20 - 30%) CAS#: 7681-11-0	Human TD ₀₁	2700 mg/kg	39 weeks	Specific Developmental Abnormalities Endocrine System	RTECS (Registry of Toxic Effects of Chemical Substances)

Aspiration hazard
Based on available data, the classification criteria are not met.

12. ECOLOGICAL INFORMATION

Ecotoxicity Based on available data, the classification criteria are not met.

Unknown aquatic toxicity 0% of the mixture consists of components(s) of unknown hazards to the aquatic environment.

Product Ecological Data

Aquatic Acute Toxicity
No data available.

Aquatic Chronic Toxicity
No data available.

Ingredient Ecological Data

Aquatic Acute Toxicity
Test data reported below.

Crustacea

Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Salt of N,N-Diethyl-p-Phenyl enediamine (1 - 5%) CAS#: -	48 Hours	Daphnia magna	EC ₅₀	10.8 mg/L	Internal Data

Aquatic Chronic Toxicity
No data available.

Persistence and degradability

Product Biodegradability Data
No data available.

Bioaccumulation

MATERIAL DOES NOT BIOACCUMULATE

Product Bioaccumulation Data
No data available.

Partition Coefficient (n-octanol/water) log K_{ow} ~ 0

Mobility

Soil Organic Carbon-Water Partition Coefficient log K_{oc} ~ 0

Other adverse effects
No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from residues/unused products Dispose of waste in accordance with environmental legislation. Dispose of in accordance with local regulations.

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Sudden release of pressure hazard No
Reactive Hazard No

CWA (Clean Water Act)

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Phosphoric acid, disodium salt 7558-79-4	5000 lb	-	-	X

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Phosphoric acid, disodium salt 7558-79-4	5000 lb	-	RQ 5000 lb final RQ RQ 2270 kg final RQ

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals

IMERC: Not applicable

New Jersey Trade Secret Registry Number 80100131-5001 (Carboxylate Salt) New Jersey Trade Secret Registry Number 80100131-5002 (DPD Salt) New York Trade Secret Registry Number 478 (DPD Salt) New York Trade Secret Registry Number 479 (Carboxylate Salt) This product complies with Pennsylvania Trade Secret Regulations. This product is registered as a trade secret in the state of Illinois. This product is registered as a trade secret in the state of Massachusetts. This product is registered as a trade secret in the state of New York.

U.S. State Right-to-Know Regulations

This product may contain substances regulated by state right-to-know regulations.

Chemical name	New Jersey	Massachusetts	Pennsylvania
Phosphoric acid, disodium salt 7558-79-4	X	X	X

U.S. EPA Label Information

Chemical name	FIFRA	FDA
Phosphoric acid, disodium salt	180.0910	21 CFR 182.1778, 21 CFR 182.6290, 21 CFR 182.6778, 21 CFR 182.8778
Potassium iodide (KI)	180.0940	21 CFR 184.1634

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION

Special Comments
None

Additional information

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Contaminated packaging Do not reuse empty containers.

US EPA Waste Number Not applicable

14. TRANSPORT INFORMATION

DOT Not regulated

TDG Not regulated

IATA Not regulated

IMDG Not regulated

Note: No special precautions necessary.

Additional information

15. REGULATORY INFORMATION

National Inventories

TSCA Complies

DSL/NDSL Complies

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

International Inventories

EINECS/ELINCS Complies

ENCS Complies

IECSC Complies

KECL - Existing substances Complies

PICCS Complies

TCSI Complies

AICS Complies

NZIoC Complies

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

TCSI - Taiwan Chemical Substances Inventory

AICS - Australian Inventory of Chemical Substances

NZIoC - New Zealand Inventory of Chemicals

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

SARA 311/312 Hazard Categories

Acute health hazard Yes

Chronic Health Hazard Yes

Fire hazard No

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Global Automotive Declarable Substance List (GADSL)

Not applicable

NFPA and HMIS Classifications

NFPA	Health hazards - 2	Flammability - 0	Instability - 0	Physical and chemical properties
HMIS	Health hazards - 2	Flammability - 0	Physical hazards - 0	Personal protection - 1
	- *			- X

Key or legend to abbreviations and acronyms used in the safety data sheet

NIOSH IDLH Immediately Dangerous to Life or Health

ACGIH ACGIH (American Conference of Governmental Industrial Hygienists)

NDF no data

Legend - Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA TWA (time-weighted average) **STEL** STEL (Short Term Exposure Limit)

MAC Maximum Allowable Concentration **Ceiling** Ceiling Limit Value

X Listed **Vacated** These values have no official status. The only binding levels of contaminants are those listed in the final OSHA PEL. These lists are for reference purposes only. Please note that some reference state regulations of these "liberated" exposure limits in their state regulations.

SKN* Skin designation **SKN+** Skin sensitization

RSP+ Respiratory sensitization ****** Hazard Designation

C Carcinogen **Reproductive toxicant**

M mutagen

Prepared By Hach Product Compliance Department

Issue Date 16-Sep-2019

Revision Date 01-Jun-2022

Revision Note None

Disclaimer

USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations. THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. HACH COMPANY©2022

End of Safety Data Sheet

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SAFETY DATA SHEET

Issue Date 04-May-2021 Revision Date 07-Sep-2021 Version 7.6 Page 1 / 15

1. IDENTIFICATION

Product identifier
Product Name PhosVer® 3 Phosphate Reagent

Other means of identification
Product Code(s) 2106069

Safety data sheet number
M00035

Recommended use of the chemical and restrictions on use
Recommended Use Water Analysis. Phosphate determination.
Uses advised against Consumer use.
Restrictions on use None.

Details of the supplier of the safety data sheet

Manufacturer Address
Hach Company P.O.Box 389 Loveland, CO 80539 USA +1(970) 669-3050

Emergency telephone number
+1(303) 623-5716 - 24 Hour Service

2. HAZARDS IDENTIFICATION

Classification

Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 1

Hazards not otherwise classified (HNOC)
Not applicable

Label elements

Signal word
Danger



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Version 7.6

Product Name PhosVer® 3 Phosphate Reagent
Revision Date 07-Sep-2021
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Hazard statements

H315 - Causes skin irritation
H318 - Causes serious eye damage

Precautionary statements

P280 - Wear protective gloves, protective clothing, eye protection, and face protection
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
P332 + P313 - If skin irritation occurs: Get medical attention
P362 - Take off contaminated clothing and wash before reuse
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a POISON CENTER or doctor/physician

Other Hazards Known
May be harmful if swallowed

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance

Not applicable

Mixture

Chemical Family Mixture.
Chemical nature Mixture of inorganic salts, Mixture of organic compounds.

Percent ranges are used where confidential product information is applicable.

Chemical name	CAS No	Percent Range	HMRIC #
Potassium pyrosulfate	7790-62-7	80 - 90%	-
L-Ascorbic acid	50-81-7	10 - 20%	-
Sodium molybdate	7831-95-0	1 - 5%	-
Tetrasodium EDTA, dihydrate	10378-23-1	<1%	-
Antimonate(2-), bis[.mu.-(2,3-dihydroxybutanedioato(4-)-O1,O2,O3,O4)]di-, dipotassium, trihydrate, stereoisomer	28300-74-5	<1%	-

4. FIRST AID MEASURES

Description of first aid measures

General advice Immediate medical attention is required. Show this safety data sheet to the doctor in attendance.

Inhalation Remove to fresh air. Get medical attention immediately if symptoms occur.

Eye contact Get immediate medical advice/attention. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. Do not rub affected area.

Skin contact Wash off immediately with soap and plenty of water for at least 15 minutes. Get medical attention if irritation develops and persists.

Ingestion Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Call a physician.

Self-protection of the first aider Avoid contact with skin, eyes or clothing.

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Most important symptoms and effects, both acute and delayed

Symptoms Burning sensation.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media Caution: Use of water spray when fighting fire may be inefficient.

Specific hazards arising from the chemical No information available.

Hazardous combustion products Sulfur oxides. Carbon monoxide, Carbon dioxide. Sodium monoxide. Potassium oxides.

Special protective equipment for fire-fighters Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. ACCIDENTAL RELEASE MEASURES

U.S. Notice Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance. Outside of the US, only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.

Personal precautions, protective equipment and emergency procedures

Personal precautions Avoid contact with skin, eyes or clothing. Use personal protective equipment as required. Ensure adequate ventilation.

Other Information Refer to protective measures listed in Sections 7 and 8.

Environmental precautions

Environmental precautions Prevent further leakage or spillage if safe to do so.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Take up mechanically, placing in appropriate containers for disposal.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

Reference to other sections See section 8 for more information. See section 13 for more information.

7. HANDLING AND STORAGE

Precautions for safe handling

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Advice on safe handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Store locked up. Keep out of the reach of children.

Flammability class Not applicable

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical name	ACGIH TLV	OSHA PEL	NIOSH
Sodium molybdate CAS#: 7831-95-0	TWA: 0.5 mg/m ³ Mo respirable particulate matter	TWA: 5 mg/m ³ (vacated) TWA: 5 mg/m ³	IDLH: 1000 mg/m ³ Mo
Antimonate(2-), bis[.mu.-(2,3-dihydroxybutanedioato(4-)-O1,O2,O3,O4)]di-, dipotassium, trihydrate, stereoisomer CAS#: 28300-74-5	TWA: 0.5 mg/m ³ Sb	TWA: 0.5 mg/m ³ (vacated) TWA: 0.5 mg/m ³	IDLH: 50 mg/m ³ Sb TWA: 0.5 mg/m ³ Sb

Appropriate engineering controls

Engineering Controls Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Respiratory protection No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

Hand Protection Wear suitable gloves. Impervious gloves. Gloves must be inspected prior to use. The selected protective gloves have to satisfy the specifications of EU Directive 2016/425 and the standard EN 374 derived from it. Chemical resistant gloves made of butyl rubber or nitrile rubber category III according to EN 374-1:2016.

Eye/face protection Tight sealing safety goggles.

Skin and body protection Wear suitable protective clothing. Long sleeved clothing.

General Hygiene Considerations Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product.

Environmental exposure controls Local authorities should be advised if significant spillages cannot be contained. Do not allow into any sewer, on the ground or into any body of water.

Thermal hazards None under normal processing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

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Physical state

Solid

Appearance

powder

Odor

Odorless

Color

white

Odor threshold

Not applicable

Property

Values

Remarks - Method

Molecular weight

Not applicable

pH

1.5

5% @ 20°C

Melting point/freezing point

105 °C / 221 °F

Boiling point / boiling range

No data available

Evaporation rate

Not applicable

Vapor pressure

Not applicable

Relative vapor density

No data available

Specific gravity (water = 1 / air = 1)

2.22

Partition Coefficient (n-octanol/water)

log K_{ow} ~ -0.42

Soil Organic Carbon-Water Partition Coefficient

log K_{oc} ~ -0.23

Autoignition temperature

No data available

Decomposition temperature

No data available

Dynamic viscosity

Not applicable

Kinematic viscosity

Not applicable

Solubility(ies)

Water solubility

Water solubility classification	Water solubility	Water Solubility Temperature
Soluble	> 1000 mg/L	25 °C / 77 °F

Solubility in other solvents

Chemical Name	Solubility classification	Solubility	Solubility Temperature
Acid	Soluble	> 1000 mg/L	25 °C / 77 °F

Other information

Metal Corrosivity

Steel Corrosion Rate

No data available

Aluminum Corrosion Rate

No data available

Volatile Organic Compounds (VOC) Content

Not applicable

Chemical name	CAS No	Volatile organic compounds (VOC) content	CAA (Clean Air Act)
Potassium pyrosulfate	7790-62-7	No data available	-
L-Ascorbic acid	50-81-7	No data available	-
Sodium molybdate	7631-95-0	No data available	-

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Chemical name

CAS No

Volatile organic compounds (VOC) content

CAA (Clean Air Act)

Tetrasodium EDTA, dihydrate

10378-23-1

Not applicable

-

bis[.mu.-(2,3-dihydroxybutanedioato(4-)-O1,O2:O3,O4)]di-, dipotassium, trihydrate, stereoisomer

28300-74-5

No data available

-

Explosive properties

Upper explosion limit

No data available

Lower explosion limit

No data available

Flammable properties

Flash point

Not applicable

Flammability Limit in Air

Upper flammability limit:

No data available

Lower flammability limit:

No data available

Oxidizing properties

No data available.

Bulk density

No data available

10. STABILITY AND REACTIVITY

Reactivity

Not applicable.

Chemical stability

Stable under normal conditions.

Explosion data

Sensitivity to Mechanical Impact

None.

Sensitivity to Static Discharge

None.

Possibility of hazardous reactions

None under normal processing.

Hazardous polymerization

Hazardous polymerization does not occur.

Conditions to avoid

None known based on information supplied.

Incompatible materials

Strong acids. Strong bases. Strong oxidizing agents.

Hazardous decomposition products

Thermal decomposition can lead to release of irritating and toxic gases and vapors.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

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Product Information

Inhalation

May cause irritation of respiratory tract.

Eye contact

Severely irritating to eyes. Causes serious eye damage. May cause burns. May cause irreversible damage to eyes.

Skin contact

Causes skin irritation.

Ingestion

Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Symptoms

Redness. Burning. May cause blindness. May cause redness and tearing of the eyes.

Acute toxicity

Based on available data, the classification criteria are not met

Product Acute Toxicity Data

No data available.

Ingredient Acute Toxicity Data

Test data reported below.

Oral Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Potassium pyrosulfate (80 - 90%) CAS#: 7790-62-7	Rat LD ₅₀	2340 mg/kg	None reported	None reported	Vendor SDS
Sodium molybdate (1 - 5%) CAS#: 7631-95-0	Rat LD ₅₀	4000 mg/kg	None reported	None reported	RTECS (Registry of Toxic Effects of Chemical Substances)
Tetrasodium EDTA, dihydrate (<1%) CAS#: 10378-23-1	Rat LD ₅₀	2700 mg/kg	None reported	None reported	ILUCLID (The International Uniform Chemical Information Database)
Antimonate(2-), bis[.mu.-(2,3-dihydroxybutanedioato(4-)-O1,O2:O3,O4)]di-, dipotassium, trihydrate, stereoisomer (<1%) CAS#: 28300-74-5	Rat LD ₅₀	115 mg/kg	None reported	None reported	Vendor SDS

Dermal Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Sodium molybdate (1 - 5%) CAS#: 7631-95-0	Rat LD ₅₀	> 2000 mg/kg	None reported	None reported	Vendor SDS

Inhalation (Dust/Mist) Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Antimonate(2-),	None	None	None	None reported	No information available

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bis[.mu.-(2,3-dihydroxybutanedioato(4-)-O1,O2:O3,O4)]di-, dipotassium, trihydrate, stereoisomer (<1%)
CAS#: 28300-74-5

reported

reported

reported

Unknown Acute Toxicity

17% of the mixture consists of ingredient(s) of unknown toxicity.

Acute Toxicity Estimations (ATE)

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral)	2,775.50 mg/kg
ATEmix (dermal)	No information available
ATEmix (inhalation-dust/mist)	No information available
ATEmix (inhalation-vapor)	No information available
ATEmix (inhalation-gas)	No information available

Skin corrosion/irritation

Classification based on data available for ingredients. Irritating to skin.

Product Skin Corrosion/Irritation Data

Test data reported below.

Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
United States Department of Transportation (DOT) Skin Corrosion Test	Rabbit	None reported	None reported	Not corrosive to skin	Internal Data Outside testing

Ingredient Skin Corrosion/Irritation Data

Test data reported below.

Chemical name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
Potassium pyrosulfate (80 - 90%) CAS#: 7790-62-7	None reported	None reported	None reported	None reported	Corrosive to skin	Vendor SDS
Sodium molybdate (1 - 5%) CAS#: 7631-95-0	Standard Draize Test	Rabbit	500 mg	4 hours	Not corrosive or irritating to skin	ECHA (The European Chemicals Agency)

Serious eye damage/irritation

Classification based on data available for ingredients. Causes burns. Risk of serious damage to eyes.

Product Serious Eye Damage/Eye Irritation Data

No data available.

Ingredient Eye Damage/Eye Irritation Data

Test data reported below.

Chemical name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and

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Potassium pyrosulfate (80 - 90%) CAS#: 7790-62-7	None reported	None reported	None reported	None reported	Corrosive to eyes	sources for data Vendor SDS
Sodium molybdate (1 - 5%) CAS#: 7631-95-0	Patch test	None reported	200 mg	None reported	Not corrosive or irritating to eyes	ECHA (The European Chemicals Agency)
Antimonate(2-), bis[.mu.-(2,3-dihydroxybutanedioato(4-)-O1,O2-O3,O4)]di-, dipotassium, trihydrate, stereoisomer (<1%) CAS#: 28300-74-5	None reported	Rabbit	100 mg	24 hours	Eye irritant	No information available

Respiratory or skin sensitization
Based on available data, the classification criteria are not met.

Product Sensitization Data
No data available.

Ingredient Sensitization Data
Test data reported below.

Skin Sensitization Exposure Route

Chemical name	Test method	Species	Results	Key literature references and sources for data
Sodium molybdate (1 - 5%) CAS#: 7631-95-0	OECD Test No. 406: Skin Sensitization	Guinea pig	Not confirmed to be a skin sensitizer	Vendor SDS

STOT - single exposure
Based on available data, the classification criteria are not met.

Product Specific Target Organ Toxicity Single Exposure Data
No data available.

Ingredient Specific Target Organ Toxicity Single Exposure Data
No data available.

STOT - repeated exposure
Based on available data, the classification criteria are not met.

Product Specific Target Organ Toxicity Repeat Dose Data
No data available.

Ingredient Specific Target Organ Toxicity Repeat Exposure Data
No data available.

Carcinogenicity
Based on available data, the classification criteria are not met.

Product Carcinogenicity Data
No data available.

Ingredient Carcinogenicity Data
No data available.

	type	dose	time		sources for data
L-Ascorbic acid (10 - 20%) CAS#: 50-81-7	Guinea pig TD ₅₀	19500 mg/kg	26 days	None reported	RTECS (Registry of Toxic Effects of Chemical Substances)

Aspiration hazard
Based on available data, the classification criteria are not met.

12. ECOLOGICAL INFORMATION

Ecotoxicity Based on available data, the classification criteria are not met.

Unknown aquatic toxicity 0 % of the mixture consists of component(s) of unknown hazards to the aquatic environment.

Product Ecological Data

Aquatic Acute Toxicity
No data available.

Aquatic Chronic Toxicity
No data available.

Ingredient Ecological Data

Aquatic Acute Toxicity
Test data reported below.

Fish

Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Potassium pyrosulfate (80 - 90%) CAS#: 7790-62-7	96 hours	<i>Oncorhynchus mykiss</i>	LC ₅₀	420 mg/L	ERMA (New Zealands Environmental Risk Management Authority)
L-Ascorbic acid (10 - 20%) CAS#: 50-81-7	96 hours	None reported	LC ₅₀	44200 mg/L	Estimation through ECOSARS v1.11 part of the Estimation Programs Interface (EPI) Suite™
Sodium molybdate (1 - 5%) CAS#: 7631-95-0	96 hours	<i>Oncorhynchus mykiss</i>	LC ₅₀	800 mg/L	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)
Antimonate(2-), bis[.mu.-(2,3-dihydroxybutanedioato(4-)-O1,O2-O3,O4)]di-, dipotassium, trihydrate, stereoisomer (<1%) CAS#: 28300-74-5	96 hours	None reported	LC ₅₀	12.5 mg/L	Vendor SDS

Crustacea

Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Potassium pyrosulfate (80 - 90%)	48 Hours	<i>Daphnia magna</i>	EC ₅₀	140 mg/L	ERMA (New Zealands Environmental Risk Management Authority)

Chemical name	CAS No	ACGIH	IARC	NTP	OSHA
Potassium pyrosulfate	7790-62-7	-	-	-	-
L-Ascorbic acid	50-81-7	-	-	-	-
Sodium molybdate	7631-95-0	A3	-	-	-
Tetrasodium EDTA, dihydrate	10378-23-1	-	-	-	-
Antimonate(2-), bis[.mu.-(2,3-dihydroxybutanedioato(4-)-O1,O2-O3,O4)]di-, dipotassium, trihydrate, stereoisomer	28300-74-5	-	-	-	-

Legend

ACGIH (American Conference of Governmental Industrial Hygienists)	A3 - Animal Carcinogen
IARC (International Agency for Research on Cancer)	Does not apply
NTP (National Toxicology Program)	Does not apply
OSHA (Occupational Safety and Health Administration of the US Department of Labor)	Does not apply

Germ cell mutagenicity
Based on available data, the classification criteria are not met.

Product Germ Cell Mutagenicity *invitro* Data
No data available.

Ingredient Germ Cell Mutagenicity *invitro* Data
Test data reported below.

Chemical name	Test	Cell Strain	Reported dose	Exposure time	Results	Key literature references and sources for data
L-Ascorbic acid (10 - 20%) CAS#: 50-81-7	DNA damage	Human fibroblast	0.2 mmol/L	None reported	Positive test result for mutagenicity	RTECS (Registry of Toxic Effects of Chemical Substances)
Sodium molybdate (1 - 5%) CAS#: 7631-95-0	Phage inhibition capacity	Escherichia coli	16 mmol/L	None reported	Positive test result for mutagenicity	RTECS (Registry of Toxic Effects of Chemical Substances)

Product Germ Cell Mutagenicity *invivo* Data
No data available.

Ingredient Germ Cell Mutagenicity *invivo* Data
No data available.

Reproductive toxicity
Based on available data, the classification criteria are not met.

Product Reproductive Toxicity Data
No data available.

Ingredient Reproductive Toxicity Data
Test data reported below.

Oral Exposure Route

Chemical name	Endpoint	Reported	Exposure	Toxicological effects	Key literature references and
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CAS#: 7790-62-7					
L-Ascorbic acid (10 - 20%) CAS#: 50-81-7	48 Hours	None reported	LC ₅₀	17500 mg/L	Estimation through ECOSARS v1.11 part of the Estimation Programs Interface (EPI) Suite™

Algae

Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
L-Ascorbic acid (10 - 20%) CAS#: 50-81-7	96 hours	None reported	EC ₅₀	29675 mg/L	Estimation through ECOSARS v1.11 part of the Estimation Programs Interface (EPI) Suite™

Aquatic Chronic Toxicity
No data available.

Persistence and degradability

Product Biodegradability Data
No data available.

Bioaccumulation
MATERIAL DOES NOT BIOACCUMULATE

Product Bioaccumulation Data
No data available.

Partition Coefficient (n-octanol/water) log K_{ow} ~ -0.42

Mobility

Soil Organic Carbon-Water Partition Coefficient log K_{oc} ~ -0.23

Other adverse effects
No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from residues/unused products Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging Do not reuse empty containers.

US EPA Waste Number Not applicable, D002

14. TRANSPORT INFORMATION

DOT Not regulated

TDG Not regulated

IATA Not regulated

IMDG Not regulated

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Note: No special precautions necessary.

Additional information
There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods.
If the item is not in a reagent set or kit, the classification given above applies.
If the item is part of a reagent set or kit the classification would change to the following:
UN3316 Chemical Kit, Hazard Class 9, Packing Group II or III.
If the item is not regulated, the Chemical Kit classification does not apply.

15. REGULATORY INFORMATION

National Inventories

TSCA Complies
DSL/NDSL Complies

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

International Inventories

EINECS/ELINCS Complies
ENCS Complies
IECSC Complies
KECL - Existing substances Complies
PICCS Complies
TCSI Complies
AICS Complies
NZIoC Complies

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

TCSI - Taiwan Chemical Substances Inventory

AICS - Australian Inventory of Chemical Substances

NZIoC - New Zealand Inventory of Chemicals

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

Chemical name	SARA 313 - Threshold Values %
Antimonate(2-), bis[.mu.-(2,3-dihydroxybutanedioato(4-)-O1,O2,O3,O4)]di-, dipotassium, trihydrate, stereoisomer (CAS #: 28300-74-5)	1.0

SARA 311/312 Hazard Categories

Acute health hazard	Yes
Chronic Health Hazard	Yes
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
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Antimonate(2-), bis[.mu.-(2,3-dihydroxybutanedioato(4-)-O1,O2,O3,O4)]di-, dipotassium, trihydrate, stereoisomer 28300-74-5	-	X	-	X
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CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

Chemical name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Antimonate(2-), bis[.mu.-(2,3-dihydroxybutanedioato(4-)-O1,O2,O3,O4)]di-, dipotassium, trihydrate, stereoisomer 28300-74-5	100 lb	-	RQ 100 lb final RQ RQ 45.4 kg final RQ

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals

IMERC: Not applicable

U.S. State Right-to-Know Regulations

This product may contain substances regulated by state right-to-know regulations.

Chemical name	New Jersey	Massachusetts	Pennsylvania
Antimonate(2-), bis[.mu.-(2,3-dihydroxybutanedioato(4-)-O1,O2,O3,O4)]di-, dipotassium, trihydrate, stereoisomer 28300-74-5	X	X	X

U.S. EPA Label Information

Chemical name	FIFRA	FDA
L-Ascorbic acid	180.0950	21 CFR 182.3013,21 CFR 182.8013
Sodium molybdate	180.0920	-

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION

Special Comments

None

Additional information

Global Automotive Declarable Substance List (GADSL)

Not applicable

NFPA and HMIS Classifications

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NFPA	Health hazards - 3	Flammability - 0	Instability - 0	Physical and chemical properties
HMIS	Health hazards - 3	Flammability - 0	Physical hazards - 0	Personal protection - X -1

Key or legend to abbreviations and acronyms used in the safety data sheet

NIOSH IDLH Immediately Dangerous to Life or Health
ACGIH ACGIH (American Conference of Governmental Industrial Hygienists)
NDF no data

Legend - Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
MAC	Maximum Allowable Concentration	Ceiling	Ceiling Limit Value
X	Listed	Vacated	These values have no official status. The only binding levels of contaminants are those listed in the final OSHA PEL. These lists are for reference purposes only. Please note that some reference state regulations of these "liberated" exposure limits in their state regulations.
SKN*	Skin designation	SKN+*	Skin sensitization
RSP+	Respiratory sensitization	**	Hazard Designation
C	Carcinogen	R	Reproductive toxicant
M	mutagen		

Prepared By Hach Product Compliance Department

Issue Date 04-May-2021

Revision Date 07-Sep-2021

Revision Note SDS sections updated
2

Disclaimer

USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

HACH COMPANY©2021

End of Safety Data Sheet



SAFETY DATA SHEET

Issue Date 01-Mar-2021 Revision Date 01-Mar-2021 Version 3.2

1. IDENTIFICATION

Product identifier

Product Name NitrVer® 2 Nitrite Reagent

Other means of identification

Product Code(s) 2107569

Safety data sheet number M00031

Recommended use of the chemical and restrictions on use

Recommended Use Determination of nitrite Laboratory reagent.

Uses advised against No information available

Details of the supplier of the safety data sheet

Initial Supplier Identifier

Hach Sales & Service LP, 3020 Gore Road, London, Ontario N5V 4T7 Canada Tel: 1-800-665-7635

Manufacturer Address

Hach Company P.O. Box 389 Loveland, CO 80539 USA +1(970) 669-3050

Emergency telephone number

Emergency Telephone Chemtrec 1-800-424-9300
CANUTEC 613-992-4624

2. HAZARD IDENTIFICATION

Classification

Acute toxicity - Oral	Category 4
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 1

Label elements

Signal word - Danger

Hazard statements

H302 - Harmful if swallowed
H315 - Causes skin irritation
H318 - Causes serious eye damage

**Precautionary Statements**

P270 - Do not eat, drink or smoke when using this product
P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell
P330 - Rinse mouth
P501 - Dispose of contents/ container to an approved waste disposal plant
P302 + P352 - IF ON SKIN: Wash with plenty of water and soap
P332 + P313 - If skin irritation occurs: Get medical attention
P362 + P364 - Take off contaminated clothing and wash it before reuse
P280 - Wear protective gloves, protective clothing, eye protection, and face protection
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a POISON CENTER or doctor

Unknown Acute Toxicity

0 % of the mixture consists of ingredient(s) of unknown toxicity.
0 % of the mixture consists of ingredient(s) of unknown acute oral toxicity
0 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity
0 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist)
0 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor)
0 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas)

Other Hazards Known

Not applicable.

3. COMPOSITION/INFORMATION ON INGREDIENTS**Substance**

Not applicable

Mixture

Chemical name	Synonyms	CAS No	Percent Range	Units	HMIRA #
Sulfuric acid, iron(2+) salt (2:1), compound with 1,2-ethanediamine (1:1)	Ferrous Ethylenediammonium Sulfate	63589-59-3	60 - 70%	g	-
Potassium pyrosulfate	No information available	7790-62-7	30 - 40%	g	-

4. FIRST AID MEASURES**Description of first aid measures**

General advice	Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.
Inhalation	Remove to fresh air. Get medical attention immediately if symptoms occur.
Eye contact	Get immediate medical advice/attention. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. Do not rub affected area.

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Precautions for safe handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Keep out of the reach of children. Store locked up.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Control parameters****Exposure Limits**

Chemical name	Alberta OEL	British Columbia OEL	Manitoba OEL	New Brunswick OEL	Newfoundland & Labrador OEL
Sulfuric acid, iron(2+) salt (2:1), compound with 1,2-ethanediamine (1:1) 60 - 70%	TWA: 1 mg/m ³	TWA: 1 mg/m ³ STEL: 2 mg/m ³	TWA: 1 mg/m ³	TWA: 1 mg/m ³	TWA: 1 mg/m ³

Chemical name	Northwest Territories OEL	Nova Scotia OEL	Nunavut OEL	Ontario TWA	Prince Edward Island OEL
Sulfuric acid, iron(2+) salt (2:1), compound with 1,2-ethanediamine (1:1) 60 - 70%	TWA: 1 mg/m ³ STEL: 3 mg/m ³	TWA: 1 mg/m ³	TWA: 1 mg/m ³ STEL: 3 mg/m ³	TWA: 1 mg/m ³	TWA: 1 mg/m ³

Chemical name	Quebec OEL	Saskatchewan OEL	Yukon OEL
Sulfuric acid, iron(2+) salt (2:1), compound with 1,2-ethanediamine (1:1) 60 - 70%	TWA: 1.0 mg/m ³	TWA: 1 mg/m ³ STEL: 3 mg/m ³	STEL: 2 mg/m ³ TWA: 1 mg/m ³

Chemical name	ACGIH TLV	OSHA PEL	NIOSH
Sulfuric acid, iron(2+) salt (2:1), compound with 1,2-ethanediamine (1:1) 60 - 70%	TWA: 1 mg/m ³ Fe	(vacated) TWA: 1 mg/m ³	TWA: 1 mg/m ³ Fe

Legend See section 16 for terms and abbreviations

Appropriate engineering controls

Engineering Controls Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Respiratory protection No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

Hand Protection Wear suitable gloves. Impervious gloves.

Eye/face protection Tight sealing safety goggles.

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Skin contact	Wash off immediately with soap and plenty of water for at least 15 minutes. Get medical attention if irritation develops and persists.
Ingestion	Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Call a physician.
Self-protection of the first aider	Avoid contact with skin, eyes or clothing. Wear personal protective clothing (see section 8).

Most important symptoms and effects, both acute and delayed

Symptoms Burning sensation.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable Extinguishing Media	Caution: Use of water spray when fighting fire may be inefficient.
Specific hazards arising from the chemical	No information available.
Hazardous combustion products	Nitrogen oxides. Sulfur oxides. Carbon monoxide. Carbon dioxide (CO ₂).
Special protective equipment for fire-fighters	Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. ACCIDENTAL RELEASE MEASURES**Personal precautions, protective equipment and emergency procedures**

WHMIS Notice Only persons properly qualified to respond to an emergency involving hazardous substances should respond to a spill involving chemicals. See Section 13, Special Instructions for disposal assistance.

Personal precautions Avoid contact with skin, eyes or clothing. Use personal protective equipment as required. Ensure adequate ventilation.

Other Information Refer to protective measures listed in Sections 7 and 8.

Environmental precautions

Environmental precautions Prevent further leakage or spillage if safe to do so.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Pick up and transfer to properly labeled containers.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

7. HANDLING AND STORAGE

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Skin and body protection	Wear suitable protective clothing. Long sleeved clothing. Avoid contact with eyes, skin and clothing.
General Hygiene Considerations	Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product.
Environmental exposure controls	Local authorities should be advised if significant spillages cannot be contained. Do not allow into any sewer, on the ground or into any body of water.
Thermal hazards	None under normal processing.

9. PHYSICAL AND CHEMICAL PROPERTIES**Information on basic physical and chemical properties**

Physical state	powder	Solid
Appearance	None	Color light green
Odor	None	Odor threshold No data available
Property	Values	Remarks - Method
Molecular weight	No data available	
pH	1.3	5% @ 20°C
Melting point/freezing point	156 °C / 312.8 °F	
Boiling point / boiling range	No data available	
Evaporation rate	Not applicable	
Vapor pressure	Not applicable	
Relative vapor density	No data available	
Specific gravity (water = 1 / air = 1)	2.06	
Partition Coefficient (n-octanol/water)	log K _{ow} ~ 0	
Soil Organic Carbon-Water Partition Coefficient	log K _{oc} ~ 0	
Autoignition temperature	No data available	
Decomposition temperature	No data available	
Dynamic viscosity	Not applicable	
Kinematic viscosity	Not applicable	
Solubility(ies)		

Water solubility

Water solubility classification	Water solubility	Water Solubility Temperature
Soluble	> 1000 mg/L	25 °C / 77 °F

Solubility in other solvents

Chemical Name	Solubility classification	Solubility	Solubility Temperature
Acid	Soluble	> 1000 mg/L	25 °C / 77 °F

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Other information**Metal Corrosivity**

Steel Corrosion Rate	No data available
Aluminum Corrosion Rate	No data available

Volatile Organic Compounds (VOC) Content
Not applicable

Chemical name	CAS No	Volatile organic compounds (VOC) content	CAA (Clean Air Act)
Sulfuric acid, iron(2+) salt (2:1), compound with 1,2-ethanediamine (1:1)	63589-59-3	No data available	-
Potassium pyrosulfate	7790-62-7	No data available	-

Explosive properties

Upper explosion limit	No data available
Lower explosion limit	No data available

Flammable properties

Flash point	Not applicable
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Flammability Limit in Air

Upper flammability limit:	No data available
Lower flammability limit:	No data available

Oxidizing properties

	No data available.
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Bulk density

	No data available
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10. STABILITY AND REACTIVITY**Reactivity**

Not applicable.

Chemical stability

Stability Stable under normal conditions.

Explosion data

Sensitivity to Mechanical Impact	None
Sensitivity to Static Discharge	None.

Possibility of hazardous reactions

Possibility of Hazardous Reactions None under normal processing.

Hazardous polymerization

None under normal processing.

Conditions to avoid

Conditions to avoid None known based on information supplied.

Incompatible materials

Incompatible materials Strong acids. Strong bases. Strong oxidizing agents.

ATEmix (inhalation-gas) No information available

Skin corrosion/irritation

Classification based on data available for ingredients. Irritating to skin.

Product Skin Corrosion/Irritation Data

No data available.

Ingredient Skin Corrosion/Irritation Data

No data available.

Chemical name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
Potassium pyrosulfate (30 - 40%) CAS#: 7790-62-7	None reported	None reported	None reported	None reported	Corrosive to skin	Vendor SDS

Serious eye damage/eye irritation

Classification based on data available for ingredients. Causes burns. Risk of serious damage to eyes.

Product Serious Eye Damage/Eye Irritation Data

No data available.

Ingredient Eye Damage/Eye Irritation Data

No data available.

Chemical name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
Potassium pyrosulfate (30 - 40%) CAS#: 7790-62-7	None reported	None reported	None reported	None reported	Corrosive to eyes	Vendor SDS

Respiratory or skin sensitization

Based on available data, the classification criteria are not met.

Product Sensitization Data

No data available.

Ingredient Sensitization Data

No data available.

STOT - single exposure

Based on available data, the classification criteria are not met.

Product Specific Target Organ Toxicity Single Exposure Data

No data available.

Ingredient Specific Target Organ Toxicity Single Exposure Data

No data available.

STOT - repeated exposure

Based on available data, the classification criteria are not met.

Product Specific Target Organ Toxicity Repeat Dose Data

No data available.

Ingredient Specific Target Organ Toxicity Repeat Exposure Data

No data available.

Carcinogenicity**Hazardous decomposition products**

Thermal decomposition can lead to release of irritating and toxic gases and vapors. Sodium oxides. Nitrogen oxides (NOx).

11. TOXICOLOGICAL INFORMATION**Information on likely routes of exposure****Product Information**

Inhalation	May cause irritation of respiratory tract.
Eye contact	Severely irritating to eyes. Causes serious eye damage. May cause burns. May cause irreversible damage to eyes.
Skin contact	Causes skin irritation.
Ingestion	Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Harmful if swallowed.

Symptoms Redness. Burning. May cause blindness. May cause redness and tearing of the eyes.

Acute toxicity

Based on available data, the classification criteria are not met

Product Acute Toxicity Data

No data available.

Ingredient Acute Toxicity Data

No data available.

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Sulfuric acid, iron(2+) salt (2:1), compound with 1,2-ethanediamine (1:1) (60 - 70%) CAS#: 63589-59-3	Rat LD ₅₀	> 5454 316025 2 mg/kg	None reported	None reported	Vendor SDS
Potassium pyrosulfate (30 - 40%) CAS#: 7790-62-7	Rat LD ₅₀	2340 mg/kg	None reported	None reported	Vendor SDS

Unknown Acute Toxicity

0 % of the mixture consists of ingredient(s) of unknown toxicity.

- 0 % of the mixture consists of ingredient(s) of unknown acute oral toxicity
- 0 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity
- 0 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist)
- 0 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor)
- 0 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas)

Acute Toxicity Estimations (ATE)

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral)	682.00
ATEmix (dermal)	No information available
ATEmix (inhalation-dust/mist)	No information available
ATEmix (inhalation-vapor)	No information available

Based on available data, the classification criteria are not met.

Product Carcinogenicity Data

No data available.

Ingredient Carcinogenicity Data

No data available.

Chemical name	CAS No	ACGIH	IARC	NTP	OSHA
Sulfuric acid, iron(2+) salt (2:1), compound with 1,2-ethanediamine (1:1)	63589-59-3	-	-	-	-
Potassium pyrosulfate	7790-62-7	-	-	-	-

Legend

ACGIH (American Conference of Governmental Industrial Hygienists)	Does not apply
IARC (International Agency for Research on Cancer)	Does not apply
NTP (National Toxicology Program)	Does not apply
OSHA (Occupational Safety and Health Administration of the US Department of Labor)	Does not apply

Germ cell mutagenicity

Based on available data, the classification criteria are not met.

Product Germ Cell Mutagenicity *in vitro* Data

No data available.

Ingredient Germ Cell Mutagenicity *in vitro* Data

No data available.

Product Germ Cell Mutagenicity *in vivo* Data

No data available.

Ingredient Germ Cell Mutagenicity *in vivo* Data

No data available.

Reproductive toxicity

Based on available data, the classification criteria are not met.

Product Reproductive Toxicity Data

No data available.

Ingredient Reproductive Toxicity Data

No data available.

Aspiration hazard

Based on available data, the classification criteria are not met.

12. ECOLOGICAL INFORMATION

Ecotoxicity Based on available data, the classification criteria are not met

Unknown Acute Toxicity 0 % of the mixture consists of component(s) of unknown hazards to the aquatic environment.

Product Ecological Data**Aquatic Acute Toxicity**

No data available.

Aquatic Chronic Toxicity

No data available.

Ingredient Ecological Data**Aquatic Acute Toxicity**

No data available.

Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Potassium pyrosulfate (30 - 40%) CAS#: 7790-62-7	96 hours	<i>Oncorhynchus mykiss</i>	LC ₅₀	420 mg/L	ERMA (New Zealand Environmental Risk Management Authority)
Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Potassium pyrosulfate (30 - 40%) CAS#: 7790-62-7	48 Hours	<i>Daphnia magna</i>	EC ₅₀	140 mg/L	ERMA (New Zealand Environmental Risk Management Authority)

Aquatic Chronic Toxicity

No data available.

Persistence and degradability**Product Biodegradability Data**

No data available.

Bioaccumulation

MATERIAL DOES NOT BIOACCUMULATE.

Product Bioaccumulation Data

No data available.

Partition Coefficient (n-octanol/water) log K_{ow} ~ 0**Mobility****Soil Organic Carbon-Water Partition Coefficient** log K_{oc} ~ 0**Other adverse effects**

No information available

13. DISPOSAL CONSIDERATIONS**Waste treatment methods****Waste from residues/unused products** Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.**Contaminated packaging** Do not reuse empty containers.**14. TRANSPORT INFORMATION****Transport Canada** Not regulated**TDG** Not regulated**IATA** Not regulated

NFPA	Health hazards - 3	Flammability - 0	Instability - 0	Physical and chemical properties -
HMIS	Health hazards - 3	Flammability - 0	Physical hazards - 0	Personal protection - X

Key or legend to abbreviations and acronyms used in the safety data sheet

NIOSH IDLH Immediately Dangerous to Life or Health
ACGIH ACGIH (American Conference of Governmental Industrial Hygienists)
NDF no data

Legend - Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
MAC	Maximum Allowable Concentration	Ceiling	Ceiling Limit Value
X	Listed	Vacated	These values have no official status. The only binding levels of contaminants are those listed in the final OSHA PEL. These lists are for reference purposes only. Please note that some reference state regulations of these "liberated" exposure limits in their state regulations.
SKN*	Skin designation	SKN+	Skin sensitization
RSP+	Respiratory sensitization	**	Hazard Designation
C	Carcinogen	R	Reproductive toxicant
M	mutagen		

Prepared By Hach Product Compliance Department**Issue Date** 01-Mar-2021**Revision Date** 01-Mar-2021**Revision Note**

None

Disclaimer**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

HACH COMPANY®2021

End of Safety Data Sheet

IMDG

Not regulated

Note:

No special precautions necessary.

Additional information

There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is not in a reagent set or kit, the classification given above applies.

If the item is part of a reagent set or kit the classification would change to the following:

UN3316 Chemical Kit, Hazard Class 9, Packing Group II or III.

If the item is not regulated, the Chemical Kit classification does not apply.

15. REGULATORY INFORMATION**Regulatory information****National Inventories****DSL/NDSL** Complies**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List**International Inventories****TSCA** Complies**EINECS/ELINCS** Complies**ENCS** Complies**IECSC** Complies**KECL - Existing substances** Complies**PICCS** Complies**TCSI** Complies**AICS** Complies**NZIoC** Complies**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory**EINECS/ELINCS** - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances**ENCS** - Japan Existing and New Chemical Substances**IECSC** - China Inventory of Existing Chemical Substances**KECL** - Korean Existing and Evaluated Chemical Substances**PICCS** - Philippines Inventory of Chemicals and Chemical Substances**TCSI** - Taiwan Chemical Substances Inventory**AICS** - Australian Inventory of Chemical Substances**NZIoC** - New Zealand Inventory of Chemicals**Canada - CEPA - Mercury Containing Products**

None

International Regulations**The Montreal Protocol on Substances that Deplete the Ozone Layer** Not applicable**The Stockholm Convention on Persistent Organic Pollutants** Not applicable**The Rotterdam Convention** Not applicable**16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION****Special Comments**

None

NFPA and HMIS Classifications**SAFETY DATA SHEET****Issue Date** 14-Apr-2021**Revision Date** 10-Aug-2021**Version** 5.7**Page** 1 / 16**1. IDENTIFICATION****Product Identifier****Product Name** Buffer Solution pH 4.01 ± 0.02**Other means of identification****Product Code(s)** 2283456**Safety data sheet number** M00368**Recommended use of the chemical and restrictions on use****Recommended Use** Analytical reagent. Buffer.**Uses advised against** None.**Restrictions on use** None.**Details of the supplier of the safety data sheet****Manufacturer Address**

Hach Company P.O.Box 389 Loveland, CO 80539 USA +1(970) 669-3050

Emergency telephone number

+1(303) 623-5716 - 24 Hour Service

2. HAZARDS IDENTIFICATION**Classification****Regulatory Status**

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Hazards not otherwise classified (HNOC)

Not applicable

Label elements**Signal word**

None

Hazard statements

The product contains no substances which at their given concentration, are considered to be hazardous to health

Other Hazards Known

None

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3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance
Not applicable

Mixture

Chemical Family Mixture.

Chemical name	CAS No	Percent Range	HMRIC #
Formaldehyde	50-00-0	<0.1%	-
Methanol	67-56-1	<0.1%	-

4. FIRST AID MEASURES

Description of first aid measures

General advice	No hazards which require special first aid measures. Use first aid treatment according to the nature of the injury.
Inhalation	Remove to fresh air.
Eye contact	Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.
Skin contact	Wash skin with soap and water.
Ingestion	Clean mouth with water and drink afterwards plenty of water.
Most important symptoms and effects, both acute and delayed	
Symptoms	See Section 11 for additional Toxicological Information.
Indication of any immediate medical attention and special treatment needed	
Note to physicians	Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable Extinguishing Media	Caution: Use of water spray when fighting fire may be inefficient.
Specific hazards arising from the chemical	No information available.
Hazardous combustion products	This material will not burn.
Special protective equipment for fire-fighters	Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. ACCIDENTAL RELEASE MEASURES

U.S. Notice	Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR
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Engineering Controls
Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment
Respiratory protection No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

Hand Protection Wear suitable gloves.

Eye/face protection Wear safety glasses with side shields (or goggles).

Skin and body protection No special protective equipment required.

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice.

Environmental exposure controls Local authorities should be advised if significant spillages cannot be contained. Do not allow into any sewer, on the ground or into any body of water.

Thermal hazards None under normal processing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties.

Physical state	Liquid		
Appearance	aqueous solution		
Odor	None		
Color	red		
Odor threshold	No data available		
<u>Property</u>	<u>Values</u>	<u>Remarks</u>	<u>Method</u>
Molecular weight	No data available		
pH	4.01		
Melting point/freezing point	~ 0 °C / 32 °F		
Boiling point / boiling range	~ 100 °C / 212 °F		
Evaporation rate	0.99 (water = 1)		
Vapor pressure	17.027 mm Hg / 2.27 kPa at 20 °C / 68 °F		
Relative vapor density	0.62		
Specific gravity (water = 1 / air = 1)	1.002		
Partition Coefficient (n-octanol/water)	Not applicable		
Soil Organic Carbon-Water Partition Coefficient	Not applicable		
Autoignition temperature	No data available		
Decomposition temperature	No data available		
Dynamic viscosity	~ 1 cP (mPa s) at 20 °C / 68 °F		
Kinematic viscosity	~ 0.998 cSt (mm²/s) at 20 °C / 68 °F		
Solubility(ies)			

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1910.120(c)(vii) and per your company's emergency response plan and guidelines/procedures. See Section 13. Special Instructions for disposal assistance. Outside of the US, only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.

Personal precautions, protective equipment and emergency procedures

Personal precautions Ensure adequate ventilation.

Environmental precautions

Environmental precautions See Section 12 for additional ecological information.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Take up mechanically, placing in appropriate containers for disposal.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

Reference to other sections See section 8 for more information. See section 13 for more information.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place.

Flammability class Not applicable

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical name	ACGIH TLV	OSHA PEL	NIOSH
Formaldehyde CAS#: 50-00-0	STEL: 0.3 ppm TWA: 0.1 ppm	TWA: 0.75 ppm (vacated) TWA: 3 ppm (vacated) STEL: 10 ppm (vacated) Ceiling: 5 ppm STEL: 2 ppm	IDLH: 20 ppm Ceiling: 0.1 ppm 15 min TWA: 0.016 ppm
Methanol CAS#: 67-56-1	STEL: 250 ppm TWA: 200 ppm S*	TWA: 200 ppm TWA: 260 mg/m³ (vacated) TWA: 200 ppm (vacated) TWA: 260 mg/m³ (vacated) STEL: 250 ppm (vacated) STEL: 325 mg/m³ (vacated) SKN*	IDLH: 6000 ppm TWA: 200 ppm TWA: 260 mg/m³ STEL: 250 ppm STEL: 325 mg/m³

Appropriate engineering controls

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Water solubility

Water solubility classification	Water solubility	Water Solubility Temperature
Completely soluble	> 10000 mg/L	25 °C / 77 °F

Solubility in other solvents

Chemical Name	Solubility classification	Solubility	Solubility Temperature
None reported	No information available	No data available	No information available

Other information

Metal Corrosivity

Steel Corrosion Rate No data available
Aluminum Corrosion Rate No data available

Volatile Organic Compounds (VOC) Content
Not applicable See ingredients information below

Chemical name	CAS No	Volatile organic compounds (VOC) content	CAA (Clean Air Act)
Formaldehyde	50-00-0	No data available	X
Methanol	67-56-1	100%	X

Explosive properties

Upper explosion limit No data available
Lower explosion limit No data available

Flammable properties

Flash point No data available

Flammability Limit in Air

Upper flammability limit: No data available
Lower flammability limit: No data available

Oxidizing properties

No data available.

Bulk density

No data available

10. STABILITY AND REACTIVITY

Reactivity

Not applicable.

Chemical stability

Stable under normal conditions.

Explosion data

Sensitivity to Mechanical Impact None.
Sensitivity to Static Discharge None.

Possibility of hazardous reactions

None under normal processing.

Hazardous polymerization
None under normal processing.

Conditions to avoid
None known based on information supplied.

Incompatible materials
Strong oxidizing agents, strong acids, and strong bases.

Hazardous decomposition products
None known based on information supplied.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Inhalation	None known effect based on information supplied.
Eye contact	None known effect based on information supplied.
Skin contact	None known effect based on information supplied.
Ingestion	None known effect based on information supplied.
Symptoms	No information available.

Acute toxicity
Based on available data, the classification criteria are not met

Product Acute Toxicity Data
No data available.

Ingredient Acute Toxicity Data
Test data reported below.

Oral Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Formaldehyde (<0.1%) CAS#: 50-00-0	Rat LD ₅₀	100 mg/kg	None reported	None reported	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)
Methanol (<0.1%) CAS#: 67-56-1	None reported	None reported	None reported	None reported	No information available

Dermal Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Formaldehyde (<0.1%) CAS#: 50-00-0	Rabbit LD ₅₀	270 mg/kg	None reported	None reported	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)
Methanol	None	None	None	None reported	No information available

(<0.1%) CAS#: 67-56-1	reported	reported	reported		
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Inhalation (Dust/Mist) Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Formaldehyde (<0.1%) CAS#: 50-00-0	Rat LC ₅₀	0.576 mg/L	4 hours	None reported	LOLI
Methanol (<0.1%) CAS#: 67-56-1	None reported	None reported	None reported	None reported	No information available

Inhalation (Vapor) Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Methanol (<0.1%) CAS#: 67-56-1	None reported	None reported	None reported	None reported	No information available

Unknown Acute Toxicity
1.01% of the mixture consists of ingredient(s) of unknown toxicity.

Acute Toxicity Estimations (ATE)

ATEmix (oral)	No information available
ATEmix (dermal)	No information available
ATEmix (inhalation-dust/mist)	No information available
ATEmix (inhalation-vapor)	No information available
ATEmix (inhalation-gas)	No information available

Skin corrosion/irritation
Based on available data, the classification criteria are not met.

Product Skin Corrosion/Irritation Data
No data available.

Ingredient Skin Corrosion/Irritation Data
Test data reported below.

Chemical name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
Formaldehyde (<0.1%) CAS#: 50-00-0	Standard Draize Test	Human	0.150 mg	72 hours	Corrosive to skin	RTECS (Registry of Toxic Effects of Chemical Substances)
Methanol (<0.1%) CAS#: 67-56-1	OECD Test 439: In Vitro Skin Irritation: Reconstructed Human Epidermis (Rhe) Test Method	Rabbit	None reported	20 hours	Not corrosive or irritating to skin	ECHA (The European Chemicals Agency)

Serious eye damage/irritation
Based on available data, the classification criteria are not met.

Product Serious Eye Damage/Eye Irritation Data
No data available.

Ingredient Eye Damage/Eye Irritation Data
Test data reported below.

Chemical name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
Formaldehyde (<0.1%) CAS#: 50-00-0	Rinse Test	Human	1 ppm	6 minutes	Corrosive to eyes	RTECS (Registry of Toxic Effects of Chemical Substances)
Methanol (<0.1%) CAS#: 67-56-1	OECD Test 439: In Vitro Skin Irritation: Reconstructed Human Epidermis (Rhe) Test Method	Rabbit	0.05 mL	24 hours	Not corrosive or irritating to eyes	ECHA (The European Chemicals Agency)

Respiratory or skin sensitization
Based on available data, the classification criteria are not met.

Product Sensitization Data
No data available.

Ingredient Sensitization Data
Test data reported below.

Skin Sensitization Exposure Route

Chemical name	Test method	Species	Results	Key literature references and sources for data
Formaldehyde (<0.1%) CAS#: 50-00-0	Patch test	Human	Confirmed to be a skin sensitizer	ERMA (New Zealand's Environmental Risk Management Authority)
Methanol (<0.1%) CAS#: 67-56-1	OECD Test No. 406: Skin Sensitization	Guinea pig	Not confirmed to be a skin sensitizer	ECHA (The European Chemicals Agency)

Respiratory Sensitization Exposure Route

Chemical name	Test method	Species	Results	Key literature references and sources for data
Formaldehyde (<0.1%) CAS#: 50-00-0	IgE Specific Immune Response Test	Guinea pig	Confirmed to be a respiratory sensitizer	CICAD (Concise International Chemical Assessment Documents)

STOT - single exposure
Based on available data, the classification criteria are not met.

Product Specific Target Organ Toxicity Single Exposure Data
No data available.

Ingredient Specific Target Organ Toxicity Single Exposure Data
Test data reported below.

Oral Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Formaldehyde (<0.1%) CAS#: 50-00-0	Human LD ₅₀	70 mg/kg	None reported	Gastrointestinal Kidney, Ureter, or Bladder Liver	RTECS (Registry of Toxic Effects of Chemical Substances)

				Other changes Ulcerated stomach Other changes	
Methanol (<0.1%) CAS#: 67-56-1	Human LD ₅₀	143 mg/kg	None reported	Lungs, Thorax, or Respiration Dyspnea	RTECS (Registry of Toxic Effects of Chemical Substances)

Inhalation (Vapor) Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Methanol (<0.1%) CAS#: 67-56-1	Human TC ₅₀	300 mg/L	None reported	Lungs, Thorax, or Respiration Other changes	RTECS (Registry of Toxic Effects of Chemical Substances)

STOT - repeated exposure
Based on available data, the classification criteria are not met.

Product Specific Target Organ Toxicity Repeat Dose Data
No data available.

Ingredient Specific Target Organ Toxicity Repeat Exposure Data
Test data reported below.

Oral Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Methanol (<0.1%) CAS#: 67-56-1	Monkey	2340 mg/kg	3 days	None reported	ECHA (The European Chemicals Agency)

Inhalation (Vapor) Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Formaldehyde (<0.1%) CAS#: 50-00-0	Human TC ₅₀	0.017 mg/L	0.5 days	Eye Lungs, Thorax, or Respiration Lacrimation Other changes	RTECS (Registry of Toxic Effects of Chemical Substances)

Carcinogenicity
Based on available data, the classification criteria are not met.

Product Carcinogenicity Data
No data available.

Ingredient Carcinogenicity Data
Test data reported below.

Chemical name	CAS No	ACGIH	IARC	NTP	OSHA
Formaldehyde	50-00-0	A1	Group 1	Known	X
Methanol	67-56-1	-	-	-	-

Legend

ACGIH (American Conference of Governmental Industrial Hygienists)	Does not apply
IARC (International Agency for Research on Cancer)	Does not apply
NTP (National Toxicology Program)	Does not apply

OSHA (Occupational Safety and Health Administration of the US Department of Labor)	Does not apply
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Inhalation (Vapor) Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Formaldehyde (<0.1%) CAS#: 50-00-0	Rat	15 mg/L	78 weeks	Olfaction Tumors	RTECS (Registry of Toxic Effects of Chemical Substances)

Germ cell mutagenicity
Based on available data, the classification criteria are not met.

Product Germ Cell Mutagenicity *invitro* Data
No data available.

Ingredient Germ Cell Mutagenicity *invitro* Data
Test data reported below.

Chemical name	Test	Cell Strain	Reported dose	Exposure time	Results	Key literature references and sources for data
Methanol (<0.1%) CAS#: 67-56-1	DNA inhibition	Human lymphocyte	300 mmol/L	None reported	Positive test result for mutagenicity	RTECS (Registry of Toxic Effects of Chemical Substances)

Product Germ Cell Mutagenicity *invivo* Data
No data available.

Ingredient Germ Cell Mutagenicity *invivo* Data
Test data reported below.

Oral Exposure Route

Chemical name	Test	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
Methanol (<0.1%) CAS#: 67-56-1	DNA damage	Rat	0.405 mg/kg	None reported	Positive test result for mutagenicity	RTECS (Registry of Toxic Effects of Chemical Substances)

Inhalation (Vapor) Exposure Route

Chemical name	Test	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
Formaldehyde (<0.1%) CAS#: 50-00-0	Micronucleus test	Human	.000985 mg/L	8.5 years	Positive test result for mutagenicity	RTECS (Registry of Toxic Effects of Chemical Substances)

Reproductive toxicity
Based on available data, the classification criteria are not met.

Product Reproductive Toxicity Data
No data available.

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(<0.1%) CAS#: 50-00-0					Network)
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Crustacea

Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Formaldehyde (<0.1%) CAS#: 50-00-0	48 Hours	Daphnia pulex	EC ₅₀	5.8 mg/L	PEEN (Pan European Ecological Network)

Aquatic Chronic Toxicity
No data available.

Persistence and degradability

Product Biodegradability Data
No data available.

Product Bioaccumulation Data
No data available.

Partition Coefficient (n-octanol/water) Not applicable

Mobility

Soil Organic Carbon-Water Partition Coefficient Not applicable

Other adverse effects
No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from residues/unused products Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging Do not reuse empty containers.

US EPA Waste Number U122 U154

Chemical name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Formaldehyde 50-00-0	U122	Included in waste streams: K009, K010, K038, K040, K156, K157	-	U122
Methanol 67-56-1	-	Included in waste stream: F039	-	U154

Special instructions for disposal Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. If permitted by regulation. Open cold water tap completely, slowly pour the reacted material to the drain. Check with local municipal and state authorities and waste contractors for pertinent local information regarding the proper disposal of chemicals.

14. TRANSPORT INFORMATION

DOT Not regulated

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Ingredient Reproductive Toxicity Data
Test data reported below.

Oral Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Methanol (<0.1%) CAS#: 67-56-1	Rat TD ₀₁	4118 mg/kg	10 days	Effects on Embryo or Fetus Specific Developmental Abnormalities Ear Eye Fetotoxicity (except death e.g. stunted fetus) Urogenital System	RTECS (Registry of Toxic Effects of Chemical Substances)

Inhalation (Dust/Mist) Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Methanol (<0.1%) CAS#: 67-56-1	Rat TC ₀₁	0.0026 mg/L	22 days	Effects on Embryo or Fetus Fetotoxicity (except death e.g. stunted fetus)	RTECS (Registry of Toxic Effects of Chemical Substances)

Inhalation (Vapor) Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Formaldehyde (<0.1%) CAS#: 50-00-0	Rat TC ₀₁	40 mg/L	14 days	Effects on Embryo or Fetus Fetotoxicity (except death e.g. stunted fetus)	RTECS (Registry of Toxic Effects of Chemical Substances)

Aspiration hazard
Based on available data, the classification criteria are not met.

12. ECOLOGICAL INFORMATION

Ecotoxicity Based on available data, the classification criteria are not met.

Unknown aquatic toxicity 0 % of the mixture consists of component(s) of unknown hazards to the aquatic environment.

Product Ecological Data

Aquatic Acute Toxicity
No data available.

Aquatic Chronic Toxicity
No data available.

Ingredient Ecological Data

Aquatic Acute Toxicity
Test data reported below.

Fish

Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Formaldehyde	96 hours	Morone saxatilis	LC ₅₀	6.7 mg/L	PEEN (Pan European Ecological

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TDG Not regulated
IATA Not regulated
IMDG Not regulated
Note: No special precautions necessary.

Additional information

15. REGULATORY INFORMATION

National Inventories

TSCA Complies
DSL/NDSL Complies

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

International Inventories

EINECS/ELINCS Complies
ENCS Does not comply
IECSC Complies
KECL - Existing substances Complies
PICCS Complies
TCSI Complies
AICS Complies
NZIoC Complies

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
TCSI - Taiwan Chemical Substances Inventory
AICS - Australian Inventory of Chemical Substances
NZIoC - New Zealand Inventory of Chemicals

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical name	SARA 313 - Threshold Values %
Formaldehyde (CAS #: 50-00-0)	0.1
Methanol (CAS #: 67-56-1)	1.0

SARA 311/312 Hazard Categories

Acute health hazard Yes
Chronic Health Hazard No
Fire hazard No
Sudden release of pressure hazard No
Reactive Hazard No

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

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Chemical name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Formaldehyde 50-00-0	100 lb	-	-	X

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

Chemical name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Formaldehyde 50-00-0	100 lb	100 lb	RQ 100 lb final RQ RQ 45.4 kg final RQ
Methanol 67-56-1	5000 lb	-	RQ 5000 lb final RQ RQ 2270 kg final RQ

U.S. - Department of Homeland Security - Chemical Facility Anti-Terrorism Standards (CFATS) - Security Issues

Chemical name	U.S. - Department of Homeland Security - Chemical Facility Anti-Terrorism Standards (CFATS) - Security Issues
Formaldehyde (<0.1%) CAS#: 50-00-0	Release - Toxic (solution)

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals

Chemical name	California Proposition 65
Formaldehyde (CAS #: 50-00-0)	Carcinogen
Methanol (CAS #: 67-56-1)	Developmental



WARNING: This product can expose you to chemicals including Formaldehyde, Methanol, which are known to the State of California to cause cancer or birth defects or reproductive harm.
For more information, go to <http://www.P65Warnings.ca.gov>

U.S. State Right-to-Know Regulations

This product may contain substances regulated by state right-to-know regulations.

Chemical name	New Jersey	Massachusetts	Pennsylvania
Formaldehyde 50-00-0	X	X	X
Methanol 67-56-1	X	X	X

U.S. EPA Label Information

Chemical name	FIFRA	FDA
Methanol	180.0910	-

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION

Special Comments

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None

Additional information

Global Automotive Declarable Substance List (GADSL)

Chemical name	Global Automotive Declarable Substance List Classifications	Global Automotive Declarable Substance List Thresholds
Formaldehyde 50-00-0	Declarable Substance (FI) Prohibited Substance (FI) Declarable Substance (LR) Prohibited Substance (LR)	0 % 0.1 %
Methanol 67-56-1	Declarable Substance (FI) Prohibited Substance (FI) Declarable Substance (LR) Prohibited Substance (LR)	0.6 % 0.1 %

NFPA and HMIS Classifications

NFPA	Health hazards - 0	Flammability - 0	Instability - 0	Physical and chemical properties -
HMIS	Health hazards - 0	Flammability - 0	Physical hazards - 0	Personal protection - X - I

Key or legend to abbreviations and acronyms used in the safety data sheet

NIOSH IDLH Immediately Dangerous to Life or Health
ACGIH ACGIH (American Conference of Governmental Industrial Hygienists)
NDP no data

Legend - Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
MAC	Maximum Allowable Concentration	Ceiling	Ceiling Limit Value
X	Listed	Vacated	These values have no official status. The only binding levels of contaminants are those listed in the final OSHA PEL. These lists are for reference purposes only. Please note that some reference state regulations of these "liberated" exposure limits in their state regulations.
SKN*	Skin designation	SKN+	Skin sensitization
RSP+	Respiratory sensitization	**	Hazard Designation
C	Carcinogen	R	Reproductive toxicant
M	Mutagen		

Prepared By Hach Product Compliance Department

Issue Date 14-Apr-2021

Revision Date 10-Aug-2021

Revision Note None

Disclaimer

USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site

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safety programs in accordance with applicable hazard communication standards and regulations.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

HACH COMPANY©2021

End of Safety Data Sheet



SAFETY DATA SHEET

Issue Date 07-Oct-2020 Revision Date 10-Aug-2021 Version 7.7 Page 1 / 14

1. IDENTIFICATION

Product Identifier
Product Name Buffer Solution pH 7.00 ± 0.02

Other means of identification
Product Code(s) 2283556

Safety data sheet number M00369

Recommended use of the chemical and restrictions on use
Recommended Use Laboratory reagent, Buffer.
Uses advised against Consumer use.
Restrictions on use For Laboratory Use Only.

Details of the supplier of the safety data sheet

Manufacturer Address
Hach Company P.O.Box 389 Loveland, CO 80539 USA +1(970) 669-3050

Emergency telephone number
+1(303) 623-5716 - 24 Hour Service

2. HAZARDS IDENTIFICATION

Classification

Regulatory Status
This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Hazards not otherwise classified (HNOC)

Not applicable

Label elements

Signal word
None

Hazard statements

The product contains no substances which at their given concentration, are considered to be hazardous to health

Other Hazards Known

None

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3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance
Not applicable

Mixture

Chemical Family Mixture.
Chemical nature Aqueous alkaline solution.

Chemical name	CAS No	Percent Range	HMRIC #
Phosphoric acid, disodium salt	7558-79-4	<1%	-
Magnesium nitrate	10377-60-3	<0.1%	-
3(2H)-Isothiazolone, 5-chloro-2-methyl-	26172-55-4	<0.01%	-
3(2H)-Isothiazolone, 2-methyl-	2682-20-4	<0.01%	-

4. FIRST AID MEASURES

Description of first aid measures

General advice No hazards which require special first aid measures. Use first aid treatment according to the nature of the injury.

Inhalation Remove to fresh air.

Eye contact Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.

Skin contact Wash skin with soap and water.

Ingestion Clean mouth with water and drink afterwards plenty of water.

Most important symptoms and effects, both acute and delayed

Symptoms See Section 11 for additional Toxicological Information.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media Caution: Use of water spray when fighting fire may be inefficient.

Specific hazards arising from the chemical No information available.

Hazardous combustion products This material will not burn.

Special protective equipment for fire-fighters Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

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Eye/face protection Wear safety glasses with side shields (or goggles).

Skin and body protection No special protective equipment required.

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice.

Environmental exposure controls Local authorities should be advised if significant spillages cannot be contained. Do not allow into any sewer, on the ground or into any body of water.

Thermal hazards None under normal processing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state Liquid
Appearance clear
Odor Odorless
Color yellow
Odor threshold Not applicable

Property	Values	Remarks - Method
Molecular weight	Not applicable	
pH	7.3	@ 20 °C
Melting point/freezing point	~ 0 °C / 32 °F	
Boiling point / boiling range	~ 100 °C / 212 °F	
Evaporation rate	1 (water = 1)	
Vapor pressure	18.002 mm Hg / 2.4 kPa at 20 °C / 68 °F	
Relative vapor density	0.62	
Specific gravity (water = 1 / air = 1)	1	
Partition Coefficient (n-octanol/water)	No data available	
Soil Organic Carbon-Water Partition Coefficient	No data available	
Autoignition temperature	No data available	
Decomposition temperature	No data available	
Dynamic viscosity	~ 1 cP (mPa s) at 20 °C / 68 °F	
Kinematic viscosity	~ 1 cSt (mm ² /s) at 20 °C / 68 °F	

Solubility(ies)

Water solubility

Water solubility classification	Water solubility	Water Solubility Temperature
Completely soluble	> 10000 mg/L	25 °C / 77 °F

Solubility in other solvents

Chemical Name	Solubility classification	Solubility	Solubility Temperature
None reported	No information available	No data available	No information available

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6. ACCIDENTAL RELEASE MEASURES

U.S. Notice Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance. Outside of the US, only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.

Personal precautions, protective equipment and emergency procedures

Personal precautions Ensure adequate ventilation.

Environmental precautions

Environmental precautions See Section 12 for additional ecological information.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Pick up and transfer to properly labeled containers.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

Reference to other sections See section 8 for more information. See section 13 for more information.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place.

Flammability class Not applicable

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

Appropriate engineering controls

Engineering Controls Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Respiratory protection No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required. Ensure adequate ventilation.

Hand Protection Wear suitable gloves.

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Other information

Metal Corrosivity

Steel Corrosion Rate No data available
Aluminum Corrosion Rate No data available

Volatile Organic Compounds (VOC) Content

Chemical name	CAS No	Volatile organic compounds (VOC) content	CAA (Clean Air Act)
Phosphoric acid, disodium salt	7558-79-4	No data available	-
Magnesium nitrate	10377-60-3	No data available	-
3(2H)-Isothiazolone, 5-chloro-2-methyl-	26172-55-4	No data available	-
3(2H)-Isothiazolone, 2-methyl-	2682-20-4	No data available	-

Explosive properties

Upper explosion limit Not applicable
Lower explosion limit Not applicable

Flammable properties

Flash point No data available

Flammability Limit in Air

Upper flammability limit: No data available
Lower flammability limit: No data available

Oxidizing properties

No data available.

Bulk density

Not applicable

10. STABILITY AND REACTIVITY

Reactivity

Not applicable.

Chemical stability

Stable under normal conditions.

Explosion data

Sensitivity to Mechanical Impact None.
Sensitivity to Static Discharge None.

Possibility of hazardous reactions

None under normal processing.

Hazardous polymerization

Hazardous polymerization does not occur.

Conditions to avoid

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None known based on information supplied.

Incompatible materials
Strong oxidizing agents, strong acids, and strong bases.

Hazardous decomposition products
Carbon monoxide. Carbon dioxide (CO2). Nitrogen oxides (NOx). metal oxides.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Inhalation	No known effect based on information supplied.
Eye contact	No known effect based on information supplied.
Skin contact	No known effect based on information supplied.
Ingestion	No known effect based on information supplied.

Symptoms
No information available.

Acute toxicity
Based on available data, the classification criteria are not met

Product Acute Toxicity Data
No data available.

Ingredient Acute Toxicity Data
Test data reported below.

Oral Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Magnesium nitrate (<0.1%) CAS#: 10377-60-3	Rat LD ₅₀	5440 mg/kg	None reported	None reported	IUCLID (The International Uniform Chemical Information Database)
3(2H)-Isothiazolone, 5-chloro-2-methyl- (<0.01%) CAS#: 26172-55-4	Rat LD ₅₀	481 mg/kg	None reported	None reported	IUCLID (The International Uniform Chemical Information Database)
Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
3(2H)-Isothiazolone, 2-methyl- (<0.01%) CAS#: 2682-20-4	None reported	None reported	None reported	None reported	No information available

Inhalation (Dust/Mist) Exposure Route

Unknown Acute Toxicity
0% of the mixture consists of ingredient(s) of unknown toxicity.

Acute Toxicity Estimations (ATE)

Product Sensitization Data
No data available.

Ingredient Sensitization Data
Test data reported below.

Skin Sensitization Exposure Route

Chemical name	Test method	Species	Results	Key literature references and sources for data
3(2H)-Isothiazolone, 5-chloro-2-methyl- (<0.01%) CAS#: 26172-55-4	OECD Test No. 406: Skin Sensitization	Guinea pig	Confirmed to be a skin sensitizer	IUCLID (The International Uniform Chemical Information Database)

STOT - single exposure
Based on available data, the classification criteria are not met.

Product Specific Target Organ Toxicity Single Exposure Data
No data available.

Ingredient Specific Target Organ Toxicity Single Exposure Data
No data available.

STOT - repeated exposure
Based on available data, the classification criteria are not met.

Product Specific Target Organ Toxicity Repeat Dose Data
No data available.

Ingredient Specific Target Organ Toxicity Repeat Exposure Data
No data available.

Carcinogenicity
Based on available data, the classification criteria are not met.

Product Carcinogenicity Data
No data available.

Ingredient Carcinogenicity Data
No data available.

Chemical name	CAS No	ACGIH	IARC	NTP	OSHA
Phosphoric acid, disodium salt	7558-79-4	-	-	-	-
Magnesium nitrate	10377-60-3	-	Group 2A	-	X
3(2H)-Isothiazolone, 5-chloro-2-methyl- 3(2H)-isothiazolone, 2-methyl-	26172-55-4 2682-20-4	- -	- -	- -	- -

Legend

ACGIH (American Conference of Governmental Industrial Hygienists)	Does not apply
IARC (International Agency for Research on Cancer)	Does not apply
NTP (National Toxicology Program)	Does not apply
OSHA (Occupational Safety and Health Administration of the US Department of Labor)	Does not apply

Germ cell mutagenicity

ATEmix (oral)	No information available
ATEmix (dermal)	No information available
ATEmix (inhalation-dust/mist)	No information available
ATEmix (inhalation-vapor)	No information available
ATEmix (inhalation-gas)	No information available

Skin corrosion/irritation
Based on available data, the classification criteria are not met.

Product Skin Corrosion/Irritation Data
No data available.

Ingredient Skin Corrosion/Irritation Data
Test data reported below.

Chemical name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
Phosphoric acid, disodium salt (<1%) CAS#: 7558-79-4	Standard Draize Test	Rabbit	500 mg	24 hours	Skin irritant	RTECS (Registry of Toxic Effects of Chemical Substances)
Magnesium nitrate (<0.1%) CAS#: 10377-60-3	Standard Draize Test	Rabbit	500 mg	24 hours	Skin irritant	HSDB (Hazardous Substances Data Bank)
3(2H)-Isothiazolone, 5-chloro-2-methyl- (<0.01%) CAS#: 26172-55-4	OECD Test 404: Acute Dermal Corrosion/Irritation	Rabbit	None reported	None reported	Corrosive to skin	OECD 429: Skin Sensitization: Local Lymph Node Assay

Serious eye damage/irritation
Based on available data, the classification criteria are not met.

Product Serious Eye Damage/Eye Irritation Data
No data available.

Ingredient Eye Damage/Eye Irritation Data
Test data reported below.

Chemical name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
Phosphoric acid, disodium salt (<1%) CAS#: 7558-79-4	Standard Draize Test	Rabbit	500 mg	24 hours	Eye irritant	RTECS (Registry of Toxic Effects of Chemical Substances)
Magnesium nitrate (<0.1%) CAS#: 10377-60-3	Standard Draize Test	Rabbit	500 mg	24 hours	Eye irritant	HSDB (Hazardous Substances Data Bank)
3(2H)-Isothiazolone, 5-chloro-2-methyl- (<0.01%) CAS#: 26172-55-4	OECD Test 405: Acute Eye Corrosion/Irritation	Rabbit	None reported	None reported	Eye irritant	ERMA (New Zealand's Environmental Risk Management Authority) OECD 429: Skin Sensitization: Local Lymph Node Assay

Respiratory or skin sensitization
Based on available data, the classification criteria are not met.

Based on available data, the classification criteria are not met.

Product Germ Cell Mutagenicity *in vitro* Data
No data available.

Ingredient Germ Cell Mutagenicity *in vitro* Data
No data available.

Product Germ Cell Mutagenicity *in vivo* Data
No data available.

Ingredient Germ Cell Mutagenicity *in vivo* Data
No data available.

Reproductive toxicity
Based on available data, the classification criteria are not met.

Product Reproductive Toxicity Data
No data available.

Ingredient Reproductive Toxicity Data
No data available.

Aspiration hazard
Based on available data, the classification criteria are not met.

12. ECOLOGICAL INFORMATION

Ecotoxicity
Based on available data, the classification criteria are not met.

Unknown aquatic toxicity
0 % of the mixture consists of component(s) of unknown hazards to the aquatic environment.

Product Ecological Data

Aquatic Acute Toxicity
No data available.

Aquatic Chronic Toxicity
No data available.

Ingredient Ecological Data

Aquatic Acute Toxicity
Test data reported below.

Fish

Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Magnesium nitrate (<0.1%) CAS#: 10377-60-3	96 hours	<i>Lepomis macrochirus</i>	LC ₅₀	9000 mg/L	ECHA (The European Chemicals Agency)
3(2H)-Isothiazolone, 5-chloro-2-methyl- (<0.01%) CAS#: 26172-55-4	96 hours	<i>Oncorhynchus mykiss</i>	LC ₅₀	0.19 mg/L	EPA (United States Environmental Protection Agency)
3(2H)-Isothiazolone, 2-methyl- (<0.01%)	96 hours	<i>Oncorhynchus mykiss</i>	LC ₅₀	0.7 mg/L	EPA (United States Environmental Protection Agency)

CAS#: 2682-20-4					
Crustacea					
Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Magnesium nitrate (<0.1%) CAS#: 10377-60-3	48 Hours	Daphnia magna	EC ₅₀	880 mg/L	ECHA (The European Chemicals Agency)
3(2H)-isothiazolone, 5-chloro-2-methyl- (<0.01%) CAS#: 26172-55-4	48 Hours	None reported	LC ₅₀	0.56 mg/L	EPA (United States Environmental Protection Agency)
3(2H)-isothiazolone, 2-methyl- (<0.01%) CAS#: 2682-20-4	48 Hours	Daphnia magna	EC ₅₀	0.18 mg/L	EPA (United States Environmental Protection Agency)

Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Magnesium nitrate (<0.1%) CAS#: 10377-60-3	72 Hours	Scenedesmus subspicatus	EC ₅₀	> 100 mg/L	ECHA (The European Chemicals Agency)
3(2H)-isothiazolone, 5-chloro-2-methyl- (<0.01%) CAS#: 26172-55-4	72 Hours	None reported	EC ₅₀	0.021 mg/L	EPA (United States Environmental Protection Agency)

Aquatic Chronic Toxicity
No data available.

Persistence and degradability

Product Biodegradability Data
No data available.

Bioaccumulation
There is no data for this product

Product Bioaccumulation Data
No data available.

Partition Coefficient (n-octanol/water) No data available

Mobility

Soil Organic Carbon-Water Partition Coefficient No data available

Other adverse effects
No information available

13. DISPOSAL CONSIDERATIONS	
Waste treatment methods	
Waste from residues/unused products	Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.
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chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372				
Chemical name	SARA 313 - Threshold Values %			
Magnesium nitrate (CAS #. 10377-60-3)	1.0			
SARA 311/312 Hazard Categories				
Acute health hazard	No			
Chronic Health Hazard	No			
Fire hazard	No			
Sudden release of pressure hazard	No			
Reactive Hazard	No			
CWA (Clean Water Act)				
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)				
Chemical name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Phosphoric acid, disodium salt 7558-79-4	5000 lb	-	-	X
CERCLA				
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material				

US State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals

IMERC: Not applicable

U.S. State Right-to-Know Regulations

This product may contain substances regulated by state right-to-know regulations.

Chemical name	New Jersey	Massachusetts	Pennsylvania
Phosphoric acid, disodium salt 7558-79-4	X	X	X
Magnesium nitrate 10377-60-3	X	X	X

U.S. EPA Label Information		
Chemical name	FIFRA	FDA
Phosphoric acid, disodium salt	180.0910	21 CFR 182.1778,21 CFR 182.6290,21 CFR 182.6778,21 CFR 182.8778
Magnesium nitrate	180.0920	-
3(2H)-isothiazolone, 5-chloro-2-methyl-	180.0920	-
3(2H)-isothiazolone, 2-methyl-	180.0920	-

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION	
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Contaminated packaging	Do not reuse empty containers.
US EPA Waste Number	Not applicable
Special instructions for disposal	
If permitted by regulation. Open cold water tap completely, slowly pour the material to the drain. Check with local municipal and state authorities and waste contractors for pertinent local information regarding the proper disposal of chemicals.	
14. TRANSPORT INFORMATION	
DOT	Not regulated
TDG	Not regulated
IATA	Not regulated
IMDG	Not regulated

Additional information
There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is not in a reagent set or kit, the classification given above applies.
If the item is part of a reagent set or kit the classification would change to the following:
UN3316 Chemical Kit, Hazard Class 9, Packing Group II or III.
If the item is not regulated, the Chemical Kit classification does not apply.

15. REGULATORY INFORMATION	
National Inventories.	
TSCA	Complies
DSL/NDSL	Complies
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory	
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List	
International Inventories.	
EINECS/ELINCS	Complies
ENCS	Complies
IECSC	Complies
KECL - Existing substances	Complies
PICCS	Complies
TCSI	Complies
AICS	Complies
NZIoC	Complies

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
TCSI - Taiwan Chemical Substances Inventory
AICS - Australian Inventory of Chemical Substances
NZIoC - New Zealand Inventory of Chemicals

US Federal Regulations	
SARA 313	
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any	
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Special Comments

None

Additional information

Global Automotive Declarable Substance List (GADSL)

Chemical name	Global Automotive Declarable Substance List Classifications	Global Automotive Declarable Substance List Thresholds
Magnesium nitrate 10377-60-3	Declarable Substance (FI)	0.1 %
3(2H)-isothiazolone, 5-chloro-2-methyl- 26172-55-4	Prohibited Substance (LR)	0 %
3(2H)-isothiazolone, 2-methyl- 2682-20-4	Declarable Substance (LR) Prohibited Substance (LR)	0 %

NFPA and HMIS Classifications

NFPA	Health hazards - 0	Flammability - 0	Instability - 0	Physical and chemical properties
HMIS	Health hazards - 0	Flammability - 0	Physical hazards - 0	Personal protection - X -I

Key or legend to abbreviations and acronyms used in the safety data sheet			
NIOSH IDLH			
ACGIH			
NDF			
Immediately Dangerous to Life or Health ACGIH (American Conference of Governmental Industrial Hygienists) no data			
Legend - Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION			
TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
MAC	Maximum Allowable Concentration	Ceiling	Ceiling Limit Value
X	Listed	Vacated	These values have no official status. The only binding levels of contaminants are those listed in the final OSHA PEL. These lists are for reference purposes only. Please note that some reference state regulations of these "liberated" exposure limits in their state regulations.
SKN*	Skin designation	SKN+	Skin sensitization
RSP+	Respiratory sensitization	**	Hazard Designation
C	Carcinogen	R	Reproductive toxicant
M	mutagen		
Prepared By			
Hach Product Compliance Department			
Issue Date			
07-Oct-2020			
Revision Date			
10-Aug-2021			
Revision Note			
None			
Disclaimer			

Product Code(s) 2283556
Issue Date 07-Oct-2020
Version 7.7

Product Name Buffer Solution pH 7.00 ± 0.02
Revision Date 10-Aug-2021
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USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

HACH COMPANY©2021

End of Safety Data Sheet



SAFETY DATA SHEET

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1. IDENTIFICATION

Product identifier
Product Name pH Storage Solution

Other means of identification
Product Code(s) 2756549

Safety data sheet number M01702

Recommended use of the chemical and restrictions on use
Recommended Use Laboratory reagent. Electrode storage solution.
Uses advised against None.
Restrictions on use None.

Details of the supplier of the safety data sheet

Manufacturer Address
Hach Company P.O.Box 389 Loveland, CO 80539 USA +1(970) 669-3050

Emergency telephone number
+1(303) 623-5716 - 24 Hour Service

2. HAZARDS IDENTIFICATION

Classification

Regulatory Status
This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Hazards not otherwise classified (HNOC)
Not applicable

Label elements

Signal word
None

Hazard statements
The product contains no substances which at their given concentration, are considered to be hazardous to health

Other Hazards Known
None

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3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance
Not applicable

Mixture

Chemical name	CAS No	Percent Range	HMRIC #
Phosphoric acid, disodium salt	7558-79-4	<0.1%	-
Glutaraldehyde	111-30-8	<0.1%	-

4. FIRST AID MEASURES

Description of first aid measures

General advice No hazards which require special first aid measures. Use first aid treatment according to the nature of the injury.

Inhalation Remove to fresh air.

Eye contact Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.

Skin contact Wash skin with soap and water.

Ingestion Clean mouth with water and drink afterwards plenty of water.

Most important symptoms and effects, both acute and delayed

Symptoms See Section 11 for additional Toxicological Information.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media Caution: Use of water spray when fighting fire may be inefficient.

Specific hazards arising from the chemical No information available.

Hazardous combustion products This material will not burn.

Special protective equipment for fire-fighters Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. ACCIDENTAL RELEASE MEASURES

U.S. Notice Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and

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guidelines/procedures. See Section 13. Special Instructions for disposal assistance. Outside of the U.S. only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.

Personal precautions, protective equipment and emergency procedures

Personal precautions Ensure adequate ventilation.

Environmental precautions

Environmental precautions See Section 12 for additional ecological information.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Pick up and transfer to properly labeled containers.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

Reference to other sections See section 8 for more information. See section 13 for more information.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place.

Flammability class Not applicable

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical name	ACGIH TLV	OSHA PEL	NIOSH
Glutaraldehyde CAS# 111-30-8	Ceiling: 0.05 ppm activated or unactivated	(vacated) Ceiling: 0.2 ppm (vacated) Ceiling: 0.8 mg/m ³	Ceiling: 0.2 ppm Ceiling: 0.8 mg/m ³

Appropriate engineering controls

Engineering Controls Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Respiratory protection No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

Hand Protection Wear suitable gloves.

Eye/face protection Wear safety glasses with side shields (or goggles).

Skin and body protection No special protective equipment required.

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General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice.

Environmental exposure controls Local authorities should be advised if significant spillages cannot be contained. Do not allow into any sewer, on the ground or into any body of water.

Thermal hazards None under normal processing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties.

Physical state	Liquid	Color	colorless
Appearance	aqueous solution clear	Odor threshold	No data available
Odor	Odorless		
Property	Values	Remarks - Method	
Molecular weight	No data available		
pH	6.4	@ 20 °C	
Melting point/freezing point	~ -49 °C / -56.2 °F		
Boiling point / boiling range	~ 113 °C / 235.4 °F		
Evaporation rate	0.87 (water = 1)		
Vapor pressure	16.502 mm Hg / 2.2 kPa at 20 °C / 68 °F		
Relative vapor density	0.62		
Specific gravity (water = 1 / air = 1)	1.15		
Partition Coefficient (n-octanol/water)	Not applicable		
Soil Organic Carbon-Water Partition Coefficient	Not applicable		
Autoignition temperature	No data available		
Decomposition temperature	No data available		
Dynamic viscosity	No data available		
Kinematic viscosity	No data available		

Solubility(ies)

Water solubility

Water solubility classification	Water solubility	Water Solubility Temperature
Soluble	> 1000 mg/L	25 °C / 77 °F

Solubility in other solvents

Chemical Name	Solubility classification	Solubility	Solubility Temperature
Acid	Soluble	> 1000 mg/L	25 °C / 77 °F

Other information

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Metal Corrosivity

Steel Corrosion Rate No data available
Aluminum Corrosion Rate No data available

Volatile Organic Compounds (VOC) Content

See ingredients information below

Chemical name	CAS No	Volatile organic compounds (VOC) content	CAA (Clean Air Act)
Phosphoric acid, disodium salt	7558-79-4	No data available	-
Glutaraldehyde	111-30-8	100%	-

Explosive properties

Upper explosion limit No data available
Lower explosion limit No data available

Flammable properties

Flash point No data available

Flammability Limit in Air

Upper flammability limit: No data available
Lower flammability limit: No data available

Oxidizing properties

No data available.

Bulk density

No data available

10. STABILITY AND REACTIVITY

Reactivity

Not applicable.

Chemical stability

Stable under normal conditions.

Explosion data

Sensitivity to Mechanical Impact None.
Sensitivity to Static Discharge None.

Possibility of hazardous reactions

None under normal processing.

Hazardous polymerization

None under normal processing.

Conditions to avoid

None known based on information supplied.

Incompatible materials

Strong oxidizing agents, strong acids, and strong bases.

Hazardous decomposition products

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Chlorides. Potassium oxide.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Inhalation	No known effect based on information supplied.
Eye contact	No known effect based on information supplied.
Skin contact	No known effect based on information supplied.
Ingestion	No known effect based on information supplied.

Symptoms No information available.

Acute toxicity

Based on available data, the classification criteria are not met

Product Acute Toxicity Data

No data available.

Ingredient Acute Toxicity Data

No data available.

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Glutaraldehyde (<0.1%) CAS#: 111-30-8	Rat LD ₅₀	134 mg/kg	None reported	None reported	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)
Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Glutaraldehyde (<0.1%) CAS#: 111-30-8	Rat LC ₅₀	0.39 mg/L	4 hours	None reported	ECHA (The European Chemicals Agency)

Unknown Acute Toxicity

0% of the mixture consists of ingredient(s) of unknown toxicity.

Acute Toxicity Estimations (ATE)

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral)	13,347.00 mg/kg
ATEmix (dermal)	No information available
ATEmix (inhalation-dust/mist)	No information available
ATEmix (inhalation-vapor)	No information available
ATEmix (inhalation-gas)	No information available

Skin corrosion/irritation

Based on available data, the classification criteria are not met.

Product Skin Corrosion/Irritation Data

No data available.

Ingredient Skin Corrosion/Irritation Data

No data available.

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Chemical name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
Phosphoric acid, disodium salt (<0.1%) CAS#: 7558-79-4	Standard Draize Test	Rabbit	500 mg	24 hours	Skin irritant	RTECS (Registry of Toxic Effects of Chemical Substances)
Glutaraldehyde (<0.1%) CAS#: 111-30-8	OECD Test 404: Acute Dermal Corrosion/Irritation	Rabbit	0.5 mL	4 hours	Corrosive to skin	ECHA (The European Chemicals Agency)

Serious eye damage/irritation

Based on available data, the classification criteria are not met.

Product Serious Eye Damage/Eye Irritation Data

No data available.

Ingredient Eye Damage/Eye Irritation Data

No data available.

Chemical name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
Phosphoric acid, disodium salt (<0.1%) CAS#: 7558-79-4	Standard Draize Test	Rabbit	500 mg	24 hours	Eye irritant	RTECS (Registry of Toxic Effects of Chemical Substances)
Glutaraldehyde (<0.1%) CAS#: 111-30-8	Standard Draize Test	Rabbit	0.1 mL	24 hours	Corrosive to eyes	ECHA (The European Chemicals Agency)

Respiratory or skin sensitization

Based on available data, the classification criteria are not met.

Product Sensitization Data

No data available.

Ingredient Sensitization Data

No data available.

Chemical name	Test method	Species	Results	Key literature references and sources for data
Glutaraldehyde (<0.1%) CAS#: 111-30-8	Open Epicutaneous Test	Guinea pig	Confirmed to be a skin sensitizer	ECHA (The European Chemicals Agency)
Chemical name	Test method	Species	Results	Key literature references and sources for data
Glutaraldehyde (<0.1%) CAS#: 111-30-8	Based on human experience	Human	Confirmed to be a respiratory sensitizer	Japan National Institute of Technology and Evaluation (NITE)

STOT - single exposure

Based on available data, the classification criteria are not met.

Product Specific Target Organ Toxicity Single Exposure Data

No data available.

Ingredient Specific Target Organ Toxicity Single Exposure Data

No data available.

STOT - repeated exposure

Based on available data, the classification criteria are not met.

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Product Specific Target Organ Toxicity Repeat Dose Data
No data available.

Ingredient Specific Target Organ Toxicity Repeat Exposure Data
No data available.

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Glutaraldehyde (<0.1%) CAS#: 111-30-8	Rat NOAEL	29.9 mg/kg	90 days	Nutritional and Gross Metabolic Weight loss or decreased weight gain	ECHA (The European Chemicals Agency)
Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Glutaraldehyde (<0.1%) CAS#: 111-30-8	Rat NOAEL	150 mg/kg	90 days	No toxicological effects observed	ECHA (The European Chemicals Agency)
Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Glutaraldehyde (<0.1%) CAS#: 111-30-8	Rat NOAEC	0.125 mg/L	730 days	Nutritional and Gross Metabolic Weight loss or decreased weight gain	ECHA (The European Chemicals Agency)

Carcinogenicity
Based on available data, the classification criteria are not met.

Product Carcinogenicity Data
No data available.

Ingredient Carcinogenicity Data
No data available.

Chemical name	CAS No	ACGIH	IARC	NTP	OSHA
Phosphoric acid, disodium salt	7558-79-4	-	-	-	-
Glutaraldehyde	111-30-8	-	-	-	-

Legend

ACGIH (American Conference of Governmental Industrial Hygienists)	Does not apply
IARC (International Agency for Research on Cancer)	Does not apply
NTP (National Toxicology Program)	Does not apply
OSHA (Occupational Safety and Health Administration of the US Department of Labor)	Does not apply

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Glutaraldehyde (<0.1%) CAS#: 111-30-8	Rat TD _{Lo}	2912 mg/kg	2 years	Blood Leukemia	RTECS (Registry of Toxic Effects of Chemical Substances)

Germ cell mutagenicity
Based on available data, the classification criteria are not met.

Product Germ Cell Mutagenicity *invitro* Data
No data available.

Ingredient Germ Cell Mutagenicity *invitro* Data
No data available.

CAS#: 111-30-8					German Social Accident Insurance)
Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Glutaraldehyde (<0.1%) CAS#: 111-30-8	72 Hours	<i>Scenedemus subspicatus</i>	EC ₅₀	0.6 mg/L	ECHA (The European Chemicals Agency)

Aquatic Chronic Toxicity
No data available.

Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Glutaraldehyde (<0.1%) CAS#: 111-30-8	None reported	<i>Scenedemus subspicatus</i>	NOEC	< 0.0391 mg/L	ECHA (The European Chemicals Agency)

Persistence and degradability

Product Biodegradability Data
No data available.

Bioaccumulation
There is no data for this product
Product Bioaccumulation Data
No data available.

Partition Coefficient (n-octanol/water) Not applicable

Mobility

Soil Organic Carbon-Water Partition Coefficient Not applicable

Other adverse effects
No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from residues/unused products	Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.
Contaminated packaging	Do not reuse empty containers.

Special instructions for disposal Check with local municipal and state authorities and waste contractors for pertinent local information regarding the proper disposal of chemicals.

14. TRANSPORT INFORMATION

DOT	Not regulated
TDG	Not regulated
IATA	Not regulated
IMDG	Not regulated

Chemical name	Test	Cell Strain	Reported dose	Exposure time	Results	Key literature references and sources for data
Glutaraldehyde (<0.1%) CAS#: 111-30-8	Mutation in microorganisms	<i>Salmonella typhimurium</i>	5 mg/plate	None reported	Positive test result for mutagenicity	ECHA (The European Chemicals Agency)

Product Germ Cell Mutagenicity *invivo* Data
No data available.

Ingredient Germ Cell Mutagenicity *invivo* Data
No data available.

Reproductive toxicity
Based on available data, the classification criteria are not met.

Product Reproductive Toxicity Data
No data available.

Ingredient Reproductive Toxicity Data
No data available.

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Glutaraldehyde (<0.1%) CAS#: 111-30-8	Rat NOAEL	500 ppm	Multiple generations	No reproductive or developmental toxic effects observed	ECHA (The European Chemicals Agency)

Aspiration hazard
Based on available data, the classification criteria are not met.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Unknown aquatic toxicity 0 % of the mixture consists of component(s) of unknown hazards to the aquatic environment.

Product Ecological Data

Aquatic Acute Toxicity
No data available.

Aquatic Chronic Toxicity
No data available.

Ingredient Ecological Data

Aquatic Acute Toxicity
No data available.

Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Glutaraldehyde (<0.1%) CAS#: 111-30-8	96 hours	None reported	LC ₅₀	3.5 mg/L	GESTIS - (Information System on Hazardous Substances of the German Social Accident Insurance)
Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Glutaraldehyde (<0.1%)	48 Hours	None reported	EC ₅₀	0.75 mg/L	GESTIS - (Information System on Hazardous Substances of the

Note: No special precautions necessary.

Additional information

15. REGULATORY INFORMATION

National Inventories.

TSCA Complies
DSL/NDSL Complies

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

International Inventories.

EINECS/ELINCS Complies
ENCS Complies
IECSC Complies
KECL - Existing substances Complies
PICCS Complies
TCSI Complies
AICS Complies
NZIoC Complies

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
TCSI - Taiwan Chemical Substances Inventory
AICS - Australian Inventory of Chemical Substances
NZIoC - New Zealand Inventory of Chemicals

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

Acute health hazard	No
Chronic Health Hazard	No
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Phosphoric acid, disodium salt 7558-79-4	5000 lb	-	-	X

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

Product Code(s) 2756549
Issue Date 08-Jun-2021
Version 3.7

Product Name pH Storage Solution
Revision Date 10-Aug-2021
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Chemical name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Phosphoric acid, disodium salt 7558-79-4	5000 lb	-	RQ 5000 lb final RQ RQ 2270 kg final RQ

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

This product does not contain any substances regulated by state right-to-know regulations.

Chemical name	New Jersey	Massachusetts	Pennsylvania
Phosphoric acid, disodium salt 7558-79-4	X	X	X
Glutaraldehyde 111-30-8	X	X	X

U.S. EPA Label Information

Chemical name	FIFRA	FDA
Phosphoric acid, disodium salt	180.0910	21 CFR 182.1778.21 CFR 182.6290.21 CFR 182.6778.21 CFR 182.6778

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION

Special Comments

None

Additional Information

Global Automotive Declarable Substance List (GADSL)

Chemical name	Global Automotive Declarable Substance List Classifications	Global Automotive Declarable Substance List Thresholds
Glutaraldehyde 111-30-8	Declarable Substance (LR) Prohibited Substance (LR)	0 %

NFPA and HMIS Classifications

NFPA	Health hazards - 0	Flammability - 0	Instability - 0	Physical and chemical properties -
HMIS	Health hazards - 0	Flammability - 0	Physical hazards - 0	Personal protection - X -1

Key or legend to abbreviations and acronyms used in the safety data sheet

NIOSH IDLH Immediately Dangerous to Life or Health
ACGIH American Conference of Governmental Industrial Hygienists
NDF no data

Legend - Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA TWA (time-weighted average) STEL STEL (Short Term Exposure Limit)
MAC Maximum Allowable Concentration Ceiling Ceiling Limit Value

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SAFETY DATA SHEET

Issue Date 28-05-2020 Revision Date 24-Jan-2023 Version 4 Page 1 / 15

1. IDENTIFICATION

Product identifier
Product Name DEHA 2 Reagent

Other means of identification
Product Code(s) 2168042

Safety data sheet number M00444

UN/ID no UN3264

Recommended use of the chemical and restrictions on use

Recommended Use Water Analysis. Determination of N,N-diethylhydroxylamine.
Uses advised against Consumer use.
Restrictions on use For Laboratory Use Only.

Details of the supplier of the safety data sheet

Manufacturer Address
Hach Company, P.O.Box 389, Loveland, CO 80539, USA, +1(970) 669-3050

Emergency telephone number
+1(303) 623-5716 - 24 Hour Service

2. HAZARDS IDENTIFICATION

Classification

Regulatory Status

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Corrosive to metals	Category 1
Acute toxicity - Inhalation (Dusts/Mists)	Category 4
Skin corrosion/irritation	Category 1
Serious eye damage/eye irritation	Category 1

Hazards not otherwise classified (HNOC)

Not applicable

Label elements

Signal word
Danger

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X Listed Vacated These values have no official status. The only binding levels of contaminants are those listed in the final OSHA PEL. These lists are for reference purposes only. Please note that some reference state regulations of these "liberated" exposure limits in their state regulations.

SKN* Skin designation SKN+ Skin sensitization
RSP+ Respiratory sensitization ** Hazard Designation
C Carcinogen R Reproductive toxicant
M mutagen

Prepared By Hach Product Compliance Department

Issue Date 08-Jun-2021

Revision Date 10-Aug-2021

Revision Note None

Disclaimer

USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

HACH COMPANY©2021

End of Safety Data Sheet

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Hazard statements

H290 - May be corrosive to metals
H314 - Causes severe skin burns and eye damage
H332 - Harmful if inhaled

Precautionary statements

P271 - Use only outdoors or in a well-ventilated area
P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P260 - Do not breathe dust/fume/gas/mist/vapors/spray
P280 - Wear protective gloves, protective clothing, eye protection, and face protection
P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
P303 + P361 + P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a POISON CENTER or doctor/physician
P363 - Wash contaminated clothing before reuse
P405 - Store locked up
P501 - Dispose of contents/ container to an approved waste disposal plant
P234 - Keep only in original container
P390 - Absorb spillage to prevent material damage

Other Hazards Known
None

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance

Not applicable

Mixture

Chemical Family Mixture.
Chemical nature Aqueous solution of inorganic acids and salts.

Percent ranges are used where confidential product information is applicable.

Chemical name	CAS No	Percent Range	HMRC #
Nitric acid	7697-37-2	10 - 20%	-
Ferric nitrate	10421-48-4	1 - 5%	-

4. FIRST AID MEASURES

Description of first aid measures

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General advice	Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.
Inhalation	Remove to fresh air. If breathing has stopped, give artificial respiration. Get medical attention immediately. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If breathing is difficult, (trained personnel should) give oxygen. Delayed pulmonary edema may occur. Get immediate medical advice/attention.
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. Do not rub affected area. Get immediate medical advice/attention.
Skin contact	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get immediate medical advice/attention.
Ingestion	Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Get immediate medical advice/attention.
Self-protection of the first aider	Avoid contact with skin, eyes or clothing. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. Avoid breathing vapors or mists.

Most important symptoms and effects, both acute and delayed

Symptoms Burning sensation. Coughing and/ or wheezing. Difficulty in breathing.

Indication of any immediate medical attention and special treatment needed

Note to physicians Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable Extinguishing Media	Caution: Use of water spray when fighting fire may be inefficient.
Specific hazards arising from the chemical	The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating gases and vapors.
Hazardous combustion products	Nitrogen oxides (NOx). This material will not burn.
Special protective equipment for fire-fighters	Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. ACCIDENTAL RELEASE MEASURES

U.S. Notice Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance. Outside

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Ferric nitrate CAS#: 10421-48-4	TWA: 1 mg/m ³ Fe	(vacated) STEL: 10 mg/m ³ (vacated) TWA: 1 mg/m ³	TWA: 1 mg/m ³ Fe
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Appropriate engineering controls

Engineering Controls Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Respiratory protection No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required. Wear breathing apparatus if exposed to vapors/dusts/aerosols.

Hand Protection Wear suitable gloves. Impervious gloves. Gloves must be inspected prior to use. The selected protective gloves have to satisfy the specifications of EU Directive 2016/425 and the standard EN 374 derived from it. Chemical resistant gloves made of butyl rubber or nitrile rubber category III according to EN 374-1:2016.

Eye/face protection Face protection shield.

Skin and body protection Wear suitable protective clothing. Long sleeved clothing. Chemical resistant apron.

General Hygiene Considerations Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Regular cleaning of equipment, work area and clothing is recommended. Avoid contact with skin, eyes or clothing. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Contaminated work clothing should not be allowed out of the workplace. Wash hands before breaks and immediately after handling the product.

Environmental exposure controls Local authorities should be advised if significant spillages cannot be contained. Do not allow into any sewer, on the ground or into any body of water.

Thermal hazards None under normal processing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Liquid	Color	Colorless to light purple
Appearance	aqueous solution	Odor threshold	Not applicable
Odor	Odorless		

Property	Values	Remarks • Method
Molecular weight	Not applicable	
pH	< 0.5	@ 20 °C
Melting point / freezing point	~ -9 °C / 15.8 °F	
Initial boiling point and boiling range	~ 103 °C / 217.4 °F	
Evaporation rate	0.93 (water = 1)	
Vapor pressure	17.027 mm Hg / 2.27 kPa at 20 °C / 68 °F	
Relative vapor density	0.67	
Specific Gravity	1.062	
Partition coefficient	No data available	

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of the US, only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.

Personal precautions, protective equipment and emergency procedures

Personal precautions Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Attention! Corrosive material. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Avoid breathing vapors or mists.

Other information Refer to protective measures listed in Sections 7 and 8.

Environmental precautions

Environmental precautions Prevent further leakage or spillage if safe to do so. Should not be released into the environment. Do not allow to enter into soil/subsoil. Prevent product from entering drains.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Take up mechanically, placing in appropriate containers for disposal.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

Reference to other sections See section 8 for more information. See section 13 for more information.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. In case of insufficient ventilation, wear suitable respiratory equipment. Handle product only in closed system or provide appropriate exhaust ventilation. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse. Avoid breathing vapors or mists.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from moisture. Store locked up. Keep out of the reach of children. Store away from other materials.

Flammability class Not applicable

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical name	ACGIH TLV	OSHA PEL	NIOSH
Nitric acid CAS#: 7697-37-2	STEL: 4 ppm TWA: 2 ppm	TWA: 2 ppm TWA: 5 mg/m ³ (vacated) TWA: 2 ppm (vacated) TWA: 5 mg/m ³ (vacated) STEL: 4 ppm	IDLH: 25 ppm TWA: 2 ppm TWA: 5 mg/m ³ STEL: 10 mg/m ³

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Soil Organic Carbon-Water Partition Coefficient	No data available
Autoignition temperature	No data available
Decomposition temperature	No data available
Dynamic viscosity	No data available
Kinematic viscosity	No data available

Solubility(ies)

Water solubility

Water solubility classification	Water solubility	Water Solubility Temperature
Soluble	> 1000 mg/L	25 °C / 77 °F

Solubility in other solvents

Chemical Name	Solubility classification	Solubility	Solubility Temperature
Acid	Soluble	> 1000 mg/L	25 °C / 77 °F
Ethyl alcohol	Soluble	> 1000 mg/L	25 °C / 77 °F
Acetone	Soluble	> 1000 mg/L	25 °C / 77 °F

Other information

Metal Corrosivity

Classified as corrosive to metal according to GHS criteria

Steel Corrosion Rate 1325.9 mm/yr / 52.2 in/yr
Aluminum Corrosion Rate 3.05 mm/yr / 0.12 in/yr

Volatile Organic Compounds (VOC) Content

Chemical name	CAS No	Volatile organic compounds (VOC) content	CAA (Clean Air Act)
Nitric acid	7697-37-2	Not applicable	-
Ferric nitrate	10421-48-4	No data available	-

Explosive properties

Upper explosion limit Not applicable
Lower explosion limit Not applicable

Flammable properties

Flash point No data available

Flammability Limit in Air

Upper flammability limit: No data available
Lower flammability limit: No data available

Oxidizing properties No data available.

Bulk density Not applicable

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Ecotoxicity Based on available data, the classification criteria are not met.

Unknown aquatic toxicity 0% of the mixture consists of components(s) of unknown hazards to the aquatic environment.

Mixture

Aquatic Acute Toxicity
No data available.

Aquatic Chronic Toxicity
No data available.

Substance

Aquatic Acute Toxicity
No data available.

Aquatic Chronic Toxicity
No data available.

Persistence and degradability

Mixture
No data available.

Bioaccumulation
There is no data for this product

Mixture
No data available.

Partition coefficient No data available

Mobility

Soil Organic Carbon-Water Partition Coefficient No data available

Other adverse effects
No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from residues/unused products Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging Do not reuse empty containers.

US EPA Waste Number D002

Special instructions for disposal Work in an approved fume hood. Working in a large container, cautiously add small portions of the material to cold water with agitation. Do not breathe the fumes. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. If permitted by regulation, Open cold water tap completely, slowly pour the reacted material to the drain. Check with local municipal and state authorities and waste contractors for pertinent local information regarding the proper disposal of chemicals.

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14. TRANSPORT INFORMATION

DOT

UN/ID no UN3264
Proper shipping name Corrosive Liquid, Acidic, Inorganic, N.O.S.
DOT Technical Name Nitric Acid
Transport hazard class(es) 8
Packing Group II
Reportable Quantity (RQ) Nitric acid: RQ kg= 3413.53
Description UN3264, Corrosive liquid, acidic, inorganic, n.o.s. (Nitric Acid), 8, II, RQ
Emergency Response Guide Number 154

TDG

UN/ID no UN3264
Proper shipping name Corrosive Liquid, Acidic, Inorganic, N.O.S.
TDG Technical Name Nitric Acid
Transport hazard class(es) 8
Packing Group II
Description UN3264, Corrosive liquid, acidic, inorganic, n.o.s. (Nitric Acid), 8, II

IATA

UN number or ID number UN3264
Proper shipping name Corrosive liquid, acidic, inorganic, n.o.s.
IATA Technical Name Nitric Acid
Transport hazard class(es) 8
Packing group II
ERG Code 8L
Special precautions for user A3, A803

IMDG

UN number or ID number UN3264
Proper shipping name Corrosive liquid, acidic, inorganic, n.o.s.
IMDG Technical Name Nitric Acid
Transport hazard class(es) 8
Packing Group II
EmS-No F-A, S-B
Special precautions for user 274

Note: No special precautions necessary.

Additional information

There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is not in a reagent set or kit, the classification given above applies. If the item is part of a reagent set or kit the classification would change to the following: UN3315 Chemical Kit, Hazard Class 9, Packing Group II or III. If the item is not regulated, the Chemical Kit classification does not apply.

15. REGULATORY INFORMATION

National Inventories

TSCA Complies
DSL/NDSL Complies

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

International Inventories

EINECS/ELINCS Complies
ENCS Complies
IECSC Complies

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KECL - Existing substances Complies
PICCS Complies
TCSI Complies
AICS Complies
NZIoC Complies

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
TCSI - Taiwan Chemical Substances Inventory
AICS - Australian Inventory of Chemical Substances
NZIoC - New Zealand Inventory of Chemicals

US Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical name	SARA 313 - Threshold Values %
Nitric acid (CAS #: 7697-37-2)	1.0
Ferric nitrate (CAS #: 10421-48-4)	1.0

SARA 311/312 Hazard Categories

Acute health hazard Yes
Chronic Health Hazard Yes
Fire hazard No
Sudden release of pressure hazard No
Reactive Hazard No

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Nitric acid 7697-37-2	1000 lb	-	-	X
Ferric nitrate 10421-48-4	1000 lb	-	-	X

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

Chemical name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Nitric acid 7697-37-2	1000 lb	1000 lb	RQ 1000 lb final RQ
Ferric nitrate 10421-48-4	1000 lb	-	RQ 454 kg final RQ RQ 1000 lb final RQ RQ 454 kg final RQ

U.S. - Department of Homeland Security - Chemical Facility Anti-Terrorism Standards (CFATS) - Security Issues

Chemical name	U.S. - Department of Homeland Security - Chemical Facility Anti-Terrorism Standards (CFATS) - Security Issues
Nitric acid (10 - 20%) CAS#: 7697-37-2	Release - Toxic; Theft - Explosives/Improvised Explosive Device Precursors

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US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals

IMERC: Not applicable

U.S. State Right-to-Know Regulations

This product may contain substances regulated by state right-to-know regulations.

Chemical name	New Jersey	Massachusetts	Pennsylvania
Nitric acid 7697-37-2	X	X	X
Ferric nitrate 10421-48-4	X	X	X

U.S. EPA Label Information

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION

Special Comments

None

Additional information

Global Automotive Declarable Substance List (GADSL)

Not applicable

NFPA and HMIS Classifications

NFPA	Health hazards - 3	Flammability - 0	Instability - 0	Physical and chemical properties -
HMIS	Health hazards - 3	Flammability - 0	Physical hazards - 0	Personal protection - X - I

Key or legend to abbreviations and acronyms used in the safety data sheet

ACGIH	ACGIH (American Conference of Governmental Industrial Hygienists)
ATSDR	ATSDR (Agency for Toxic Substances and Disease Registry)
CCRIS	CCRIS (Chemical Carcinogenesis Research Information System)
CDC	CDC (Center for Disease Control)
CEPA	CEPA (Canadian Environmental Protection Agency)
CICAD	CICAD (Concise International Chemical Assessment Documents)
ECHA	ECHA (The European Chemicals Agency)
EEA	EEA (European Environment Agency)
EPA	EPA (Environmental Protection Agency)
ERMA	ERMA (New Zealand Environmental Risk Management Authority)
ECOSARS	Estimation through ECOSARS v1.11 part of the Estimation Programs Interface (EPI) Suite™
FDA	FDA (Food & Drug Administration)
GESTIS	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)
HSDB	HSDB (Hazardous Substances Data Bank)
INERIS	INERIS (The National Industrial Environment and Risks Institute)
IPCS INCHEM	IPCS INCHEM (International Programme on Chemical Safety)
IUCLiD	IUCLiD (The International Uniform Chemical Information Database)
NITE	Japan National Institute of Technology and Evaluation (NITE)
NIH	NIH (National Institutes of Health)
NIOSH	NIOSH (National Institute for Occupational Safety and Health)

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LOLI (List of Lists - An International Chemical Regulatory Database)
NDF no data
NICNAS Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
NIOSH IDLH Immediately Dangerous to Life or Health
OSHA OSHA (Occupational Safety and Health Administration of the US Department of Labor)
PEEN PEEN (Pan European Ecological Network)
RTECS RTECS (Registry of Toxic Effects of Chemical Substances)
SIDS SIDS (Screening Information Dataset) for High Volume Chemicals
SYKE The Finnish Environment Institute (SYKE)
USDA USDA (United States Department of Agriculture)
USDC USDC (United States Department of Commerce)
WHO WHO (World Health Organization)

Legend - Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
MAC	Maximum Allowable Concentration	Ceiling	Ceiling Limit Value
X	Listed	Vacated	These values have no official status. The only binding levels of contaminants are those listed in the final OSHA PEL. These lists are for reference purposes only. Please note that some reference state regulations of these "liberated" exposure limits in their state regulations.
SKN*	Skin designation	SKN+*	Skin sensitization
RSP+	Respiratory sensitization	H	Hazard Designation
C	Carcinogen	R	Reproductive toxicant
M	Mutagen		

Prepared By Hach Product Compliance Department

Issue Date 28-05-2020

Revision Date 24-Jan-2023

Revision Note None

Disclaimer

USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

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End of Safety Data Sheet

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SAFETY DATA SHEET

Issue Date 11-Feb-2021 Revision Date 08-Feb-2023 Version 7.6 Page 1 / 16

1. IDENTIFICATION

Product identifier
Product Name Molybdate 3 Reagent for Silica

Other means of identification
Product Code(s) 199549

Safety data sheet number M00187

UN/ID no UN3264

Recommended use of the chemical and restrictions on use
Recommended Use Laboratory reagent. Silica determination.
Uses advised against Consumer use.
Restrictions on use For Laboratory Use Only.

Details of the supplier of the safety data sheet

Manufacturer Address
Hach Company, P.O.Box 389, Loveland, CO 80539, USA, +1(970) 669-3050

Emergency telephone number
+1(303) 623-5716 - 24 Hour Service

2. HAZARDS IDENTIFICATION

Classification

Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Corrosive to metals	Category 1
Skin corrosion/irritation	Category 1 Sub-category A
Serious eye damage/eye irritation	Category 1
Specific target organ toxicity (repeated exposure)	Category 1

Hazards not otherwise classified (HNOC)
Not applicable

Label elements

Signal word
Danger

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Hazard statements

H290 - May be corrosive to metals
H314 - Causes severe skin burns and eye damage
H372 - Causes damage to organs through prolonged or repeated exposure

Precautionary statements

P280 - Wear protective gloves, protective clothing, eye protection, and face protection
P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
P303 + P361 + P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a POISON CENTER or doctor/physician
P363 - Wash contaminated clothing before reuse
P405 - Store locked up
P501 - Dispose of contents/ container to an approved waste disposal plant
P260 - Do not breathe dust/fume/gas/mist/vapors/spray
P270 - Do not eat, drink or smoke when using this product
P234 - Keep only in original container
P390 - Absorb spillage to prevent material damage

Other Hazards Known
Toxic to aquatic life

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance
Not applicable

Mixture

Chemical Family Mixture.
Chemical nature Aqueous solution of inorganic acids and salts.

Percent ranges are used where confidential product information is applicable.

Chemical name	CAS No	Percent Range	HMRIC #
Sulfuric acid	7664-93-9	10 - 13%	-
Sulfuric acid, sodium salt (1:1)	7681-38-1	10 - 13%	-
Molybdate (MoO42-), dihydrogen, (T-4)-	7782-91-4	<10%	-

4. FIRST AID MEASURES

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Description of first aid measures

General advice
Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

Inhalation
Remove to fresh air. If breathing has stopped, give artificial respiration. Get medical attention immediately. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If breathing is difficult, (trained personnel should) give oxygen. Delayed pulmonary edema may occur. Get immediate medical advice/attention.

Eye contact
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. Do not rub affected area. Get immediate medical advice/attention.

Skin contact
Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get immediate medical advice/attention.

Ingestion
Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Get immediate medical advice/attention.

Self-protection of the first aider
Avoid contact with skin, eyes or clothing. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation.

Most important symptoms and effects, both acute and delayed

Symptoms
Burning sensation.

Indication of any immediate medical attention and special treatment needed

Note to physicians
Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antibiotics. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media
Caution: Use of water spray when fighting fire may be inefficient.

Specific hazards arising from the chemical
The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating gases and vapors.

Hazardous combustion products
Sulfur oxides. Sodium oxides.

Special protective equipment for fire-fighters
Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. ACCIDENTAL RELEASE MEASURES

U.S. Notice
Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and

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guidelines/procedures. See Section 13, Special Instructions for disposal assistance. Outside of the US, only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.

Personal precautions, protective equipment and emergency procedures

Personal precautions Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Attention! Corrosive material. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

Other information Refer to protective measures listed in Sections 7 and 8.

Environmental precautions

Environmental precautions Prevent further leakage or spillage if safe to do so. Should not be released into the environment. Do not allow to enter into soil/subsoil. Prevent product from entering drains.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Take up mechanically, placing in appropriate containers for disposal.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

Reference to other sections See section 8 for more information. See section 13 for more information.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. In case of insufficient ventilation, wear suitable respiratory equipment. Handle product only in closed system or provide appropriate exhaust ventilation. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from moisture. Store locked up. Keep out of the reach of children. Store away from other materials.

Flammability class Class IIIB

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical name	ACGIH TLV	OSHA PEL	NIOSH
Sulfuric acid CAS#: 7664-93-9	TWA: 0.2 mg/m ³ thoracic particulate matter	TWA: 1 mg/m ³ (vacated) TWA: 1 mg/m ³	IDLH: 15 mg/m ³ TWA: 1 mg/m ³
Molybdate (MoO42-), dihydrogen, (T-4)- CAS#: 7782-91-4	TWA: 0.5 mg/m ³ Mo respirable particulate matter	TWA: 5 mg/m ³ (vacated) TWA: 5 mg/m ³	IDLH: 1000 mg/m ³ Mo

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Autoignition temperature No data available

Decomposition temperature No data available

Dynamic viscosity No data available

Kinematic viscosity No data available

Solubility(ies)

Water solubility

Water solubility classification	Water solubility	Water Solubility Temperature
Soluble	> 1000 mg/L	25 °C / 77 °F

Solubility in other solvents

Chemical Name	Solubility classification	Solubility	Solubility Temperature
Acid	Soluble	> 1000 mg/L	25 °C / 77 °F

Other information

Metal Corrosivity

Classified as corrosive to metal according to GHS criteria

Steel Corrosion Rate 151.6 mm/yr / 5.97 in/yr
Aluminum Corrosion Rate No data available

Volatile Organic Compounds (VOC) Content

Chemical name	CAS No	Volatile organic compounds (VOC) content	CAA (Clean Air Act)
Sulfuric acid	7664-93-9	No data available	-
Sulfuric acid, sodium salt (1:1)	7681-38-1	No data available	-
Molybdate (MoO42-), dihydrogen, (T-4)-	7782-91-4	Not applicable	-

Explosive properties

Upper explosion limit No data available
Lower explosion limit No data available

Flammable properties

Flash point > 100 °C / 212 °F
Method CC (closed cup)

Flammability Limit in Air

Upper flammability limit: No data available
Lower flammability limit: No data available

Oxidizing properties Not classified according to GHS criteria.

Bulk density No data available

10. STABILITY AND REACTIVITY

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Appropriate engineering controls

Engineering Controls Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Respiratory protection No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required. Wear breathing apparatus if exposed to vapors/dusts/aerosols.

Hand Protection

Wear suitable gloves. Impervious gloves. Gloves must be inspected prior to use. The selected protective gloves have to satisfy the specifications of EU Directive 2016/425 and the standard EN 374 derived from it. Chemical resistant gloves made of butyl rubber or nitrile rubber category III according to EN 374-1:2016.

Eye/face protection

Face protection shield.

Skin and body protection

Wear suitable protective clothing. Long sleeved clothing. Chemical resistant apron.

General Hygiene Considerations

Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Regular cleaning of equipment, work area and clothing is recommended. Avoid contact with skin, eyes or clothing. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Contaminated work clothing should not be allowed out of the workplace. Wash hands before breaks and immediately after handling the product.

Environmental exposure controls

Local authorities should be advised if significant spillages cannot be contained. Do not allow into any sewer, on the ground or into any body of water.

Thermal hazards

None under normal processing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Liquid	Color	Colorless to light yellow
Appearance	clear	Odor threshold	Not applicable
Odor	Odorless		
Property	Values	Remarks	Method
Molecular weight	Not applicable		
pH	< 2		@ 20 °C
Melting point / freezing point	~ -13 °C / 8.6 °F		
Initial boiling point and boiling range	~ 100 °C / 212 °F		
Evaporation rate	1.17 (water = 1)		
Vapor pressure	22.127 mm Hg / 2.95 kPa at 25 °C / 77 °F		
Relative vapor density	0.62		
Specific Gravity	1.2		
Partition coefficient	Not applicable		
Soil Organic Carbon-Water Partition Coefficient	Not applicable		

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Reactivity

Corrosive on contact with water. Corrosive to metal.

Chemical stability

Stable under normal conditions.

Explosion data

Sensitivity to Mechanical Impact None.

Sensitivity to Static Discharge None.

Possibility of hazardous reactions

None under normal processing.

Hazardous polymerization

Hazardous polymerization does not occur.

Conditions to avoid

Exposure to air or moisture over prolonged periods.

Incompatible materials

Oxidizing agent. Acids. Bases.

Hazardous decomposition products

Thermal decomposition can lead to release of irritating and toxic gases and vapors.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Inhalation	Corrosive by inhalation. Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate. Inhaled corrosive substances can lead to a toxic edema of the lungs. Pulmonary edema can be fatal.
Eye contact	Causes burns. Corrosive to the eyes and may cause severe damage including blindness. Causes serious eye damage. May cause irreversible damage to eyes.
Skin contact	Corrosive. Causes severe burns. Avoid contact with skin and clothing.
Ingestion	Causes burns. Ingestion causes burns of the upper digestive and respiratory tracts. May cause severe burning pain in the mouth and stomach with vomiting and diarrhea of dark blood. Blood pressure may decrease. Brownish or yellowish stains may be seen around the mouth. Swelling of the throat may cause shortness of breath and choking. May cause lung damage if swallowed. May be fatal if swallowed and enters airways.

Symptoms Redness. Burning. May cause blindness. Coughing and/ or wheezing.

Acute toxicity

Based on available data, the classification criteria are not met

Mixture

Test data reported below.

Oral Exposure Route

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Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Rat LD ₅₀	7099 mg/kg	None reported	None reported	Outside testing

Ingredient Acute Toxicity Data
Test data reported below.

Oral Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Sulfuric acid, sodium salt (1:1) (10 - 13%) CAS#: 7681-38-1	Rat LD ₅₀	2490 mg/kg	None reported	None reported	IUCLID
Molybdate (MoO42-), dihydrogen, (T-4), (<10%) CAS#: 7782-91-4	Rat LD ₅₀	2689 mg/kg	None reported	None reported	Vendor SDS

Dermal Exposure Route

Unknown Acute Toxicity
8.33% of the mixture consists of ingredient(s) of unknown toxicity.

Acute Toxicity Estimations (ATE)

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral)	No information available
ATEmix (dermal)	30,012.00 mg/kg
ATEmix (inhalation-dust/mist)	No information available
ATEmix (inhalation-vapor)	No information available
ATEmix (inhalation-gas)	No information available

Skin corrosion/irritation
Causes severe burns.

Mixture
Test data reported below.

Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
United States Department of Transportation (DOT) Skin Corrosion Test	Rabbit	0.5 mL	4 hours	Not corrosive to skin	Internal Data Outside testing

Ingredient Skin Corrosion/Irritation Data
Test data reported below.

Chemical name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
Sulfuric acid (10 - 13%) CAS#: 7664-93-9	Existing human experience	Human	None reported	None reported	Corrosive to skin	HSDB
Sulfuric acid, sodium salt (1:1) (10 - 13%) CAS#: 7681-38-1	Standard Draize Test	Rabbit	500 mg	4 hours	Not corrosive or irritating to skin	ECHA

(10 - 13%) CAS#: 7664-93-9	TC _{Lo}		Changes in teeth and supporting structures
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Carcinogenicity
Based on available data, the classification criteria are not met.

Mixture
No data available.

Ingredient Carcinogenicity Data
No data available.

Chemical name	CAS No	ACGIH	IARC	NTP	OSHA
Sulfuric acid	7664-93-9	A2	Group 1	Known	X
Sulfuric acid, sodium salt (1:1)	7681-38-1	-	-	-	-
Molybdate (MoO42-), dihydrogen, (T-4).	7782-91-4	A3	-	-	-

Legend

ACGIH (American Conference of Governmental Industrial Hygienists)	A2 - Suspected Human Carcinogen A3 - Animal Carcinogen
IARC (International Agency for Research on Cancer)	Group 1 - Carcinogenic to Humans
NTP (National Toxicology Program)	Known - Known Carcinogen
OSHA	X - Present

Germ cell mutagenicity
Based on available data, the classification criteria are not met.

Mixture *in vitro* Data
No data available.

Substance *in vitro* Data
Test data reported below.

Chemical name	Test	Cell Strain	Reported dose	Exposure time	Results	Key literature references and sources for data
Sulfuric acid (10 - 13%) CAS#: 7664-93-9	Cytogenetic analysis	Hamster ovary	4 mmol/L	None reported	Positive test result for mutagenicity	No information available

Mixture *in vivo* Data
No data available.

Substance *in vivo* Data
No data available.

Reproductive toxicity
Based on available data, the classification criteria are not met.

Mixture
No data available.

Ingredient Reproductive Toxicity Data
Test data reported below.

Inhalation (Vapor) Exposure Route

Chemical name	Endpoint	Reported	Exposure	Toxicological effects	Key literature references and
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Serious eye damage/irritation
Classification based on data available for ingredients. Causes burns. Risk of serious damage to eyes.

Mixture
No data available.

Ingredient Eye Damage/Eye Irritation Data
Test data reported below.

Chemical name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
Sulfuric acid (10 - 13%) CAS#: 7664-93-9	Existing human experience	Human	None reported	None reported	Corrosive to eyes	HSDB
Sulfuric acid, sodium salt (1:1) (10 - 13%) CAS#: 7681-38-1	Standard Draize Test	Rabbit	100 mg	None reported	Eye irritant	ECHA

Respiratory or skin sensitization
Based on available data, the classification criteria are not met.

Mixture
No data available.

Ingredient Sensitization Data
No data available.

STOT - single exposure
Based on available data, the classification criteria are not met.

Mixture
No data available.

Ingredient Specific Target Organ Toxicity Single Exposure Data
Test data reported below.

Inhalation (Vapor) Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Sulfuric acid (10 - 13%) CAS#: 7664-93-9	Human TD _{Lo}	0.144 mg/L	5 minutes	Lungs, Thorax, or Respiration Dyspnea	RTECS

STOT - repeated exposure
Causes damage to organs through prolonged or repeated exposure.

Mixture
No data available.

Ingredient Specific Target Organ Toxicity Repeat Exposure Data
Test data reported below.

Inhalation (Vapor) Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Sulfuric acid	Human	0.003 mg/L	168 days	Musculoskeletal	RTECS

	type	dose	time		sources for data
Sulfuric acid (10 - 13%) CAS#: 7664-93-9	Rabbit TC _{Lo}	0.02 mg/L	7 hours	Specific Developmental Abnormalities Musculoskeletal system	No information available

Aspiration hazard
Based on available data, the classification criteria are not met.

12. ECOLOGICAL INFORMATION

Ecotoxicity
Based on available data, the classification criteria are not met.

Unknown aquatic toxicity
8.33% of the mixture consists of components(s) of unknown hazards to the aquatic environment.

Mixture

Aquatic Acute Toxicity
No data available.

Aquatic Chronic Toxicity
No data available.

Substance

Aquatic Acute Toxicity
Test data reported below.

Crustacea

Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Sulfuric acid, sodium salt (1:1) (10 - 13%) CAS#: 7681-38-1	48 Hours	<i>Daphnia magna</i>	EC ₅₀	190 mg/L	IUCLID

Aquatic Chronic Toxicity
No data available.

Persistence and degradability

Mixture
No data available.

Mixture
No data available.

Partition coefficient
Not applicable

Mobility

Soil Organic Carbon-Water Partition Coefficient
Not applicable

Other adverse effects
No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from residues/unused products	Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.
Contaminated packaging	Do not reuse empty containers.
US EPA Waste Number	D002

Special instructions for disposal Dilute to 3 to 5 times the volume with cold water. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. If permitted by regulation. Open cold water tap completely, slowly pour the reacted material to the drain. Allow cold water to run for 5 minutes to completely flush the system. Check with local municipal and state authorities and waste contractors for pertinent local information regarding the proper disposal of chemicals.

14. TRANSPORT INFORMATION	
DOT	
UN/ID no	UN3264
Proper shipping name	Corrosive Liquid, Acidic, Inorganic, N.O.S.
DOT Technical Name	Sulfuric acid
Transport hazard class(es)	8
Packing Group	III
Reportable Quantity (RQ)	Sulfuric acid: RQ kg= 3588.42
Description	UN3264, Corrosive liquid, acidic, inorganic, n.o.s. (Sulfuric acid), 8, III, RQ
Emergency Response Guide Number	154
TDG	
UN/ID no	UN3264
Proper shipping name	Corrosive Liquid, Acidic, Inorganic, N.O.S.
TDG Technical Name	Sulfuric acid
Transport hazard class(es)	8
Packing Group	III
Description	UN3264, Corrosive liquid, acidic, inorganic, n.o.s. (Sulfuric acid), 8, III
IATA	
UN number or ID number	UN3264
Proper shipping name	Corrosive liquid, acidic, inorganic, n.o.s.
IATA Technical Name	Sulfuric acid
Transport hazard class(es)	8
Packing group	III
ERG Code	8L
Special precautions for user	A3, A803
IMDG	
UN number or ID number	UN3264
Proper shipping name	Corrosive liquid, acidic, inorganic, n.o.s.
IMDG Technical Name	Sulfuric acid
Transport hazard class(es)	8
Packing Group	III
EmS-No	F-A, S-B
Special precautions for user	223, 274
Marine pollutant	No

Additional information
There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods.
If the item is not in a reagent set or kit, the classification given above applies.
If the item is part of a reagent set or kit the classification would change to the following:

Sulfuric acid 7664-93-9	1000 lb	1000 lb	RQ 1000 lb final RQ RQ 454 kg final RQ
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U.S. - DEA (Drug Enforcement Administration) List I & List II

Chemical name	U.S. - DEA (Drug Enforcement Administration) - List I or Precursor Chemicals	U.S. - DEA (Drug Enforcement Administration) - List II or Essential Chemicals
Sulfuric acid (10 - 13%) CAS#: 7664-93-9	Not Listed	50 gallon Export Volume (exports, transshipments and international transactions to designated countries given in 1310.08(b))

US State Regulations

California Proposition 65
This product contains the following Proposition 65 chemicals

Chemical name	California Proposition 65
Sulfuric acid (CAS #: 7664-93-9)	Carcinogen

 **WARNING:** This product can expose you to chemicals including Sulfuric acid, which is known to the State of California to cause cancer.
For more information, go to <http://www.P65Warnings.ca.gov>

IMERC: Not applicable

U.S. State Right-to-Know Regulations

This product may contain substances regulated by state right-to-know regulations.

Chemical name	New Jersey	Massachusetts	Pennsylvania
Sulfuric acid 7664-93-9	X	X	X

U.S. EPA Label Information

Chemical name	FIFRA	FDA
Sulfuric acid	180.0910	21 CFR 184.1095
Sulfuric acid, sodium salt (1:1)	180.0920	-

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION

Special Comments
None

Additional information

Global Automotive Declarable Substance List (GADSL)
Not applicable
NFPA and HMIS Classifications

NFPA	Health hazards - 3	Flammability - 1	Instability - 0	Physical and chemical properties -
HMIS	Health hazards - 3			

UN3316 Chemical Kit, Hazard Class 9, Packing Group II or III.
If the item is not regulated, the Chemical Kit classification does not apply.

15. REGULATORY INFORMATION	
National Inventories	
TSCA	Complies
DSL/NDSL	Complies
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List	
International Inventories	
EINECS/ELINCS	Complies
ENCS	Complies
IECSC	Complies
KECL - Existing substances	Complies
PICCS	Complies
TCSI	Complies
AICS	Complies
NZIoC	Complies

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
TCSI - Taiwan Chemical Substances Inventory
AICS - Australian Inventory of Chemical Substances
NZIoC - New Zealand Inventory of Chemicals

US Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical name	SARA 313 - Threshold Values %
Sulfuric acid (CAS #: 7664-93-9)	1.0

SARA 311/312 Hazard Categories

Acute health hazard	Yes
Chronic Health Hazard	Yes
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Sulfuric acid 7664-93-9	1000 lb	-	-	X

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
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	- *	Flammability - 1	Physical hazards - 0	Personal protection -
				X - I

Key or legend to abbreviations and acronyms used in the safety data sheet

ACGIH	ACGIH (American Conference of Governmental Industrial Hygienists)
ATSDR	ATSDR (Agency for Toxic Substances and Disease Registry)
CCRIS	CCRIS (Chemical Carcinogenesis Research Information System)
CDC	CDC (Center for Disease Control)
CEPA	CEPA (Canadian Environmental Protection Agency)
CICAD	CICAD (Concise International Chemical Assessment Documents)
ECHA	ECHA (The European Chemicals Agency)
EEA	EEA (European Environment Agency)
EPA	EPA (Environmental Protection Agency)
ERMA	ERMA (New Zealand's Environmental Risk Management Authority)
ECOSARS	Estimation through ECOSARS v1.11 part of the Estimation Programs Interface (EPI) Suite™
FDA	FDA (Food & Drug Administration)
GESTIS	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)
HSDB	HSDB (Hazardous Substances Data Bank)
INERIS	INERIS (The National Industrial Environment and Risks Institute)
IPCS INCHEM	IPCS INCHEM (International Programme on Chemical Safety)
IUCLID	IUCLID (The International Uniform Chemical Information Database)
NITE	Japan National Institute of Technology and Evaluation (NITE)
NIH	NIH (National Institutes of Health)
NIOSH	NIOSH (National Institute for Occupational Safety and Health)
LOLI	LOLI (List of Lists - An International Chemical Regulatory Database)
NDF	no data
NICNAS	Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
NIOSH IDLH	Immediately Dangerous to Life or Health
OSHA	OSHA (Occupational Safety and Health Administration of the US Department of Labor)
PEEN	PEEN (Pan European Ecological Network)
RTECS	RTECS (Registry of Toxic Effects of Chemical Substances)
SIDS	SIDS (Screening Information Dataset) for High Volume Chemicals
SYKE	The Finnish Environment Institute (SYKE)
USDA	USDA (United States Department of Agriculture)
USDC	USDC (United States Department of Commerce)
WHO	WHO (World Health Organization)

Legend - Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
MAC	Maximum Allowable Concentration	Ceiling	Ceiling Limit Value
X	Listed	Vacated	These values have no official status. The only binding levels of contaminants are those listed in the final OSHA PEL. These lists are for reference purposes only. Please note that some reference state regulations of these "liberated" exposure limits in their state regulations.
SKN*	Skin designation	SKN+	Skin sensitization
RSP+	Respiratory sensitization		Hazard Designation
C	Carcinogen	R	Reproductive toxicant
M	mutagen		

Prepared By Hach Product Compliance Department

Product Code(s) 199549
Issue Date 11-Feb-2021
Version 7.6

Product Name Molybdate 3 Reagent for Silica
Revision Date 08-Feb-2023
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Issue Date 11-Feb-2021
Revision Date 08-Feb-2023
Revision Note None

Disclaimer

USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

HACH COMPANY©2022

End of Safety Data Sheet

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Safety Data Sheet

according to OSHA HCS, NOM 018-STPS-2015, HPR Schedule 1

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Product Identifier: Liquid Caustic Soda 50% Membrane Grade

(Contd. from Page 1)

Additional Precautionary Statements: Wash contaminated clothing before reuse.

NFPA Ratings (scale 0 - 4):



Health = 3
Fire = 0
Reactivity = 1

Additional Information:

If you do not understand the hazards or safety precautions described in this data sheet, contact your supervisor or safety administrator before handling this product.

3 Composition/Information on Ingredients

Chemical Characterization: Mixtures

CAS No. Description

1310-73-2 sodium hydroxide 50%

⚠ Skin Corrosion 1A, H314; ⚠ Acute Toxicity - Oral 4, H302

Additional Information: For the wording of the listed hazard phrases refer to section 16.

4 First Aid Measures

General information:

Rescue personnel must wear appropriate protective equipment during removal of victims from contaminated areas.

After Inhalation:

Remove victim to fresh air.
Administer oxygen if breathing is difficult.
Administer artificial respiration if breathing has stopped.
Onset of symptoms may be delayed up to 48 hours.
Get immediate medical attention.

After Skin Contact:

Remove contaminated clothing and shoes. Wash affected area with soap and water.
Use caution to avoid spreading contamination while washing.
Delayed skin damage is possible if product is not completely washed off.
Get immediate medical attention.

After Eye Contact:

In case of accidental contact, immediately flush eyes with water.
Hold eyelids open to ensure adequate flushing.
Remove contact lenses, if present and easy to do. Continue rinsing.
Get immediate medical attention.

After Swallowing:

Rinse mouth.
Administer 1-2 glasses of water to dilute ingested material.
Do NOT induce vomiting.
Never give anything by mouth to an unconscious person.
Get immediate medical attention.

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NAE



Safety Data Sheet

according to OSHA HCS, NOM 018-STPS-2015, HPR Schedule 1

Date Printed: 11/01/2022

Version 10

Revision Date: 08/16/2022

1 Identification of the Substance/Mixture and of the Company/Undertaking

Product Identifier: Liquid Caustic Soda 50% Membrane Grade

Synonyms: Sodium Hydroxide 50%

Product Application:

Strong chemical base in the manufacture of pulp and paper, textiles, drinking water, soaps and detergents.

Manufacturer/Supplier:

Formosa Plastics Corporation, Americas
201 Formosa Drive
Point Comfort, TX 77978 USA
+1 (361) 987-7000
E-Mail: MSDS@fpcusa.com

Business Division: Chlor-Alkali

Emergency Telephone Number:

In case of a chemical emergency, contact CHEMTREC (24 hrs) at:
+1 (800) 424-9300 (United States, Canada, Puerto Rico, Virgin Islands)
+1 (703) 527-3887 (International & Maritime)

2 Hazards Identification

Classification of the Substance or Mixture:

Skin Corrosion 1A H314 Causes severe skin burns and eye damage.
Eye Damage 1 H318 Causes serious eye damage.

Hazards Not Otherwise Classified: May be harmful if swallowed.

Hazard Pictograms:



GHS05

Signal Word: DANGER

Hazard Statements:

H318 Causes serious eye damage.
H314 Causes severe skin burns and eye damage.

Precautionary Statements:

P260 Do not breathe dusts or mists.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P533 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P309+P311 IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician.
P363 Wash contaminated clothing before reuse.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local regulations.

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Product Identifier: Liquid Caustic Soda 50% Membrane Grade

(Contd. from Page 2)

Most Important Symptoms and Effects: No further relevant information available.

5 Firefighting Measures

Suitable Extinguishing Agents:

CO2, extinguishing powder or water spray. Fight larger fires with water spray.

Unsuitable Extinguishing Agents: None.

Special Firefighting Hazards: No special firefighting hazards expected.

Protective Equipment:

In the event of a fire, wear a NIOSH (USA) or CEN (EU) approved self-contained breathing apparatus (SCBA) and full protective clothing.

Additional Information: Evacuate all non-essential personnel from the danger area.

6 Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures:

In case of a spill or other accidental release of this material, contact your supervisor, safety administrator, or emergency response team immediately.
Restrict access to keep out unauthorized or unprotected personnel.
Stay upwind of spilled material.

Wear appropriate personal protective equipment during all clean-up activities. See Section 8 for more information.
Avoid inhalation and direct contact.

All clean-up personnel must be properly trained.

Environmental Precautions:

Keep spilled material out of sewage/drainage systems and waterways.
This product contains a U.S. EPA Reportable Quantity (RQ) substance. If amounts exceeding the Reportable Quantity are released, notification of the National Response Center +1 (800) 424-8802 is required. See Section 15 for more information.

Methods for Containment and Clean-Up:

Secure the source of the leak if conditions are safe.
Use neutralizing agent.
Collect using an appropriate absorbent material such as clay or sand.
Place waste in an appropriate container for disposal.
Use care during clean-up to avoid exposure to the material and injury from broken containers.

Reference to Other Sections:

See Section 7 for information on safe handling.
See Section 8 for information on personal protective equipment.
See Section 13 for disposal information.

7 Handling and Storage

Precautions for Safe Handling:

When diluting, always stir the product into water, not water to product.
Do not mix with water without dilution and agitation to prevent potentially violent reaction.
Avoid inhalation and direct contact.

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Product Identifier: Liquid Caustic Soda 50% Membrane Grade

(Contd. from Page 7)

· Packing Group:	II
· DOT, ADR, IMDG, IATA	II
· Environmental Hazards:	Not applicable.
· Marine Pollutant:	No
· Special Precautions:	Warning: Corrosive substances
· Danger Code (Kemler):	80
· EMS Number:	F-A,S-B
· Segregation Groups:	(SGG18) Alkalis
· Stowage Category	A
· Segregation Code:	SG35 Stow "separated from" SGG1-acids
· Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:	Not applicable.
· Additional Information:	Shippers must consult transportation regulations for packaging instructions, quantity limitations and other regulatory information applicable to the desired mode of transport.
· DOT:	
· Quantity Limitations:	On passenger aircraft/raill: 1 L On cargo aircraft only: 30 L
· Remarks:	This product contains a U.S. EPA Reportable Quantity (RQ) substance. If amounts exceeding the Reportable Quantity are released, notification of the National Response Center +1 (800) 424-8802 is required. See Section 15 for more information. Shippers must consult transportation regulations for packaging instructions, quantity limitations and other regulatory information applicable to the desired mode of transport.
· ADR:	
· Excepted Quantities (EQ):	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· Tunnel Restriction Code:	E
· IMDG:	
· Limited Quantities (LQ):	1L
· Excepted Quantities (EQ):	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· UN "Model Regulation":	UN 1824 SODIUM HYDROXIDE SOLUTION, 8, II

N/A

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15 Regulatory Information

· Safety, health and environmental regulations/legislation specific for the substance or mixture
· U.S. Superfund Amendments & Reauthorization Act (SARA) 355 (Extremely Hazardous Substances): None of the ingredients is listed.
· U.S. Superfund Amendments & Reauthorization Act (SARA) 313 (Specific Toxic Chemical Listings): None of the ingredients is listed.
· U.S. Environmental Protection Agency Reportable Quantity: 1310-73-2 sodium hydroxide: 1,000 lbs.
· U.S. Toxic Substances Control Act (TSCA):
· Hazardous Air Pollutants None of the ingredients is listed.
· California Proposition 65:
· California Proposition 65 Carcinogens: Materials used in the manufacturing process may result in contamination with trace quantities (<0.0001%) of various metals listed under Proposition 65. Contact Formosa Plastics Corporation, U.S.A. for more information. None of the ingredients is listed.
· New Jersey Right-to-Know List: 1310-73-2 sodium hydroxide
· New Jersey Special Hazardous Substance List: 1310-73-2 sodium hydroxide: CO, R1
· Pennsylvania Right-to-Know List: 1310-73-2 sodium hydroxide
· Pennsylvania Special Hazardous Substance List: 1310-73-2 sodium hydroxide: E
· Canadian Substance Listings:
· Canadian Domestic Substances List (DSL): All ingredients are listed.
· Canadian Non-Domestic Substances List (NDSL) None of the ingredients is listed.
· Canadian Ingredient Disclosure List (limit 0.1%): None of the ingredients is listed.
· Canadian Ingredient Disclosure List (limit 1%): 1310-73-2 sodium hydroxide
· GHS Label Elements: The product is classified and labeled according to the Globally Harmonized System (GHS).

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N/A

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Product Identifier: Liquid Caustic Soda 50% Membrane Grade

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· Hazard Pictograms:

GHS05
· Signal Word: DANGER
· Hazard Statements: H318 Causes serious eye damage. H314 Causes severe skin burns and eye damage.
· Other Hazards: May be harmful if swallowed.
· Precautionary Statements: P260 Do not breathe dusts or mists. P280 Wear protective gloves/protective clothing/eye protection/face protection. P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P309+P311 IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician. P363 Wash contaminated clothing before reuse. P405 Store locked up. P501 Dispose of contents/container in accordance with local regulations.
· Additional Precautionary Statements: See Section 2.
· Chemical Safety Assessment: A Chemical Safety Assessment has not been carried out.

16 Other Information

This information is furnished without warranty, expressed or implied, except that it is accurate to the best knowledge of Formosa Plastics Corporation, U.S.A. at the time it was prepared. Formosa Plastics Corporation, U.S.A. does not assume any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, Formosa Plastics Corporation, U.S.A. and its subsidiaries cannot guarantee that these are the only hazards that exist. Formosa Plastics Corporation, U.S.A. assumes no legal responsibility for loss, damage or expense arising out of, or in any way connected with, the handling, storage, use or disposal of this product.
· Department Issuing Safety Data Sheet: Corporate Environment, Health & Safety
· Abbreviations & Acronyms: ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road) IMDG: International Maritime Code for Dangerous Goods DOT: US Department of Transportation IATA: International Air Transport Association EINECS: European Inventory of Existing Commercial Chemical Substances ELINCS: European List of Notified Chemical Substances CAS: Chemical Abstracts Service (division of the American Chemical Society) NFPA: National Fire Protection Association (USA) LC50: Lethal concentration, 50 percent

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N/A

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Product Identifier: Liquid Caustic Soda 50% Membrane Grade

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LD50: Lethal dose, 50 percent TLV: Threshold Limit Value PEL: Permissible Exposure Limit REL: Recommended Exposure Limit Acute Toxicity - Oral 4: Acute toxicity - Category 4 Skin Corrosion 1A: Skin corrosion/irritation - Category 1A Eye Damage 1: Serious eye damage/eye irritation - Category 1

· **Sources & References:** * - Indicates that data has been updated from the previous version.

N/A



SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name: ChemTreat CN220
Product Use: Cleaner
Supplier's Name: ChemTreat, Inc.
Emergency Telephone Number: (800)424-9300 (Toll Free)
Address (Corporate Headquarters): 5640 Cox Road
Glen Allen, VA 23060
Telephone Number for Information: (800)648-4579
Date of SDS: February 7, 2019
Revision Date: February 7, 2019
Revision Number: 19020701AN

Section 2. Hazard(s) Identification

Signal Word: DANGER

GHS Classification(s): Skin corrosion/irritation – Category 1b
Eye damage/irritation – Category 1
Acute Toxicity Dermal – Category 4
Acute Toxicity Inhalation – Category 4
Acute Toxicity Oral – Category 4

Hazard Statement(s): H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.
H312 Harmful in contact with skin.
H332 Harmful if inhaled.
H302 Harmful if swallowed.

Precautionary Statement(s):

Prevention: P260 Do not breathe dust/fume/gas/mist/vapors/spray.
P264 Wash thoroughly after handling.
P270 Do not eat, drink, or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.



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Section 4. First Aid Measures

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a poison center or doctor/physician.

Eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor/physician.

Skin: Immediately remove/take off all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before re-use. Immediately call a poison center or doctor/physician.

Ingestion: DO NOT INDUCE VOMITING. Rinse mouth. Call a POISON CENTER or doctor/physician.

Most Important Symptoms: N/D

Indication of Immediate Medical Attention and Special Treatment Needed, if Necessary: N/A

Section 5. Fire Fighting Measures

Flammability of the Product: Not flammable.

Suitable Extinguishing Media: Use extinguishing media suitable to surrounding fire.

Specific Hazards Arising from the Chemical: Use water spray to keep containers cool.

Protective Equipment: If product is involved in a fire, wear full protective clothing including a positive-pressure, NIOSH approved, self-contained breathing apparatus.

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Response:

P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER/doctor.
P363 Wash contaminated clothing before reuse.

Storage: P405 Store locked up.

Disposal: P501 Dispose of contents and container in accordance with applicable local, regional, national, and/or international regulations.

System of Classification Used: Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Hazards Not Otherwise Classified: None.

Section 3. Composition/Hazardous Ingredients

Component	CAS Registry #	Wt.%
Silicic acid, disodium salt	6834-92-0	1 – 5
Ethylene diamine tetraacetic acid, tetrasodium salt	64-02-8	1 – 5
1-Methoxy-2-propanol	107-98-2	1 – 5

Comments If chemical identity and/or exact percentage of composition has been withheld, this information is considered to be a trade secret.

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Section 6. Accidental Release Measures

Personal Precautions: Use appropriate Personal Protective Equipment (PPE).

Environmental Precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.

Methods for Cleaning up: Contain and recover liquid when possible. Flush spill area with water spray.

Other Statements: None.

Section 7. Handling and Storage

Handling: Wear appropriate Personal Protective Equipment (PPE) when handling this product. Do not get in eyes, or on skin and clothing. Wash thoroughly after handling. Do not ingest. Avoid breathing vapors, mist or dust.

Storage: Store away from incompatible materials (see Section 10). Store at ambient temperatures. Keep container securely closed when not in use. Label precautions also apply to empty container. Recondition or dispose of empty containers in accordance with government regulations. For Industrial use only. Store above Freeze Point.

Section 8. Exposure Controls/Personal Protection

Exposure Limits

Component	Source	Exposure Limits
Silicic acid, disodium salt	N/E	N/E
Ethylene diamine tetraacetic acid, tetrasodium salt	N/E	N/E
1-Methoxy-2-propanol	N/E	N/E

Engineering Controls: Use only with adequate ventilation. The use of local ventilation is recommended to control emission near the source.

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Personal Protection

Eyes:	Wear chemical splash goggles or safety glasses with full-face shield. Maintain eyewash fountain in work area.
Skin:	Maintain quick-drench facilities in work area. Wear butyl rubber or neoprene gloves. Wash them after each use and replace as necessary. If conditions warrant, wear protective clothing such as boots, aprons, and coveralls to prevent skin contact.
Respiratory:	If misting occurs, use NIOSH approved organic vapor/acid gas dual cartridge respirator with a dust/mist prefilter in accordance with 29 CFR 1910.134.

Section 9. Physical and Chemical Properties

Physical State and Appearance:	Liquid, Colorless, Slightly Hazy
Specific Gravity:	1.049 @ 20°C
pH:	13.0 @ 20°C, 100.0%
Freezing Point:	32°F
Flash Point:	N/D
Odor:	Mild
Melting Point:	N/A
Initial Boiling Point and Boiling Range:	212°F
Solubility in Water:	Complete
Evaporation Rate:	N/A
Vapor Density:	N/D
Molecular Weight:	N/D
Viscosity:	<100 CPS @ 20°C
Flammability (solid, gas):	N/D
Flammable Limits:	N/A
Autoignition Temperature:	N/A
Density:	8.75 LB/GA
Vapor Pressure:	N/D
% VOC:	N/D
Odor Threshold	N/D
n-octanol Partition Coefficient	N/D
Decomposition Temperature	N/D

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Section 10. Stability and Reactivity

Chemical Stability:	Stable at normal temperatures and pressures.
Incompatibility with Various Substances:	Strong oxidizers, Acids.
Hazardous Decomposition Products:	Oxides of carbon.
Possibility of Hazardous Reactions:	None known.
Reactivity:	N/D
Conditions To Avoid:	N/D

Section 11. Toxicological Information

Acute Toxicity

Chemical Name	Exposure	Type of Effect	Concentration	Species
Silicic acid, disodium salt	Oral	LD50	800 MG/KG	Rat
Ethylene diamine tetraacetic acid, tetrasodium salt	Oral	LD50	3030 MG/KG	Rat
	Dermal	LD50	>5000 MG/KG	Rabbit

Carcinogenicity Category

Component	Source	Code	Brief Description
Silicic acid, disodium salt	N/E	N/E	N/E
Ethylene diamine tetraacetic acid, tetrasodium salt	N/E	N/E	N/E
1-Methoxy-2-propanol	N/E	N/E	N/E

Likely Routes of Exposure: N/D

Symptoms

Inhalation:	N/D
Eye Contact:	N/D
Skin Contact:	N/D
Ingestion:	N/D

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Skin Corrosion/Irritation:	N/D
Serious Eye Damage/Eye Irritation:	N/D
Sensitization:	N/D
Germ Cell Mutagenicity:	N/D
Reproductive/Developmental Toxicity:	N/D
Specific Target Organ Toxicity	
Single Exposure:	N/D
Repeated Exposure:	N/D
Aspiration Hazard:	N/D
Comments:	None.

Section 12. Ecological Information

Ecotoxicity

Species	Duration	Type of Effect	Test Results
N/D	N/D	N/D	N/D

Persistence and Biodegradability:	N/D
Bioaccumulative Potential:	N/D
Mobility In Soil:	N/D
Other Adverse Effects:	N/D
Comments:	Not tested.

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Section 13. Disposal Considerations

Dispose of in accordance with local, state and federal regulations. EPA corrosivity characteristic hazardous waste D002 when disposed of in the original product form.

Section 14. Transport Information

Controlling Regulation	UN/NA#:	Proper Shipping Name:	Technical Name:	Hazard Class:	Packing Group:
DOT	UN3266	CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S.	(DISODIUM METASILICATE)	8	PGIII

Note: N/A

Section 15. Regulatory Information

Inventory Status

United States (TSCA): All ingredients listed.
Canada (DSL/NDL): All ingredients listed.

Federal Regulations

SARA Title III Rules

Sections 311/312 Hazard Classes

Fire Hazard:	No
Reactive Hazard:	No
Release of Pressure:	No
Acute Health Hazard:	Yes
Chronic Health Hazard:	No

Other Sections

Component	Section 313 Toxic Chemical	Section 302 EHS TPQ	CERCLA RQ
Silicic acid, disodium salt	N/A	N/A	N/A
Ethylene diamine tetraacetic acid, tetrasodium salt	N/A	N/A	N/A
1-Methoxy-2-propanol	N/A	N/A	N/A

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Comments: None.

State Regulations

California Proposition 65: None known.

Special Regulations

Component	States
Silicic acid, disodium salt	None.
Ethylene diamine tetraacetic acid, tetrasodium salt	None.
1-Methoxy-2-propanol	MA, MN, PA, WA

Compliance Information

NSF: N/A

Food Regulations: N/A

KOSHER: This product has not been evaluated for Kosher approval.

Halal: This product has not been evaluated for Halal approval.

FIFRA: N/A

Other: None

Comments: None.

Section 16. Other Information

HMIS Hazard Rating

Health: 3
Flammability: 0
Physical Hazard: 1
PPE: X

Notes: The PPE rating depends on circumstances of use. See Section 8 for recommended PPE. The Hazardous Material Information System (HMIS) is a voluntary, subjective alpha-numeric symbolic system for recommending hazard risk and personal protection equipment information. It is a subjective rating system based on the evaluator's understanding of the chemical associated risks. The end-user must determine if the code is appropriate for their use.

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Abbreviations

Abbreviation	Definition
<	Less Than
>	Greater Than
ACGIH	American Conference of Governmental Industrial Hygienists
EHS	Environmental Health and Safety Dept
N/A	Not Applicable
N/D	Not Determined
N/E	Not Established
OSHA	Occupational Health and Safety Dept
PEL	Personal Exposure Limit
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weight Average
UNK	Unknown

Prepared by: Product Compliance Department; ProductCompliance@chemtreat.com

Revision Date: February 7, 2019

Disclaimer

Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, ChemTreat, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ChemTreat, Inc. be responsible for damages of any nature whatsoever resulting from the use or reliance upon information. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.

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SAFETY DATA SHEET



ZEP-O-CLEAN_12CS QTS

Version 2.0 Revision Date 05/06/2018 Print Date 03/24/2023

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Material name : ZEP-O-CLEAN_12CS QTS

Material number : 00000000000138901

Manufacturer or supplier's details

Company : Zep Inc.

Address : 350 Joe Frank Harris Parkway, SE
Emerson, GA 30137

Telephone : 404-352-1680

Emergency telephone numbers

For SDS Information : Compliance Services 1-877-428-9937

For a Medical Emergency : 877-541-2016 Toll Free - All Calls Recorded

For a Transportation Emergency : CHEMTREC: 800-424-9300 - All Calls Recorded.
In the District of Columbia 202-483-7616

Recommended use of the chemical and restrictions on use

Recommended use : Bathroom Care Maintenance

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	liquid
Colour	opaque
Odour	pungent

GHS Classification

Skin corrosion : Category 1

Serious eye damage : Category 1

Specific target organ toxicity - single exposure : Category 3 (Respiratory system)

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : H314 Causes severe skin burns and eye damage.
H335 May cause respiratory irritation.

Precautionary statements : Prevention:
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.

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P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.

P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.

P363 Wash contaminated clothing before reuse.

Storage:

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

Disposal:

P501 Dispose of contents/container in accordance with local regulation.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Concentration [%]
hydrochloric acid	7647-01-0	>= 20 - < 30

The exact percentages of disclosed substances are withheld as trade secrets.

SECTION 4. FIRST AID MEASURES

General advice : Move out of dangerous area.
Get medical attention immediately.
Show this safety data sheet to the doctor in attendance.
Do not leave the victim unattended.

If inhaled : If unconscious, place in recovery position and seek medical advice.
If symptoms persist, call a physician.

In case of skin contact : Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.
Wash off immediately with plenty of water for at least 15 minutes.
Remove contaminated clothing and shoes.
Wash contaminated clothing before re-use.
If skin irritation persists, call a physician.

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- In case of eye contact : Small amounts splashed into eyes can cause irreversible tissue damage and blindness.
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Continue rinsing eyes during transport to hospital.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear.
DO NOT induce vomiting unless directed to do so by a physician or poison control center.
Never give anything by mouth to an unconscious person.
Take victim immediately to hospital.
- Most important symptoms and effects, both acute and delayed : Effects are dependent on exposure (dose, concentration, contact time).
Effects are immediate and delayed.
Symptoms may include blistering, irritation, burns, and pain.
Symptoms may include shortness of breath, dry cough, and irritation of the nose, eyes, lips, mouth, and throat.
Causes severe skin burns and eye damage.
May cause respiratory irritation.
Review section 2 of SDS to see all potential hazards.
- Notes to physician : Treat symptomatically. Symptoms may be delayed.

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
- Unsuitable extinguishing media : High volume water jet
- Specific hazards during firefighting : Do not allow run-off from fire fighting to enter drains or water courses.
- Hazardous combustion products : Carbon dioxide (CO2)
Carbon monoxide
Chlorine compounds
- Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Standard procedure for chemical fires.
- Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if necessary.

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			7 mg/m3	
		C	5 ppm	OSHA Z-1
			7 mg/m3	
		C	5 ppm	OSHA P0
			7 mg/m3	
		PEL	0.3 ppm	CAL PEL
			0.45 mg/m3	
		C	2 ppm	CAL PEL

Engineering measures : effective ventilation in all processing areas

Personal protective equipment

- Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.
- Hand protection : Protective gloves
- Material : The suitability for a specific workplace should be discussed with the producers of the protective gloves.
- Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves.
- Eye protection : Access to clean water to rinse eyes must be available, options include: eye wash stations or showers, or eye wash bottles with pure water.
Tightly fitting safety goggles
Wear face-shield and protective suit for abnormal processing problems.
- Skin and body protection : Impervious clothing
Choose body protection according to the amount and concentration of the dangerous substance at the work place.
- Hygiene measures : When using do not eat or drink.
When using do not smoke.
Wash hands before breaks and at the end of workday.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : liquid
- Colour : opaque
- Odour : pungent
- Odour Threshold : No data available
- pH : < 2
- Boiling point : 107.2 °C
- Flash point : does not flash
- Evaporation rate : No data available

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SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Ensure adequate ventilation.
Refer to protective measures listed in sections 7 and 8.
- Environmental precautions : Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods and materials for containment and cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Sweep up or vacuum up spillage and collect in suitable container for disposal.

SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : Avoid formation of aerosol.
Do not breathe vapours/dust.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Provide sufficient air exchange and/or exhaust in work rooms.
To avoid spills during handling keep bottle on a metal tray.
Dispose of rinse water in accordance with local and national regulations.
- Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Observe label precautions.
Electrical installations / working materials must comply with the technological safety standards.
- Materials to avoid : Oxidizing agents
Store and keep away from bases and alkalis.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
hydrochloric acid	7647-01-0	C	2 ppm	ACGIH
		C	5 ppm	NIOSH REL

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- Upper explosion limit : No data available
- Lower explosion limit : No data available
- Vapour pressure : No data available
- Relative vapour density : No data available
- Density : 1.115 g/cm3
- Solubility(ies)
- Water solubility : soluble
- Partition coefficient: n-octanol/water : No data available
- Auto-ignition temperature : not determined
- Thermal decomposition : No data available
- Viscosity
- Viscosity, kinematic : No data available

SECTION 10. STABILITY AND REACTIVITY

- Reactivity : Stable
- Chemical stability : Stable under normal conditions.
- Possibility of hazardous reactions : No decomposition if stored and applied as directed.
- Conditions to avoid : No data available
- Incompatible materials : Oxidizing agents
Bases
- Hazardous decomposition products : Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke).

SECTION 11. TOXICOLOGICAL INFORMATION

Potential Health Effects

- Aggravated Medical Condition : None known.
- Symptoms of Overexposure : Effects are dependent on exposure (dose, concentration, contact time).
Effects are immediate and delayed.
Symptoms may include blistering, irritation, burns, and pain.
Symptoms may include shortness of breath, dry cough, and irritation of the nose, eyes, lips, mouth, and throat.

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Carcinogenicity:

IARC

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

OSHA

No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Acute toxicity

No data available

Skin corrosion/irritation

Product:

Remarks: Extremely corrosive and destructive to tissue.

Serious eye damage/eye irritation

Product:

Remarks: May cause irreversible eye damage.

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

STOT - single exposure

No data available

STOT - repeated exposure

No data available

Aspiration toxicity

No data available

Further information

Product:

Remarks: No data available

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Transportation Regulation: 49 CFR (USA):

UN3264, Corrosive liquid, acidic, inorganic, n.o.s., (HYDROCHLORIC ACID), 8, II - Limited quantity

Transportation Regulation: IMDG (Vessel):

UN3264, CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S., (HYDROCHLORIC ACID), 8, II - Limited quantity

Transportation Regulation: IATA (Cargo Air):

UN3264, Corrosive liquid, acidic, inorganic, n.o.s., (HYDROCHLORIC ACID), 8, II

Transportation Regulation: IATA (Passenger Air):

UN3264, Corrosive liquid, acidic, inorganic, n.o.s., (HYDROCHLORIC ACID), 8, II

Transportation Regulation: TDG (Canada):

UN3264, CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S., (HYDROCHLORIC ACID), 8, II - Limited quantity

The product as delivered to the customer conforms to packaging requirements for shipment by road under US Department of Transportation (DOT) regulations. Additional transportation classifications noted above are for reference only, and not a certification or warranty of the suitability of the packaging for shipment under these alternative transport regulations.

SECTION 15. REGULATORY INFORMATION

TSCA list

: No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
hydrochloric acid	7647-01-0	5000	*

*: Calculated RQ exceeds reasonably attainable upper limit.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards

: Skin corrosion or irritation
Serious eye damage or eye irritation
Specific target organ toxicity (single or repeated exposure)

SARA 302

: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313

: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

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SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

No data available

Persistence and degradability

No data available

Bioaccumulative potential

Product:

Partition coefficient: n-octanol/water

: Remarks: No data available

Mobility in soil

No data available

Other adverse effects

No data available

Product:

Regulation

40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances

Remarks

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App. A + B).

Additional ecological information

: No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues

: The product should not be allowed to enter drains, water courses or the soil.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Dispose of in accordance with local regulations.

Contaminated packaging

: Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

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California Prop. 65

This product contains a chemical that is at or below California Propositions 65's "safe harbor level" for reproductive/developmental toxicity as determined via a risk assessment. Therefore, the chemical is not required to be listed as a Prop 65 chemical on the SDS or label.

The components of this product are reported in the following inventories:

DSL

All components of this product are on the Canadian DSL

TSCA

On TSCA Inventory

For information on the country notification status for other regions please contact the manufacturer's regulatory group.

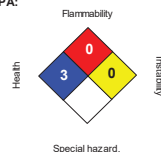
Inventory Acronym and Validity Area Legend:

TSCA (USA), DSL (Canada), NDSL (Canada)

SECTION 16. OTHER INFORMATION

Further information

NFPA:



HMIS III:

HEALTH	3
FLAMMABILITY	0
PHYSICAL HAZARD	0

0 = not significant, 1 = Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

OSHA - GHS Label Information:

Hazard pictograms



Signal word

Hazard statements

Precautionary statements

Danger:

: Causes severe skin burns and eye damage. May cause respiratory irritation.

Prevention: Avoid breathing dust/fume/gas/mist/vapours/spray. Wash skin thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear

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protective gloves/ protective clothing/ eye protection/ face protection.
Response: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor. Wash contaminated clothing before reuse.
Storage: Store in a well-ventilated place. Keep container tightly closed.
Disposal: Dispose of contents/container in accordance with local regulation.

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We believe the statements, technical information and recommendations contained herein are reliable, but they are given without warranty or guarantee of any kind. The information in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. Users should make their own investigations to determine the suitability and applicability of the information for their particular purposes. This SDS has been prepared by the Compliance Services organization supporting this manufacturer, supplier or distributor.

Zep Inc. markets products under well recognized and established brand names such as Zep®, Zep Commercial®, Zep Professional®, Enforcer®, National Chemical™, Selig™, Misty®, Next Dimension™, Petro®, i-Chem®, TimeMist®, TimeWick™, MicrobeMax®, Country Vet®, Konk®, Original Bike Spirits®, Blue Coral®, Black Magic®, Rain-X®, Niagara National™, FC Forward Chemicals®, Rexodan®, Mykal™, and a number of private labeled brands.

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Hazard statements
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H335 - May cause respiratory irritation

Precautionary statements
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
P332 + P313 - If skin irritation occurs: Get medical attention
P362 - Take off contaminated clothing and wash before reuse
P280 - Wear protective gloves, protective clothing, eye protection, and face protection
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P337 + P313 - If eye irritation persists: Get medical attention
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray
P271 - Use only outdoors or in a well-ventilated area
P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing
P312 - Call a POISON CENTER or doctor if you feel unwell
P403 + P233 - Store in a well-ventilated place. Keep container tightly closed
P405 - Store locked up
P501 - Dispose of contents/ container to an approved waste disposal plant

Other Hazards Known
May be harmful if swallowed

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance
Chemical Name Citric Acid
Chemical Family Organic Acid.
Formula C₆H₈O₇
CAS No 77-92-9
Alternate CAS Number 5949-29-1 - Monohydrate
Chemical nature Organic Compound.

Percent ranges are used where confidential product information is applicable.

Chemical name	CAS No	Percent Range	HMRIC #
Citric acid	77-92-9	100%	-

4. FIRST AID MEASURES

Description of first aid measures

General advice Show this safety data sheet to the doctor in attendance.

Inhalation Remove to fresh air. IF exposed or concerned: Get medical advice/attention. Get medical attention immediately if symptoms occur.

Eye contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Remove contact lenses, if present and easy to do. Continue

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1. IDENTIFICATION

Product identifier
Product Name Citric Acid

Other means of identification
Product Code(s) 1454899

Safety data sheet number M00072

Recommended use of the chemical and restrictions on use
Recommended Use Laboratory reagent.
Uses advised against Consumer use.
Restrictions on use For Laboratory Use Only.

Details of the supplier of the safety data sheet

Manufacturer Address
Hach Company, P.O.Box 389, Loveland, CO 80539, USA, +1(970) 669-3050

Emergency telephone number
+1(303) 623-5716 - 24 Hour Service

2. HAZARDS IDENTIFICATION

Classification

Regulatory Status

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2A
Specific target organ toxicity (single exposure)	Category 3

Hazards not otherwise classified (HNOC)

Not applicable

Label elements

Signal word
Warning

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rinsing. Get medical attention if irritation develops and persists. Do not rub affected area.

Skin contact Wash off immediately with soap and plenty of water for at least 15 minutes. Get medical attention if irritation develops and persists.

Ingestion Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Call a physician.

Self-protection of the first aider Avoid contact with skin, eyes or clothing.

Most important symptoms and effects, both acute and delayed

Symptoms Burning sensation.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media Caution: Use of water spray when fighting fire may be inefficient.

Specific hazards arising from the chemical No information available.

Hazardous combustion products Carbon monoxide. Carbon dioxide (CO₂).

Special protective equipment for fire-fighters Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. ACCIDENTAL RELEASE MEASURES

U.S. Notice Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(1)) and per your company's emergency response plan and guidelines/procedures. See Section 13. Special Instructions for disposal assistance. Outside of the US, only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.

Personal precautions, protective equipment and emergency procedures

Personal precautions Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Avoid contact with skin, eyes or clothing.

Other information Refer to protective measures listed in Sections 7 and 8.

Environmental precautions

Environmental precautions Prevent further leakage or spillage if safe to do so.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Take up mechanically, placing in appropriate containers for disposal.

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Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

Reference to other sections See section 8 for more information. See section 13 for more information.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse. Ensure adequate ventilation. Avoid breathing vapors or mists. In case of insufficient ventilation, wear suitable respiratory equipment.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place.

Flammability class Not applicable

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

Appropriate engineering controls

Engineering Controls Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Respiratory protection No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

Hand Protection Wear suitable gloves. Impervious gloves. Barrier creams may help to protect the exposed areas of skin. Gloves must be inspected prior to use. The selected protective gloves have to satisfy the specifications of EU Directive 2016/425 and the standard EN 374 derived from it. Chemical resistant gloves made of butyl rubber or nitrile rubber category III according to EN 374-1:2016.

Eye/face protection If splashes are likely to occur, wear safety glasses with side-shields.

Skin and body protection Wear suitable protective clothing. Long sleeved clothing. Avoid contact with eyes, skin and clothing.

General Hygiene Considerations Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Avoid contact with skin, eyes or clothing.

Environmental exposure controls Local authorities should be advised if significant spillages cannot be contained. Do not allow into any sewer, on the ground or into any body of water.

Thermal hazards None under normal processing.

9. PHYSICAL AND CHEMICAL PROPERTIES

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This Product is by Weight 100% an Individual Pure Chemical Substance

Chemical name	CAS No	Volatile organic compounds (VOC) content	CAA (Clean Air Act)
Citric acid	77-92-9	Not applicable	-

Explosive properties

Upper explosion limit 64%
Lower explosion limit 18%

Flammable properties

Flash point Not applicable

Flammability Limit in Air

Upper flammability limit: No data available
Lower flammability limit: No data available

Oxidizing properties

No data available.

Bulk density 560 kg/m³

10. STABILITY AND REACTIVITY

Reactivity

Not applicable.

Chemical stability

Stable under normal conditions.

Explosion data

Sensitivity to Mechanical Impact None.
Sensitivity to Static Discharge None.

Possibility of hazardous reactions

None under normal processing.

Hazardous polymerization

Hazardous polymerization does not occur.

Conditions to avoid

None known based on information supplied.

Incompatible materials

Strong acids. Strong bases. Strong oxidizing agents.

Hazardous decomposition products

Carbon monoxide. Carbon dioxide (CO₂). Thermal decomposition can lead to release of irritating and toxic gases and vapors.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

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Information on basic physical and chemical properties

Physical state	Solid	Color	white
Appearance	crystalline	Odor threshold	Not applicable
Odor	Odorless		
Property	Values	Remarks	Method
Molecular weight	192.12 g/mole		
pH	2.1		0.1 M
Melting point/freezing point	153 °C / 307.4 °F		
Boiling point / boiling range	No data available		
Evaporation rate	Not applicable		
Vapor pressure	Not applicable		
Relative vapor density	No data available		
Specific gravity (water = 1 / air = 1)	1.67		
Partition Coefficient (n-octanol/water)	log K _{ow} = -1.72		
Soil Organic Carbon-Water Partition Coefficient	log K _{oc} = -1.16		
Autoignition temperature	1010 °C / 1850 °F		
Decomposition temperature	175 °C / 347 °F		
Dynamic viscosity	Not applicable		
Kinematic viscosity	Not applicable		

Solubility(ies)

Water solubility

Water solubility classification	Water solubility	Water Solubility Temperature
Completely soluble	750000 mg/L	25 °C / 77 °F

Solubility in other solvents

Chemical Name	Solubility classification	Solubility	Solubility Temperature
Acids	Soluble	> 1000 mg/L	25 °C / 77 °F
Ethyl alcohol	Soluble	> 1000 mg/L	25 °C / 77 °F
Methanol	Soluble	> 1000 mg/L	25 °C / 77 °F
Benzene	Insoluble	< 0.1 mg/L	25 °C / 77 °F
Chloroform	Insoluble	< 0.1 mg/L	25 °C / 77 °F

Other information

Metal Corrosivity

Steel Corrosion Rate	Not applicable
Aluminum Corrosion Rate	Not applicable

Volatile Organic Compounds (VOC) Content

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Inhalation	May cause irritation of respiratory tract.
Eye contact	Irritating to eyes. Causes serious eye irritation.
Skin contact	Causes skin irritation.
Ingestion	Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.
Symptoms	Redness. May cause redness and tearing of the eyes.

Acute toxicity

Based on available data, the classification criteria are not met

Product Acute Toxicity Data

If available, see ingredient data below.

Ingredient Acute Toxicity Data

Test data reported below.

Oral Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Citric acid (100%) CAS#: 77-92-9	Rat LD ₅₀	3000 mg/kg	None reported	None reported	IUCLID (The International Uniform Chemical Information Database)

Unknown Acute Toxicity

0% of the mixture consists of ingredient(s) of unknown toxicity.

Acute Toxicity Estimations (ATE)

Not applicable

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral)	No information available
ATEmix (dermal)	No information available
ATEmix (inhalation-dust/mist)	No information available
ATEmix (inhalation-vapor)	No information available
ATEmix (inhalation-gas)	No information available

Skin corrosion/irritation

Classification based on data available for ingredients. Irritating to skin.

Product Skin Corrosion/Irritation Data

If available, see ingredient data below.

Ingredient Skin Corrosion/Irritation Data

Test data reported below.

Chemical name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
Citric acid (100%) CAS#: 77-92-9	Standard Draize Test	Rabbit	500 mg	24 hours	Mild skin irritant	RTECS (Registry of Toxic Effects of Chemical Substances)

Serious eye damage/irritation

Classification based on data available for ingredients. Irritating to eyes.

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Product Serious Eye Damage/Eye Irritation Data
If available, see ingredient data below.

Ingredient Eye Damage/Eye Irritation Data
Test data reported below.

Chemical name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
Citric acid (100%) CAS#: 77-92-9	Standard Draize Test	Rabbit	0.750 mg	24 hours	Eye irritant	RTECS (Registry of Toxic Effects of Chemical Substances)

Respiratory or skin sensitization
Based on available data, the classification criteria are not met.

Product Sensitization Data
If available, see ingredient data below.

Ingredient Sensitization Data
No data available.

STOT - single exposure
May cause respiratory irritation.

Product Specific Target Organ Toxicity Single Exposure Data
If available, see ingredient data below.

Ingredient Specific Target Organ Toxicity Single Exposure Data
No data available.

STOT - repeated exposure
Based on available data, the classification criteria are not met.

Product Specific Target Organ Toxicity Repeat Dose Data
If available, see ingredient data below.

Ingredient Specific Target Organ Toxicity Repeat Exposure Data
Test data reported below.

Inhalation (Dust/Mist) Exposure Route

Carcinogenicity
Based on available data, the classification criteria are not met.

Product Carcinogenicity Data
If available, see ingredient data below.

Ingredient Carcinogenicity Data
No data available.

Chemical name	CAS No	ACGIH	IARC	NTP	OSHA
Citric acid	77-92-9	-	-	-	-

Legend

ACGIH (American Conference of Governmental Industrial Hygienists)	Does not apply
IARC (International Agency for Research on Cancer)	Does not apply
NTP (National Toxicology Program)	Does not apply

No data available.

Partition Coefficient (n-octanol/water) log K_{ow} = -1.72

Mobility

Soil Organic Carbon-Water Partition Coefficient log K_{oc} = -1.16

Other adverse effects
No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from residues/unused products Dispose of waste in accordance with environmental legislation. Dispose of in accordance with local regulations.

Contaminated packaging Do not reuse empty containers.

US EPA Waste Number Not applicable

14. TRANSPORT INFORMATION

DOT	Not regulated
TDG	Not regulated
IATA	Not regulated
IMDG	Not regulated

Additional information
There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods.
If the item is not in a reagent set or kit, the classification given above applies.
If the item is part of a reagent set or kit the classification would change to the following:
UN3316 Chemical Kit, Hazard Class 9, Packing Group II or III.
If the item is not regulated, the Chemical Kit classification does not apply.

15. REGULATORY INFORMATION

National Inventories

TSCA	Complies
DSL/NDSL	Complies

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

International Inventories

EINECS/ELINCS	Complies
ENCS	Complies
IECSC	Complies
KECL - Existing substances	Complies
PICCS	Complies
TCSI	Complies
AICS	Complies

OSHA (Occupational Safety and Health Administration of the US Department of Labor)	Does not apply
--	----------------

Germ cell mutagenicity
Based on available data, the classification criteria are not met.

Product Germ Cell Mutagenicity *invitro* Data
If available, see ingredient data below.

Ingredient Germ Cell Mutagenicity *invitro* Data
No data available.

Product Germ Cell Mutagenicity *invivo* Data
If available, see ingredient data below.

Ingredient Germ Cell Mutagenicity *invivo* Data
No data available.

Reproductive toxicity
Based on available data, the classification criteria are not met.

Product Reproductive Toxicity Data
No data available.

Ingredient Reproductive Toxicity Data
No data available.

Aspiration hazard
Based on available data, the classification criteria are not met.

12. ECOLOGICAL INFORMATION

Ecotoxicity Based on available data, the classification criteria are not met.

Unknown aquatic toxicity 0% of the mixture consists of components(s) of unknown hazards to the aquatic environment.

Product Ecological Data

Aquatic Acute Toxicity
If available, see ingredient data below.

Aquatic Chronic Toxicity
If available, see ingredient data below.

Ingredient Ecological Data

Aquatic Acute Toxicity
No data available.

Aquatic Chronic Toxicity
No data available.

Persistence and degradability

Product Biodegradability Data
No data available.

Bioaccumulation
MATERIAL DOES NOT BIOACCUMULATE
Product Bioaccumulation Data

NZIoC Complies

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
TCSI - Taiwan Chemical Substances Inventory
AICS - Australian Inventory of Chemical Substances
NZIoC - New Zealand Inventory of Chemicals

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

SARA 311/312 Hazard Categories

Acute health hazard	Yes
Chronic Health Hazard	Yes
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals

IMERC: Not applicable

U.S. State Right-to-Know Regulations

This product does not contain any substances regulated by state right-to-know regulations.

U.S. EPA Label Information

Chemical name	FIFRA	FDA
Citric acid	180.0950	21 CFR 184.1033

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION

Special Comments

None

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: FerroVer® (25 mL) Iron Reagent Foil Packs
Catalog Number: 84060

Ashland Specialty Chemical Co.
Drew Division
One Drew Plaza, ...
Bounton, NJ USA 07005

Emergency Telephone Numbers:
(Medical and Transportation)
(303) 923-5716 24 Hour Service
(315) 252-2533 8am - 4pm CST

MSDS Number: M00135
Chemical Name: Not applicable
CAS No.: Not applicable
Chemical Formula: Not applicable
Chemical Family: Not applicable
Hazard: May cause allergic reaction. May cause irritation.
Date of MSDS Preparation:
Day: 15
Month: October
Year: 2009

2. COMPOSITION / INFORMATION ON INGREDIENTS

Sodium Thiosulfate
CAS No.: 10102-17-7
TSCA CAS Number: 7772-98-7
Percent Range: 45.0 - 55.0
Percent Range Units: weight / weight
LD50: Oral rat LD50 > 8 gm/kg
LC50: None reported
TLV: Not established
PEL: Not established
Hazard: May cause irritation.

1,10-Phenanthroline-p-toluenesulfonic Acid Salt
CAS No.: 92798-16-8
TSCA CAS Number: 92798-16-8
Percent Range: 1.0 - 5.0
Percent Range Units: weight / weight
LD50: None reported
LC50: None reported
TLV: Not established
PEL: Not established
Hazard: May cause irritation. Toxic properties unknown.

Sodium Hydroxide
CAS No.: 7732-14-6
TSCA CAS Number: 7775-14-6
Percent Range: 15.0 - 25.0
Percent Range Units: weight / weight
LD50: Oral rat LD50 > 500 mg/kg
LC50: None reported
TLV: Not established
PEL: Not established
Hazard: Allergen Causes moderate eye irritation. Flammable solid.

Additional information

Global Automotive Declarable Substance List (GADSL)
Not applicable
NFPA and HMIS Classifications

NFPA	Health hazards - 2	Flammability - 0	Instability - 0	Physical and chemical properties -
HMIS	Health hazards - 2	Flammability - 0	Physical hazards - 0	Personal protection - 1
				- X

Key or legend to abbreviations and acronyms used in the safety data sheet

NIOSH IDLH Immediately Dangerous to Life or Health
ACGIH ACGIH (American Conference of Governmental Industrial Hygienists)
NDF no data

Legend - Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
MAC	Maximum Allowable Concentration	Ceiling	Ceiling Limit Value
X	Listed	Vacated	These values have no official status. The only binding levels of contaminants are those listed in the final OSHA PEL. These lists are for reference purposes only. Please note that some reference state regulations of these "liberated" exposure limits in their state regulations.
SKN*	Skin designation	SKN+	Skin sensitization
RSP+	Respiratory sensitization	**	Hazard Designation
C	Carcinogen	R	Reproductive toxicant
M	Mutagen		

Prepared By: Hach Product Compliance Department
Issue Date: 23-05-2019
Revision Date: 27-May-2022
Revision Note: None

Disclaimer
USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations. THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. HACH COMPANY©2022

End of Safety Data Sheet

Sodium Citrate
CAS No.: 68-04-2
TSCA CAS Number: 68-04-2
Percent Range: 1.0 - 10.0
Percent Range Units: weight / weight
LD50: Oral rat LD50 > 8 g/Kg
LC50: None reported
TLV: Not established
PEL: Not established
Hazard: May cause irritation.

Sodium Metabisulfite
CAS No.: 7681-57-4
TSCA CAS Number: 7681-57-4
Percent Range: 20.0 - 30.0
Percent Range Units: weight / weight
LD50: Oral rat LD50 ~ 1131 mg/kg
LC50: None reported
TLV: 5 mg/m³ (ACGIH - TW A)
PEL: Not established
Hazard: May cause irritation. May cause allergic reaction.

3. HAZARDS IDENTIFICATION

Emergency Overview:
Appearance: White to light yellow crystals
Odor: Sulfur-like
MAY CAUSE EYE AND RESPIRATORY TRACT IRRITATION
MAY CAUSE ALLERGIC RESPIRATORY REACTION IF SWALLOWED OR INHALED

HMIS:
Health: 2
Flammability: 0
Reactivity: 1
Protective Equipment: X - See protective equipment, Section 8.

NFPA:
Health: 2
Flammability: 0
Reactivity: 1
Symbol: Not applicable
Potential Health Effects:
Eye Contact: May cause irritation
Skin Contact: No effects are anticipated
Skin Absorption: None reported
Target Organs: None reported
Ingestion: May cause: allergic respiratory reaction gastrointestinal irritation circulatory disturbances central nervous system depression. Very large doses may cause: abdominal pain diarrhea vomiting depression
Target Organs: None reported
Inhalation: May cause: respiratory tract irritation allergic respiratory reaction difficult breathing coughing rapid pulse and respirations chest pain blood pressure changes sweating flushing hives
Target Organs: None reported
Medical Conditions Aggravated: Sulfites are strong sensitizers. Inhalation and ingestion may cause allergic respiratory reactions in asthmatics. Persons with respiratory conditions should take special care when working with products that contain sulfites.
Chronic Effects: Chronic overexposure may cause allergic respiratory reactions
Cancer / Reproductive Toxicity Information:
This product does NOT contain any OSHA listed carcinogens.

An ingredient of this mixture is: IARC Group 3: Non-classifiable
Metabisulfites
This product does NOT contain any NTP listed chemicals.
Additional Cancer / Reproductive Toxicity Information: Contains: an experimental mutagen.
Toxicologically Synergistic Products: None reported

4. FIRST AID

Eye Contact: Immediately flush eyes with water for 15 minutes. Call physician.
Skin Contact (First Aid): Wash skin with soap and plenty of water.
Ingestion (First Aid): Give 1-2 glasses of water. Do not induce vomiting. Call physician immediately.
Inhalation: Give artificial respiration if necessary. Remove to fresh air. Call physician.

5. FIRE FIGHTING MEASURES

Flammable Properties: Can burn in fire, releasing toxic vapors.
Flash Point: Not applicable
Method: Not applicable
Flammability Limits:
Lower Explosion Limit: Not applicable
Upper Explosion Limit: Not applicable
Autoignition Temperature: Not determined
Hazardous Combustion Products: Toxic fumes of: sulfur oxides sodium monoxide carbon monoxide, carbon dioxide
Fire / Explosion Hazards: May react violently with: organic materials aluminum / aluminum compounds strong oxidizers combustible materials strong acids water
Static Discharge: None reported
Mechanical Impact: None reported
Extinguishing Media: Carbon dioxide Alcohol foam Dry chemical.
Fire Fighting Instructions: As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Spill Response Notice:
Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.
Containment Technique: Stop spilled material from being released in the environment. Cover spilled solid material with sand or other inert material.
Clean-up Technique: Sweep up material. Dilute with a large excess of water. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Decontaminate the area of the spill with a soap solution.
Evacuation Procedure: Evacuate local area (15 foot radius or as directed by your facility's emergency response plan) when: any quantity is spilled. If conditions warrant, increase the size of the evacuation.
Special Instructions (for accidental release): Not applicable
304 EHS RJ (40 CFR 355): Not applicable
D.O.T. Emergency Response Guide Number: Not applicable

7. HANDLING / STORAGE

Handling: Avoid contact with eyes skin clothing. Do not breathe dust. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.
Storage: Store between 10° and 25°C. Protect from: heat moisture light. Keep away from: acids / acid fumes. Combustible materials organic material oxidizers
Flammability Class: Not applicable

8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

Engineering Controls: Have an eyewash station nearby. Use general ventilation to minimize exposure to mist, vapor or dust. Monitor general industrial hygiene practices when using this product.

Personal Protective Equipment:

Eye Protection: safety glasses with top and side shields

Skin Protection: disposable latex gloves, lab coat

Inhalation Protection: adequate ventilation and / or dust / mist mask

Precautionary Measures: Avoid contact with: eyes, skin, clothing. Do not breathe: dust. Wash thoroughly after handling. Use with adequate ventilation. Protect from: heat. Keep away from: acids/acid fumes, organic materials, combustible material, oxidizers, water.

TLVs: Not established

PELs: Not established

9. PHYSICAL / CHEMICAL PROPERTIES

Appearance: White to light yellow crystals

Physical State: Solid

Molecular Weight: Not applicable

Odor: Sulfur-like

pH: 5% solution ~ 5.29

Vapor Pressure: Not applicable

Vapor Density (air = 1): Not applicable

Boiling Point: Not applicable

Melting Point: decomposes at 192° C

Specific Gravity (water = 1): 2.27

Evaporation Rate (water = 1): Not applicable

Volatile Organic Compounds Content: Not determined

Partition Coefficient (n-octanol / water): Not determined

Solubility:

Water: Soluble

Acid: Soluble

Other: Not determined

Met Corrosivity:

Steel: 0.106 in/yr

Aluminum: 0.093 in/yr

10. STABILITY / REACTIVITY

Chemical Stability: Stable when stored under proper conditions.

Conditions to Avoid: Exposure to light. Excess moisture. Flammable temperatures.

Reactivity / Incompatibility: Incompatible with: combustible materials, organic materials, oxidizers, aluminum, acids, sodium nitrite, sodium chlorite.

Hazardous Decomposition: Heating to decomposition releases toxic and/or corrosive fumes of: sulfur oxides, carbon monoxide, carbon dioxide.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Product Toxicological Data:

LD50: None reported

LC50: None reported

Dermal Toxicity Data: None reported

Skin and Eye Irritation Data: Erythema at 3 minutes, 1 hour, 4 hours, 24 hours, 48 hours, 72 hours ~ 0. Edema at 3 minutes, 1 hour, 4 hours, 24 hours, 48 hours, 72 hours ~ 0.

Mutation Data: Sodium Metabisulfite: cytogenetic analysis hamster ovary 180 µg/1; sister chromatid exchange on hamster ovary @ 200 µg/1.

E.P.A.:

S.A.R.A. Title III Section 311/312 Categorization (49 CFR 570): Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard

S.A.R.A. Title III Section 313 (40 CFR 372): This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

302 (EHS) TPQ (49 CFR 355): Not applicable

304 CERCLA RQ (40 CFR 302.4): Not applicable

304 EHS RQ (40 CFR 355): Not applicable

Clean Water Act (40 CFR 116.4): Not applicable

RCRA: Contains no RCRA regulated substances.

C.P.S.C.: Not applicable

State Regulations:

California Prop. 65: No Prop. 65 listed chemicals are present in this product.

Identification of Prop. 65 Ingredient(s): Not applicable

California Perchlorate Rule CCR Title 22 Chap 33:

Trade Secret Registry: Not applicable

National Inventories:

U.S. Inventory Status: All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

TSCA CAS Number: Not applicable

16. OTHER INFORMATION

Intended Use: Iron determination

References: CCINTO MSDS/FTSS - Canadian Centre for Occupational Health and Safety, Hamilton, Ontario Canada; 30 June 1993. NIOSH Registry of Toxic Effects of Chemical Substances, 1985-86. Cincinnati: U.S. Department of Health and Human Services, April, 1987. Outside Testing, Vendor Information, Gosselin, R. E. et al. Clinical Toxicology of Commercial Products, 5th Ed. Baltimore: The Williams and Wilkins Co., 1984. Sax, N. Irving. Dangerous Properties of Industrial Materials, 7th Ed. New York: Van Nostrand Reinhold Co., 1989. Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Association, 1991. Technical Judgment, Indiana information. 11 V's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Air Contaminants, Federal Register, Vol. 54, No. 12, Thursday, January 19, 1989, pp. 2332-2983.

Revision Summary: Updates in Section(s) 14.

Legend:

NA - Not Applicable
w/w - weight/weight
ND - Not Determined
w/v - weight/volume
NV - Not Available
v/v - volume/volume

USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

HACH COMPANY ©2009

Manufactured by Hach Company for Ashland Specialty Chemical Co.

Reproductive Effects Data: Sodium Metabisulfite: oral rat TDLo = 20 g/kg - effects on newborn - stillbirth; oral rat TDLo = 40 g/kg - effects on newborn - wasting or lactation index.

Ingredient Toxicological Data: Sodium Hydrosulfite: Oral rat LD50 > 500 mg/kg; Sodium Thiosulfate: Oral rat LD50 > 8 g/kg; Sodium Citrate: Oral rat LD50 > 8 g/kg

12. ECOLOGICAL INFORMATION

Product Ecological Information: --

No ecological data available for this product.

Ingredient Ecological Information: Sodium Metabisulfite: 120 ppm / 24, 48 & 96 hours / mosquito fish / 1 Lm / fresh water (converting bisulfite figure to metabisulfite); Sodium Thiosulfate: Aquatic toxicity: 24,000 mg / 1 / 96 hours / mosquito-fish / 1 Lm / turbid water at 22° - 24° C.

13. DISPOSAL CONSIDERATIONS

EPA Waste ID Number: Not applicable

Special Instructions (Disposal): Dilute to 3 to 5 times the volume with cold water. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Open cold water tap completely, slowly pour the reacted material to the drain. Allow cold water to run for 5 minutes to completely flush the system.

Empty Containers: Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.

NOTICE (Disposal): These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

14. TRANSPORT INFORMATION

D.O.T.:

D.O.T. Proper Shipping Name: Not Currently Regulated

--

DOT Hazard Class: NA

DOT Subsidiary Risk: NA

DOT ID Number: NA

DOT Packing Group: NA

I.C.A.O.:

I.C.A.O. Proper Shipping Name: Not Currently Regulated

--

ICAO Hazard Class: NA

ICAO Subsidiary Risk: NA

ICAO ID Number: NA

ICAO Packing Group: NA

I.M.O.:

I.M.O. Proper Shipping Name: Not Currently Regulated

--

I.M.O. Hazard Class: NA

I.M.O. Subsidiary Risk: NA

I.M.O. ID Number: NA

I.M.O. Packing Group: NA

Additional Information: There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG I or III. If the item is not regulated, the Chemical Kit classification does not apply.

15. REGULATORY INFORMATION

U.S. Federal Regulations:

O.S.H.A.: This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard, (29 CFR 1910.1200)



HACH LANGE GmbH

Safety Data Sheet

according to Regulation (EC) No 1907/2006

2301-49 FerroZine Iron Reagent

Revision date: 18.01.2021

Product code: 230149

Page 1 of 10

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product Identifier

2301-49 FerroZine Iron Reagent

UFI: MMC1-2ATQ-P003-Y9VV

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture

Water analysis

1.3. Details of the supplier of the safety data sheet

Company name: HACH LANGE GmbH
Street: Willstätterstr. 11
Place: D-40549 Düsseldorf
Telephone: +49 (0)211 5288-383
e-mail: SDS@hach.com
Internet: www.de.hach.com
Responsible Department: HACH LANGE Ltd.
5, Pacific Way
Salford Manchester M50 1DL - United Kingdom
Tel. +44 (0) 161 872 1487 * Fax +44 (0) 161 848 7324
e-Mail: info-uk@hach.com

HACH LANGE Ltd.
Unit 1, Chestnut Road Western Industrial Estate
IRL-Dublin 12
Tel. +353 (0)1 4602522
e-Mail: info-ie@hach.com

1.4. Emergency telephone number: Poison Control Center Mainz: Tel: +49 (0) 6131 19240 - 24 hour emergency service -

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Regulation (EC) No. 1272/2008

Hazard categories:

Acute toxicity: Acute Tox. 3
Acute toxicity: Acute Tox. 4
Skin corrosion/irritation: Skin Corr. 1B
Serious eye damage/eye irritation: Eye Dam. 1
Respiratory or skin sensitisation: Skin Sens. 1
Respiratory or skin sensitisation: Resp. Sens. 1B
Hazardous to the aquatic environment: Aquatic Chronic 3
Hazard Statements:
Toxic if swallowed.
Harmful if inhaled.
Causes severe skin burns and eye damage.
Causes serious eye damage.
May cause an allergic skin reaction.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Harmful to aquatic life with long lasting effects.

2.2. Label elements

Regulation (EC) No. 1272/2008



Safety Data Sheet

HACH LANGE GmbH

according to Regulation (EC) No 1907/2006

2301-49 FerroZine Iron Reagent

Revision date: 18.01.2021

Product code: 230149

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Hazard components for labelling

Ammonium thioglycolate
thioglycolic acid

Signal word:

Danger

Pictograms:



Hazard statements

H301 Toxic if swallowed.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H332 Harmful if inhaled.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H412 Harmful to aquatic life with long lasting effects.

Precautionary statements

P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P310 Immediately call a POISON CENTER/doctor.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P342+P311 If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.

Additional advice on labelling

The product is classified as dangerous in accordance with Regulation (EC) No. 1272/2008.

2.3. Other hazards

no data available

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Revision No: 2,5

GB - EN

Print date: 08.02.2021



Safety Data Sheet

HACH LANGE GmbH

according to Regulation (EC) No 1907/2006

2301-49 FerroZine Iron Reagent

Revision date: 18.01.2021

Product code: 230149

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5.2. Special hazards arising from the substance or mixture

Fire may liberate hazardous vapours. The following may develop in event of fire: sulfur oxides, Carbon monoxide, Carbon dioxide (CO₂)

5.3. Advice for firefighters

In the case of respirable dust and/or fumes, use self-contained breathing apparatus and dust impervious protective suit.

Additional information

Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective equipment.

6.2. Environmental precautions

Do not flush into surface water or sanitary sewer system.

6.3. Methods and material for containment and cleaning up

Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Sweep up or vacuum up spillage and collect in suitable container for disposal.

6.4. Reference to other sections

13. Disposal considerations

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling

Avoid contact with skin and eyes.

Advice on protection against fire and explosion

See also section 5

Further information on handling

Avoid contact with skin, eyes and clothing.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Keep container tightly closed in a dry and well-ventilated place.

Hints on joint storage

Incompatible with acids.

7.3. Specific end use(s)

Reagent for analysis

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure limits (EH40)

CAS No	Substance	ppm	mg/m ³	fibres/ml	Category	Origin
68-11-1	Mercaptoacetic acid	1	3,8		TWA (8 h)	WEL

Additional advice on limit values

None known.

8.2. Exposure controls

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Hazardous components

CAS No	Chemical name	EC No	Index No	REACH No	Quantity
	GHS Classification				
5421-46-5	Ammonium thioglycolate				35,0-45,0 %
	226-540-9				
	Skin Irrit. 2, Eye Irrit. 2, Resp. Sens. 1B, Skin Sens. 1, Aquatic Chronic 3; H315 H319 H334 H317 H412				
7732-18-5	Water				20-30 %
	231-791-2				
68-11-1	thioglycolic acid				25,0-35,0 %
	200-677-4	607-090-00-6			
	Acute Tox. 3, Acute Tox. 3, Acute Tox. 3, Skin Corr. 1B; H331 H311 H301 H314				
69898-45-9	Ferrozine				<1 %

Full text of H and EUH statements: see section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

General information

Take off contaminated clothing and shoes immediately.
Show this safety data sheet to the doctor in attendance.

After inhalation

Move to fresh air in case of accidental inhalation of dust or fumes from overheating or combustion.
Consult a physician for severe cases.

After contact with skin

Wash off immediately with plenty of water.
If skin irritation persists, call a physician.

After contact with eyes

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Consult a physician.

After ingestion

Clean mouth with water and drink afterwards plenty of water.
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Call a physician immediately.

4.2. Most important symptoms and effects, both acute and delayed

Irritation and corrosion

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

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Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice.

Protective and hygiene measures

The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Wash hands before breaks and at the end of workday.

Eye/face protection

Safety glasses with side-shields

Hand protection

Use barrier skin cream. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Skin protection

Avoid contact with skin, eyes and clothing.

Respiratory protection

In the case of dust or aerosol formation use respirator with an approved filter.
Recommended Filter type: ABEK-filter

Environmental exposure controls

Do not flush into surface water or sanitary sewer system.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state:	liquid
Colour:	yellow
Odour:	strong, unpleasant
pH-Value (at 20 °C):	3,5

Changes in the physical state

Melting point:	not applicable
Initial boiling point and boiling range:	no data available
Sublimation point:	not applicable
Softening point:	not applicable
Pour point:	no data available
:	no data available
Flash point:	not applicable

Flammability

Solid:	no data available
Gas:	no data available

Explosive properties

not applicable

Lower explosion limits: not applicable

Upper explosion limits: not applicable

Ignition temperature: no data available

Auto-ignition temperature

Solid: no data available

Gas: no data available

Decomposition temperature: no data available

Oxidizing properties

not applicable

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Vapour pressure: no data available
Vapour pressure: no data available
Density (at 20 °C): 1,310 g/cm³
Bulk density: no data available
Water solubility: (at 20 °C) miscible
Solubility in other solvents
no data available
Partition coefficient: no data available
Viscosity / dynamic: no data available
Viscosity / kinematic: no data available
Flow time: no data available
Vapour density: no data available
Evaporation rate: no data available
Solvent separation test: no data available
Solvent content: no data available

9.2. Other information

Solid content: no data available
no data available

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity Hazard: Oxidizing agents

10.2. Chemical stability

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

Reacts with the following substances: Oxidizing agents, Strong acids

10.4. Conditions to avoid

Extremes of temperature and direct sunlight.

10.5. Incompatible materials

Strong acids and oxidizing agents

10.6. Hazardous decomposition products

To avoid thermal decomposition, do not overheat. Heating can release hazardous gases.
Ammonia, Sulphur oxides

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity

LD50/oral/rat = 190mg/kg

ATEmix calculated

ATE (oral) 247,0 mg/kg; ATE (inhalation vapour) 10,15 mg/l; ATE (inhalation aerosol) 1,691 mg/l

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CAS No	Chemical name	Exposure route	Dose	Species	Source	Method
5421-46-5	Ammonium thioglycolate	dermal	LD50 mg/kg	7900	rabbit	
68-11-1	thioglycolic acid	oral	LD50	73 mg/kg	rat	RTECS
	dermal	LD50	848	rat		
	inhalation vapour	ATE	3 mg/l			
	inhalation aerosol	ATE	0,5 mg/l			

Irritation and corrosivity

Causes burns.

Sensitising effects

May cause sensitisation by skin contact.

May cause sensitisation by inhalation.

Carcinogenic/mutagenic/toxic effects for reproduction

Contains no ingredient listed as a carcinogen

STOT-single exposure

The substance or mixture is not classified as specific target organ toxicant, single exposure.

STOT-repeated exposure

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration hazard

No aspiration toxicity classification

Specific effects in experiment on an animal

No toxicology information is available.

Additional information on tests

None known.

Practical experience

Other observations

None known.

Further information

Handle in accordance with good industrial hygiene and safety practice.

SECTION 12: Ecological information

12.1. Toxicity

No data is available on the product itself.

12.2. Persistence and degradability

No data is available on the product itself.

12.3. Bioaccumulative potential

no data available

12.4. Mobility in soil

no data available

12.5. Results of PBT and vPvB assessment

no data available

12.6. Other adverse effects

Discharge into the environment must be avoided.

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SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal recommendations

In accordance with local and national regulations.

List of Wastes Code - residues/unused products

160506 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; gases in pressure containers and discarded chemicals; laboratory chemicals, consisting of or containing hazardous substances, including mixtures of laboratory chemicals; hazardous waste

List of Wastes Code - used product

160506 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; gases in pressure containers and discarded chemicals; laboratory chemicals, consisting of or containing hazardous substances, including mixtures of laboratory chemicals; hazardous waste

List of Wastes Code - contaminated packaging

160506 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; gases in pressure containers and discarded chemicals; laboratory chemicals, consisting of or containing hazardous substances, including mixtures of laboratory chemicals; hazardous waste

SECTION 14: Transport information

Land transport (ADR/RID)

14.1. UN number:

UN 2922

14.2. UN proper shipping name:

CORROSIVE LIQUID, TOXIC, N.O.S. (Thioglycolic acid/ammonium thioglycolate)

14.3. Transport hazard class(es):

8

14.4. Packing group:

II

Hazard label:



Classification code:

CT1

Special Provisions:

274

Limited quantity:

1 L

Excepted quantity:

E2

Transport category:

2

Hazard No:

86

Tunnel restriction code:

E

Other applicable information (land transport)

Excepted Quantities: E2

Inland waterways transport (ADN)

Other applicable information (inland waterways transport)

Not tested

Marine transport (IMDG)

14.1. UN number:

UN 2922

14.2. UN proper shipping name:

CORROSIVE LIQUID, TOXIC, N.O.S. (Thioglycolic acid/ammonium thioglycolate solution)

14.3. Transport hazard class(es):

8

14.4. Packing group:

II

Hazard label:

8+6.1



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Marine pollutant:

-

Special Provisions:

274

Limited quantity:

1 L

EmS:

F-A, S-B

Other applicable information (marine transport)

Excepted Quantities: E2

Air transport (ICAO-TIATA-DGR)

14.1. UN number:

UN 2922

14.2. UN proper shipping name:

CORROSIVE LIQUID, TOXIC, N.O.S. (Thioglycolic acid/ammonium thioglycolate solution)

14.3. Transport hazard class(es):

8

14.4. Packing group:

II

Hazard label:

8+6.1



Special Provisions:

Limited quantity Passenger:

A3 A803

IATA-packing instructions - Passenger:

0.5 L

IATA-max. quantity - Passenger:

851

IATA-packing instructions - Cargo:

1 L

IATA-max. quantity - Cargo:

855

Other applicable information (air transport)

Excepted Quantities: E2

Passenger-LQ: Y840

14.5. Environmental hazards

ENVIRONMENTALLY HAZARDOUS:

No

14.6. Special precautions for user

Use personal protective equipment.

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

not applicable

Other applicable information

not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

EU regulatory information

Restrictions on use (REACH, annex XVII):

Entry 3

National regulatory information

Employment restrictions:

Observe restrictions to employment for juveniles according to the 'juvenile work protection guideline' (94/33/EC). Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.

Water hazard class (D):

2 - obviously hazardous to water

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15.2. Chemical safety assessment

Chemical safety assessments for substances in this mixture were not carried out.

SECTION 16: Other information

Changes

Revision: 18.01.2021

Safety datasheet sections which have been updated: 7

Revision: 7.05.2018

Safety datasheet sections which have been updated: 2, 11

Revision: 27.04.2017

Safety datasheet sections which have been updated: 2

Revision: 21.05.2015

Safety datasheet sections which have been updated: 2, 4, 11

Revision: 17.12.2013

Safety datasheet sections which have been updated: 9, 14

Classification for mixtures and used evaluation method according to Regulation (EC) No. 1272/2008 [CLP]

Classification	Classification procedure
Acute Tox. 3; H301	Calculation method
Acute Tox. 4; H332	Calculation method
Skin Corr. 1B; H314	Calculation method
Eye Dam. 1; H318	Calculation method
Skin Sens. 1; H317	Calculation method
Resp. Sens. 1B; H334	Calculation method
Aquatic Chronic 3; H412	Calculation method

Relevant H and EUH statements (number and full text)

H301	Toxic if swallowed.
H311	Toxic in contact with skin.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H331	Toxic if inhaled.
H332	Harmful if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H412	Harmful to aquatic life with long lasting effects.

Further Information

The information is based on the present level of our knowledge. It does not, however, give assurance of product properties and establishes no contract legal rights.

(The data for the hazardous ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.)

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Hazard statements

H302 - Harmful if swallowed
H312 - Harmful in contact with skin
H315 - Causes skin irritation
H317 - May cause an allergic skin reaction
H319 - Causes serious eye irritation
H370 - Causes damage to organs
H372 - Causes damage to organs through prolonged or repeated exposure

Precautionary statements

P270 - Do not eat, drink or smoke when using this product.
P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
P330 - Rinse mouth
P501 - Dispose of contents/ container to an approved waste disposal plant
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
P312 - Call a POISON CENTER or doctor/physician if you feel unwell
P363 - Wash contaminated clothing before reuse
P362 - Take off contaminated clothing and wash before reuse
P280 - Wear protective gloves, protective clothing, eye protection, and face protection
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P337 + P313 - If eye irritation persists: Get medical attention
P272 - Contaminated work clothing should not be allowed out of the workplace
P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention
P260 - Do not breathe dust/fume/gas/mist/vapors/spray
P308 + P311 - IF exposed or concerned: Call a POISON CENTER or doctor
P405 - Store locked up

Other Hazards Known

None

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance

Not applicable

Mixture

Chemical Family Mixture.
Chemical nature Aqueous alkaline solution.

Percent ranges are used where confidential product information is applicable.

Chemical name	CAS No	Percent Range	HMRIC #
Ethanesulfonic acid, 2-[bis(2-hydroxyethyl)amino]-	10191-18-1	1 - 5%	-
Methanaminium, N,N,N-trimethyl-, hydroxide, pentahydrate	10424-65-4	1 - 5%	-

4. FIRST AID MEASURES

Description of first aid measures

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1. IDENTIFICATION

Product identifier
Product Name Chlorophosphonazo Indicator Solution

Other means of identification
Product Code(s) 2589549

Safety data sheet number M00491

Recommended use of the chemical and restrictions on use

Recommended Use Laboratory reagent.
Uses advised against Consumer use.
Restrictions on use For Laboratory Use Only.

Details of the supplier of the safety data sheet

Manufacturer Address
Hach Company, P.O.Box 389, Loveland, CO 80539, USA, +1(970) 669-3050

Emergency telephone number
+1(303) 625-5716 - 24 Hour Service

2. HAZARDS IDENTIFICATION

Classification

Regulatory Status

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity - Oral	Category 4
Acute toxicity - Dermal	Category 4
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2A
Skin sensitization	Category 1
Specific target organ toxicity (single exposure)	Category 1
Specific target organ toxicity (repeated exposure)	Category 1

Hazards not otherwise classified (HNOC)

Not applicable

Label elements

Signal word

Danger

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General advice Show this safety data sheet to the doctor in attendance.

Inhalation Remove to fresh air. IF exposed or concerned: Get medical advice/attention. Get medical attention immediately if symptoms occur.

Eye contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If symptoms persist, call a physician. Keep eye wide open while rinsing. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists. Do not rub affected area.

Skin contact May cause an allergic skin reaction. If symptoms persist, call a physician. Wash off immediately with soap and plenty of water for at least 15 minutes.

Ingestion Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Call a physician.

Self-protection of the first aider Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Avoid contact with skin, eyes or clothing.

Most important symptoms and effects, both acute and delayed

Symptoms Itching. Rashes. Hives. Burning sensation.

Indication of any immediate medical attention and special treatment needed

Note to physicians May cause sensitization in susceptible persons. Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media Caution: Use of water spray when fighting fire may be inefficient.

Specific hazards arising from the chemical Product is or contains a sensitizer. May cause sensitization by skin contact.

Hazardous combustion products This material will not burn.

Special protective equipment for fire-fighters Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. ACCIDENTAL RELEASE MEASURES

U.S. Notice Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13. Special Instructions for disposal assistance. Outside of the US, only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.

Personal precautions, protective equipment and emergency procedures

Personal precautions Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

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Other information Refer to protective measures listed in Sections 7 and 8.

Environmental precautions

Environmental precautions Prevent further leakage or spillage if safe to do so.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Pick up and transfer to properly labeled containers.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

Reference to other sections See section 8 for more information. See section 13 for more information.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Keep out of the reach of children. Store locked up.

Flammability class Not applicable

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

Appropriate engineering controls

Engineering Controls Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Respiratory protection No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

Hand Protection Wear suitable gloves. Impervious gloves. Barrier creams may help to protect the exposed areas of skin. Gloves must be inspected prior to use. The selected protective gloves have to satisfy the specifications of EU Directive 2016/425 and the standard EN 374 derived from it. Chemical resistant gloves made of butyl rubber or nitrile rubber category III according to EN 374-1:2016.

Eye/face protection Wear safety glasses with side shields (or goggles). If splashes are likely to occur, wear safety glasses with side-shields.

Skin and body protection Wear suitable protective clothing. Long sleeved clothing.

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Metal Corrosivity

Steel Corrosion Rate No data available
Aluminum Corrosion Rate No data available

Volatile Organic Compounds (VOC) Content

Chemical name	CAS No	Volatile organic compounds (VOC) content	CAA (Clean Air Act)
Ethanesulfonic acid, 2-[bis(2-hydroxyethyl)amino]-	10191-18-1	No data available	-
Methanaminium, N,N,N-trimethyl-, hydroxide, pentahydrate	10424-65-4	No data available	-

Explosive properties

Upper explosion limit Not applicable
Lower explosion limit Not applicable

Flammable properties

Flash point No data available

Flammability Limit in Air

Upper flammability limit: No data available
Lower flammability limit: No data available

Oxidizing properties

No data available.

Bulk density Not applicable

10. STABILITY AND REACTIVITY

Reactivity
Not applicable.

Chemical stability
Stable under normal conditions.

Explosion data
Sensitivity to Mechanical Impact None.
Sensitivity to Static Discharge None.

Possibility of hazardous reactions
None under normal processing.

Hazardous polymerization
Hazardous polymerization does not occur.

Conditions to avoid
None known based on information supplied.

Incompatible materials
Strong acids. Strong bases. Strong oxidizing agents.

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General Hygiene Considerations Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product.

Environmental exposure controls Local authorities should be advised if significant spillages cannot be contained. Do not allow into any sewer, on the ground or into any body of water.

Thermal hazards None under normal processing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Liquid	Color	dark violet
Appearance	aqueous solution	Odor threshold	Not applicable
Odor	Odorless		
Property	Values	Remarks - Method	
Molecular weight	Not applicable		
pH	7.26		@ 20 °C
Melting point / freezing point	~ -1 °C / 30.2 °F		
Initial boiling point and boiling range	98 °C / 208.4 °F		
Evaporation rate	1.03 (water = 1)		
Vapor pressure	23.627 mm Hg / 3.15 kPa at 25 °C / 77 °F		
Relative vapor density	0.62		
Specific Gravity	1.06		
Partition coefficient	No data available		
Soil Organic Carbon-Water Partition Coefficient	No data available		
Autoignition temperature	No data available		
Decomposition temperature	No data available		
Dynamic viscosity	~ 1.06 cP (mPa s) at 20 °C / 68 °F		
Kinematic viscosity	~ 1 cSt (mm²/s) at 20 °C / 68 °F		
Solubility(ies)			
Water solubility			
Water solubility classification	Water solubility	Water Solubility Temperature	
Soluble	> 1000 mg/L	25 °C / 77 °F	
Solubility in other solvents			
Chemical Name	Solubility classification	Solubility	Solubility Temperature
Acid	Soluble	> 1000 mg/L	25 °C / 77 °F

Other information

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Hazardous decomposition products
Carbon dioxide. Carbon monoxide. Nitrogen oxides. Sulfur oxides. Ammonia.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product information

Inhalation May cause irritation of respiratory tract.

Eye contact Irritating to eyes. Causes serious eye irritation.

Skin contact May cause sensitization by skin contact. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons. Causes skin irritation.

Ingestion Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Harmful if swallowed.

Symptoms Itching. Rashes. Hives. Redness. May cause redness and tearing of the eyes.

Acute toxicity
Harmful if swallowed
Harmful in contact with skin

Mixture
No data available.

Ingredient Acute Toxicity Data
Test data reported below.

Oral Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Methanaminium, N,N,N-trimethyl-, hydroxide, pentahydrate (1 - 5%) CAS: 10424-65-4	Rat LD ₅₀	34 mg/kg	None reported	None reported	NITE

Dermal Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Methanaminium, N,N,N-trimethyl-, hydroxide, pentahydrate (1 - 5%) CAS: 10424-65-4	Rat LD ₅₀	25 mg/kg	None reported	None reported	ECHA

Unknown Acute Toxicity
7E-06% of the mixture consists of ingredient(s) of unknown toxicity.

Acute Toxicity Estimations (ATE)

The following values are calculated based on chapter 3.1 of the GHS document

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ATEmix (oral)	1,824.80 mg/kg
ATEmix (dermal)	1,341.80 mg/kg
ATEmix (inhalation-dust/mist)	No information available
ATEmix (inhalation-vapor)	No information available
ATEmix (inhalation-gas)	No information available

Skin corrosion/irritation

Classification based on data available for ingredients. Irritating to skin.

Mixture

No data available.

Ingredient Skin Corrosion/Irritation Data

Test data reported below.

Chemical name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
Methanaminium, N,N,N-trimethyl-, hydroxide, pentahydrate (1 - 5%) CAS#: 10424-65-4	Standard Draize Test	Guinea pig	25 mg	24 hours	Corrosive to skin	NITE

Serious eye damage/irritation

Classification based on data available for ingredients. Irritating to eyes.

Mixture

No data available.

Ingredient Eye Damage/Eye Irritation Data

No data available.

Respiratory or skin sensitization

May cause sensitization by skin contact.

Mixture

No data available.

Ingredient Sensitization Data

No data available.

STOT - single exposure

Based on the classification criteria of the Globally Harmonized System as adopted in the country or region with which this safety data sheet complies, this product has been determined to cause systemic target organ toxicity from acute exposure. (STOT SE). Causes damage to organs if swallowed. Causes damage to organs in contact with skin.

Mixture

No data available.

Ingredient Specific Target Organ Toxicity Single Exposure Data

Test data reported below.

Oral Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Methanaminium, N,N,N-trimethyl-, hydroxide,	TD ₀₁ Rat	23 mg/kg	None reported	Behavioral Clonic convulsions Salivation	NITE

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pentahydrate (1 - 5%) CAS#: 10424-65-4				Ataxia	
---	--	--	--	--------	--

STOT - repeated exposure

Causes damage to organs through prolonged or repeated exposure.

Mixture

No data available.

Ingredient Specific Target Organ Toxicity Repeat Exposure Data

No data available.

Carcinogenicity

Based on available data, the classification criteria are not met.

Mixture

No data available.

Ingredient Carcinogenicity Data

No data available.

Chemical name	CAS No	ACGIH	IARC	NTP	OSHA
Ethanesulfonic acid, 2-[bis(2-hydroxyethyl)amino]-	10191-18-1	-	-	-	-
Methanaminium, N,N,N-trimethyl-, hydroxide, pentahydrate	10424-65-4	-	-	-	-

Legend

ACGIH (American Conference of Governmental Industrial Hygienists)	Does not apply
IARC (International Agency for Research on Cancer)	Does not apply
NTP (National Toxicology Program)	Does not apply
OSHA	Does not apply

Germ cell mutagenicity

Based on available data, the classification criteria are not met.

Mixture *in vitro* Data

No data available.

Substance *in vitro* Data

No data available.

Mixture *in vivo* Data

No data available.

Substance *in vivo* Data

No data available.

Reproductive toxicity

Based on available data, the classification criteria are not met.

Mixture

No data available.

Ingredient Reproductive Toxicity Data

No data available.

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Aspiration hazard

Based on available data, the classification criteria are not met.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Based on available data, the classification criteria are not met.

Unknown aquatic toxicity

1E-05% of the mixture consists of components(s) of unknown hazards to the aquatic environment.

Mixture

Aquatic Acute Toxicity

No data available.

Aquatic Chronic Toxicity

No data available.

Substance

Aquatic Acute Toxicity

No data available.

Aquatic Chronic Toxicity

No data available.

Persistence and degradability

Mixture

No data available.

Bioaccumulation

There is no data for this product

Mixture

No data available.

Partition coefficient

No data available

Mobility

Soil Organic Carbon-Water Partition Coefficient

No data available

Other adverse effects

No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from residues/unused products

Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging

Do not reuse empty containers.

US EPA Waste Number

Not applicable

Special instructions for disposal

If permitted by regulation. Dilute to 3 to 5 times the volume with cold water. Open cold water tap completely, slowly pour the material to the drain. Allow cold water to run for 5 minutes to

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completely flush the system. Dispose of material in an E.P.A. approved hazardous waste facility.

14. TRANSPORT INFORMATION

DOT	Not regulated
TDG	Not regulated
IATA	Not regulated
IMDG	Not regulated

Additional information

15. REGULATORY INFORMATION

National Inventories

TSCA	Complies
DSL/NDSL	Complies

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

International Inventories

EINECS/ELINCS	Complies
ENCS	Does not comply
IECSC	Complies
KECL - Existing substances	Does not comply
PICCS	Does not comply
TCSI	Complies
AICS	Does not comply
NZIoC	Does not comply

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

TCSI - Taiwan Chemical Substances Inventory

AICS - Australian Inventory of Chemical Substances

NZIoC - New Zealand Inventory of Chemicals

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

SARA 311/312 Hazard Categories

Acute health hazard	Yes
Chronic Health Hazard	Yes
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

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CERCLA
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

US State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals

IMERC: Not applicable

U.S. State Right-to-Know Regulations

This product may contain substances regulated by state right-to-know regulations.

U.S. EPA Label Information

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION

Special Comments
None

Additional information

Global Automotive Declarable Substance List (GADSL)

Not applicable

NFPA and HMIS Classifications

NFPA	Health hazards - 3	Flammability - 0	Instability - 0	Physical and chemical properties -
HMIS	Health hazards - 3	Flammability - 0	Physical hazards - 0	Personal protection -
	- *		X	- I

Key or legend to abbreviations and acronyms used in the safety data sheet

ACGIH	ACGIH (American Conference of Governmental Industrial Hygienists)
ATSDR	ATSDR (Agency for Toxic Substances and Disease Registry)
CCRIS	CCRIS (Chemical Carcinogenesis Research Information System)
CDC	CDC (Center for Disease Control)
CEPA	CEPA (Canadian Environmental Protection Agency)
CICAD	CICAD (Concise International Chemical Assessment Documents)
ECHA	ECHA (The European Chemicals Agency)
EEA	EEA (European Environment Agency)
EPA	EPA (Environmental Protection Agency)
ERMA	ERMA (New Zealands Environmental Risk Management Authority)
ECOSARS	Estimation through ECOSARS v1.11 part of the Estimation Programs Interface (EPI) Suite™
FDA	FDA (Food & Drug Administration)
GESTIS	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)
HSDB	HSDB (Hazardous Substances Data Bank)
INERIS	INERIS (The National Industrial Environment and Risks Institute)
IPCS INCHEM	IPCS INCHEM (International Programme on Chemical Safety)
IUCLID	IUCLID (The International Uniform Chemical Information Database)
NITE	Japan National Institute of Technology and Evaluation (NITE)
NIH	NIH (National Institutes of Health)

NIOSH	NIOSH (National Institute for Occupational Safety and Health)
LOLI	LOLI (List of Lists - An International Chemical Regulatory Database)
NDF	no data
NICNAS	Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
NIOSH IDLH	Immediately Dangerous to Life or Health
OSHA	OSHA (Occupational Safety and Health Administration of the US Department of Labor)
PEEN	PEEN (Pan European Ecological Network)
RTECS	RTECS (Registry of Toxic Effects of Chemical Substances)
SIDS	SIDS (Screening Information Dataset) for High Volume Chemicals
SYKE	The Finnish Environment Institute (SYKE)
USDA	USDA (United States Department of Agriculture)
USDC	USDC (United States Department of Commerce)
WHO	WHO (World Health Organization)

Legend - Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
MAC	Maximum Allowable Concentration	Ceiling	Ceiling Limit Value
X	Listed	Vacated	These values have no official status. The only binding levels of contaminants are those listed in the final OSHA PEL. These lists are for reference purposes only. Please note that some reference state regulations of these "liberated" exposure limits in their state regulations.

SKN*	Skin designation	SKN+	Skin sensitization
RSP+	Respiratory sensitization	**	Hazard Designation
C	Carcinogen	R	Reproductive toxicant
M	mutagen		

Prepared By Hach Product Compliance Department

Issue Date 12-Jun-2019

Revision Date 26-Jan-2023

Revision Note None

Disclaimer

USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

HACH COMPANY@2022

End of Safety Data Sheet

World Headquarters
Ashland Specialty Chemical Co.
Drew Division
One Drew Plaza, ...
Boonton, NJ USA 07005

Page 1
Date Printed 9/23/04
MSDS No: M00370

World Headquarters
Ashland Specialty Chemical Co.
Drew Division
One Drew Plaza, ...
Boonton, NJ USA 07005

Page 2
Date Printed 9/23/04
MSDS No: M00370

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Buffer Solution pH 10.01 ± 0.02
Catalog Number: 6444-09-5

Ashland Specialty Chemical Co.
Drew Division
One Drew Plaza, ...
Boonton, NJ USA 07005

Emergency Telephone Numbers:
(Medical and Transportation)
(303) 623-5716 24 Hour Service
(515) 232-2533 8am - 4pm CST

MSDS Number: M00370
Chemical Name: Not applicable
CAS No.: Not applicable
Chemical Formula: Not applicable
Chemical Family: Not applicable
Hazard: May cause irritation.
Date of MSDS Preparation:
Day: 23
Month: 09
Year: 2004

2. COMPOSITION / INFORMATION ON INGREDIENTS

Demineralized Water

CAS No.: 7732-18-5
TSCA CAS Number: 7732-18-5
Percent Range: > 99.0
Percent Range Units: volume / volume
LD50: None reported
LC50: None reported
TLV: Not established
PEL: Not established
Hazard: No effects anticipated.

Other components, each

CAS No.: Not applicable
TSCA CAS Number: Not applicable
Percent Range: < 1.0
Percent Range Units: volume / volume
LD50: Not applicable
LC50: Not applicable
TLV: Not established
PEL: Not established
Hazard: Any ingredient(s) of this product listed as "Other component(s)" is not considered a health hazard to the user of this product.

3. HAZARDS IDENTIFICATION

Emergency Overview:
Appearance: Clear, blue
Odor: None

HMIS:

Health: 1
Flammability: 0
Reactivity: 0
Protective Equipment: X - See protective equipment, Section 8.

NFPA:

Health: 0
Flammability: 0
Reactivity: 0
Symbol: Not applicable
Potential Health Effects:
Eye Contact: May cause irritation
Skin Contact: May cause irritation
Skin Absorption: No effects anticipated
Target Organs: Not applicable
Ingestion: None reported
Target Organs: None reported
Inhalation: No effects anticipated
Target Organs: Not applicable
Medical Conditions Aggravated: None reported
Chronic Effects: None reported
Cancer / Reproductive Toxicity Information:

This product does NOT contain any OSHA listed carcinogens.

This product does NOT contain any IARC listed chemicals.

This product does NOT contain any NTP listed chemicals.

Additional Cancer / Reproductive Toxicity Information: None reported
Toxicologically Synergistic Products: None reported

4. FIRST AID

Eye Contact: Immediately flush eyes with water for 15 minutes. Call physician.
Skin Contact (First Aid): Wash skin with plenty of water. Call physician if irritation develops.
Ingestion (First Aid): Give large quantities of water. Call physician immediately.
Inhalation: None required.

5. FIRE FIGHTING MEASURES

Flammable Properties: Material will not burn.
Flash Point: Not applicable
Method: Not applicable
Flammability Limits:
Lower Explosion Limits: Not applicable
Upper Explosion Limits: Not applicable
Autoignition Temperature: Not applicable
Hazardous Combustion Products: None
Fire / Explosion Hazards: None reported
Static Discharge: None reported
Mechanical Impact: None reported
Extinguishing Media: Use media appropriate to surrounding fire conditions
Fire Fighting Instruction: As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Spill Response Notice:

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

Containment Technique: Stop spilled material from being released to the environment.

Clean-up Technique: Cover spilled material with a dry acid, such as citric or boric. Scoop up slurry into a large beaker. Adjust to a pH between 6 and 9 with an acid, such as sulfuric or citric. Flush reacted material to the drain with a large excess of water.

Evacuation Procedure: Evacuate as needed to perform spill clean-up. If conditions warrant, increase the size of the evacuation.

Special Instructions (for accidental release): Not applicable

304 EHS RQ (40 CFR 355): Not applicable

D.O.T. Emergency Response Guide Number: None

7. HANDLING / STORAGE

Handling: Avoid contact with eyes Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

Storage: Protect from heat Keep container tightly closed when not in use.

Flammability Class: Not applicable

8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

Engineering Controls: Maintain general industrial hygiene practices when using this product.

Personal Protective Equipment:

Eye Protection: safety glasses with top and side shields

Skin Protection: disposable latex gloves lab coat

Inhalation Protection: adequate ventilation

Precautionary Measures: Avoid contact with eyes Wash thoroughly after handling.

TLV: Not established

PEL: Not established

9. PHYSICAL / CHEMICAL PROPERTIES

Appearance: Clear, blue

Physical State: Liquid

Molecular Weight: Not applicable

Odor: None

pH: 10.0

Vapor Pressure: Not determined

Vapor Density (air = 1): Not determined

Boiling Point: ~100°C (-212°F)

Melting Point: ~0°C (-32°F)

Specific Gravity (water = 1): 0.990

Evaporation Rate (water = 1): 0.76

Volatile Organic Compounds Content: Not applicable

Partition Coefficient (n-octanol / water): Not determined

Solubility:

Water: Soluble

Acid: Soluble

Other: Not determined

Metal Corrosivity:

Steel: Not determined

Aluminum: Not determined

10. STABILITY / REACTIVITY

Chemical Stability: Stable when stored under proper conditions.

Additional Information: This product may be shipped as part of a chemical kit composed of various compatible dangerous goods for analytical or testing purposes. This kit would have the following classification: Proper Shipping Name: Chemical Kit Hazard Class: 9 UN Number 3316

15. REGULATORY INFORMATION

U.S. Federal Regulations:

O.S.H.A.: This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

E.P.A.:

S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370): Immediate (Acute) Health Hazard

S.A.R.A. Title III Section 313 (40 CFR 372): This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

302 (EHS) TPQ (40 CFR 355): Not applicable

304 CERCLA RQ (40 CFR 302.4): Not applicable

304 EHS RQ (40 CFR 355): Not applicable

Clean Water Act (40 CFR 116.4): Not applicable

RCRA: Contains no RCRA regulated substances.

C.P.S.C.: Not applicable.

State Regulations:

California Prop. 65: No Prop. 65 listed chemicals are present in this product.

Identification of Prop. 65 Ingredient(s): None

Trade Secret Registry: Not applicable

National Inventories:

U.S. Inventory Status: All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

TSCA CAS Number: Not applicable

16. OTHER INFORMATION

Intended Use: Buffer

References: 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989, pp. 2332-2983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Technical Judgment. In-house information.

Revision Summary: Updates in Section(s) 14,

Legend:

NA - Not Applicable w/w - weight/weight
ND - Not Determined w/v - weight/volume
NV - Not Available v/v - volume/volume

USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

HACH COMPANY ©2004

Manufactured by Hach Company for Ashland Specialty Chemical Co.

Conditions to Avoid: Heat Evaporation

Reactivity / Incompatibility: None reported

Hazardous Decomposition: None reported

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Product Toxicological Data:

LD50: None reported

LC50: None reported

Dermal Toxicity Data: None reported

Skin and Eye Irritation Data: None reported

Mutation Data: None reported

Reproductive Effects Data: None reported

Ingredient Toxicological Data: None reported

12. ECOLOGICAL INFORMATION

Product Ecological Information: No information available for this product.

Ingredient Ecological Information: None reported

13. DISPOSAL CONSIDERATIONS

EPA Waste ID Number: None

Special Instructions (Disposal): Adjust to a pH between 6 and 9 with an acid, such as sulfuric or citric. Open cold water tap completely, slowly pour the reacted material to the drain.

Empty Containers: Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.

NOTICE (Disposal): These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

14. TRANSPORT INFORMATION

D.O.T.:

D.O.T. Proper Shipping Name: Not Currently Regulated

--

DOT Hazard Class: NA

DOT Subsidiary Risk: NA

DOT ID Number: NA

DOT Packing Group: NA

I.C.A.O.:

I.C.A.O. Proper Shipping Name: Not Currently Regulated

--

ICAO Hazard Class: NA

ICAO Subsidiary Risk: NA

ICAO ID Number: NA

ICAO Packing Group: NA

L.M.O.:

L.M.O. Proper Shipping Name: Not Currently Regulated

--

L.M.O. Hazard Class: NA

L.M.O. Subsidiary Risk: NA

L.M.O. ID Number: NA

L.M.O. Packing Group: NA



SAFETY DATA SHEET

Crude Glycerine 78%

Section 1: Identification	
Company Identification: PREMIER CHEMICALS & SERVICES, LLC 4856 Revere Avenue, Suite A Baton Rouge, LA 70808	
24 Hour Emergency Telephone:	Call Chemtrec 800-424-9300 Ref#: 200235
Customer Service:	Call 225-926-0059
Common Names:	Methanolysis Crude Glycerine, Glycerol; 1,2,3-Propanetriol; Glycitol; Glycic Alcohol; 1,2,3-Trihydroxypropane; 1,2,3-Propanetriol
Section 2: Hazard(s) Identification	
Emergency Overview	
Appearance: liquid, amber color, with characteristic odor	
CAUTION! MAY CAUSE EYE, SKIN AND RESPIRATORY TRACT IRRITATION. MAY BE HARMFUL IF INHALED.	
Potential Health Effects	
Routes of exposure	
Inhalation, Skin absorption, Skin contact, Eye Contact, Ingestion	
Eye contact	
May cause mild eye irritation. Symptoms include stinging, tearing, and redness.	



SAFETY DATA SHEET

Skin contact

May cause mild skin irritation. Prolonged or repeated contact may dry the skin. Symptoms may include redness, burning, drying and cracking of skin, and skin burns. Unlikely to cause skin irritation or injury. Passage of this material into the body through the skin is possible, but it is unlikely that this would result in harmful effects during safe handling and use.

Ingestion

Swallowing small amounts of this material during normal handling is not likely to cause harmful effects. Swallowing large amounts may be harmful.

Inhalation

It is possible to breathe this material under certain conditions of handling and use (for example, during heating, spraying, or stirring). Breathing small amounts of this material during normal handling is not likely to cause harmful effects. Breathing large amounts may be harmful. Symptoms are not expected at air concentrations below the recommended exposure limits, if applicable (see Section 8.).

Aggravated Medical Condition

Preexisting disorders of the following organs (or organ systems) may be aggravated by exposure to this material: Skin, lung (for example, asthma-like conditions).

Symptoms

Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include: stomach or intestinal upset (nausea, vomiting, diarrhea), thirst, irritation (nose, throat, airways), Headache, Dizziness, central nervous system depression (dizziness, drowsiness, weakness, fatigue, nausea, headache, unconsciousness).

Target Organs

Overexposure to this material (or its components) has been suggested as a cause of the following effects in laboratory animals: mild, reversible liver effects, mild, reversible kidney effects.

Carcinogenicity

This material is not expected to cause cancer in humans since it did not cause cancer in laboratory animals. This material is not listed as a carcinogen by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA).

Reproductive hazard

Based on the available information, risk to the fetus from maternal exposure to this material cannot be assessed.

Hazard Pictograms: NONE

Revised Nov 2016



SAFETY DATA SHEET

Section 3: Composition/Information on Ingredients

Composition:

CAS#	Chemical Name/Ingredient	Concentration
56-81-5	Glycerine	≥78 (w/w)%
7732-18-5	Water	>14 (w/w)%
67-56-1	Methanol	<1 (w/w)%
---	Various soaps, salts & other inorganic materials	<7 (w/w)%

Section 4: First-Aid Measures

First Aid Measures

General Advice:

In case of accident or if you feel unwell, seek medical advice immediately (show directions for use or safety data sheet if possible).

Inhalation:

Move victim to fresh air. Provide respiratory support, if necessary. Get medical attention if cough or other respiratory symptoms develop.

Skin Contact:

Wash skin with plenty of soap and water. Get medical attention if irritation persists.

Eye Contact:

Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Gently remove contacts while flushing. Get medical attention if irritation persists.

Ingestion:

If swallowed, DO NOT induce vomiting. If spontaneous vomiting occurs, keep head below hips, or if patient is lying down, turn body and head to side to prevent aspiration and monitor for breathing difficulty. If symptoms develop, seek medical attention.

Most important signs and symptoms, both short-term and delayed with overexposure

Adverse Effects:

Repeated or prolonged skin contact may cause drying, reddening, itching and cracking.

Indication of any immediate medical attention and special treatment needed

Notes To Physician:

Contains small amounts of methanol (up to 0.6%). Methanol can induce metabolic acidosis with delayed effects. If the product is ingested consider the use of ethanol or fomepizole (Antizol) and hemodialysis. Consult standard literature or contact a poison control center for treatment details.

Revised Nov 2016



SAFETY DATA SHEET

Section 5: Fire-Fighting Measures

Suitable extinguishing media

Alcohol-resistant foam, Carbon dioxide (CO₂), Dry chemical.

Hazardous combustion products

May form: acrolein, aldehydes, carbon dioxide and carbon monoxide, Carbon oxides.

Precautions for fire-fighting

No special fire hazards are known to be associated with this product. Wear full firefighting turn-out gear (full bunker gear), and respiratory protection (SCBA). DO NOT direct a solid stream of water or foam into hot, burning pools of liquid since this may cause frothing and increase fire intensity. Frothing can be violent and possibly endanger any firefighter standing too close to the burning liquid. Use water spray to cool fire-exposed containers and structures until fire is out if it can be done with minimal risk. Avoid spreading burning liquid with water used for cooling purposes.

Section 6: Accidental Release Measures

General Information

Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks

Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Remove all sources of ignition. Provide ventilation.

Section 7: Handling and Storage

Handling

Wash thoroughly after handling. Wash hands before eating. Use with adequate ventilation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation. Wash clothing before reuse.

Storage

Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. No special precautions indicated.

Revised Nov 2016



SAFETY DATA SHEET

Section 8: Exposure Controls/Personal Protection

Exposure Guidelines

GLYCERINE 56-81-5

ACGIH time weighted average 10 mg/m³ Mist.
OSHA Z1 Permissible exposure limit 5 mg/m³ Respirable fraction.
OSHA Z1 Permissible exposure limit 15 mg/m³ Total dust.

General advice

These recommendations provide general guidance for handling this product. Personal protective equipment should be selected for individual applications and should consider factors which affect exposure potential, such as handling practices, chemical concentrations and ventilation. It is ultimately the responsibility of the employer to follow regulatory guidelines established by local authorities.

Exposure controls

Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(s). I. Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below level of overexposure (from known, suspected or apparent adverse effects).

Eye protection

Chemical splash goggles in compliance with OSHA regulations are advised, however, OSHA regulations also permit other type safety glasses. Consult your safety representative.

Skin and body protection

Wear resistant gloves (consult your safety equipment supplier). To prevent repeated or prolonged skin contact, wear impervious clothing and boots.

Respiratory protection

If workplace exposure limit(s) of product or any component is exceeded (see exposure guidelines), a NIOSH-approved air supplied respirator is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH respirators (negative pressure type) under specified conditions (see your industrial hygienist). Engineering or administrative controls should be implemented to reduce exposure.

Section 9: Physical and Chemical Properties

Physical State: Liquid

Odor: Characteristic

Vapor Pressure: No Data Available

Evaporation Rate: No Data Available.

Boiling Point: 290 deg C @ 101.32 kPa

Auto Ignition Temperature: 400 deg C (752.00 deg F)

Decomposition Temperature: 290 deg C

Solubility: Miscible in water.

Appearance: Amber / Yellow Color

pH: Not available.

Vapor Density: 3.17 (H₂O=1)

Viscosity: No Data Available.

Freezing/Melting Point: <18 deg C

Flash Point: >120 deg C

Partition coefficient: No Data Available.

Specific Gravity/Density: 1.3 - 1.2

NFPA Rating: (estimated) Health: 1; Flammability: 1; Reactivity: 0

Revised Nov 2016



SAFETY DATA SHEET

Section 10: Stability and Reactivity

Chemical Stability
Stable.

Conditions to Avoid
Incompatible materials, ignition sources, excess heat.

Incompatibilities with Other Materials
Avoid contact with: Strong oxidizing agents

Hazardous Decomposition Products
Acrolein, aldehydes, carbon dioxide and carbon monoxide.

Hazardous Polymerization
Will not occur.

Thermal decomposition
No data

Section 11: Toxicological Information

RTECS#: CAS# 56-81-5 MA8050000

LD50/LC50: CAS# 56-81-5: Draize test, rabbit, eye: 126 mg/Mld; Draize test, rabbit, eye: 500 mg/24H Mld; Draize test, rabbit, skin: 500 mg/24H Mld; Inhalation, rat: LC50 = >570 mg/m³/1H; Oral, mouse: LD50 = 4090 mg/kg; Oral, rabbit: LD50 = 27 gm/kg; Oral, rat: LD50 = 12600 mg/kg; Skin, rabbit: LD50 = >10 gm/kg;

Carcinogenicity: CAS# 56-81-5: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

Epidemiology: No information available.

Teratogenicity: No information available.

Reproductive Effects: No information available.

Neurotoxicity: No information available.

Mutagenicity: No information available.

Other Studies: No data available.

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Section 12: Ecological Information (non-mandatory)

Aquatic toxicity

Acute and Prolonged Toxicity to Fish
No data

Acute Toxicity to Aquatic Invertebrates
No data

Environmental fate and pathways
No data

Section 13: Disposal Considerations (non-mandatory)

Description of Waste Residues
Long-term storage may result in decomposition of the product.

Safe Handling of Wastes
Handle in accordance with applicable local, state, and federal regulations. Use personal protection measures as required.

Disposal of Wastes / Methods of Disposal
The user is responsible for determining if any discarded material is a hazardous waste (40 CFR 262.11). Dispose of in accordance with federal, state and local regulations.

Methods of Contaminated Packaging Disposal
Empty containers should be completely drained and then discarded or recycled, if possible. Do not cut, drill, grind or weld on empty containers since explosive residues may be present. Dispose of in accordance with federal, state and local regulations.

Section 14: Transport Information (non-mandatory)

DOT (49 CFR 172.101):
UN Proper Shipping Name: Not Regulated
UN/Identification No: Not applicable
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable

TDG (Canada):
UN Proper Shipping Name: Not Regulated
UN/Identification No: Not applicable
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable

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Note:

Dangerous goods descriptions (if indicated above) may not reflect quantity, end-use or region-specific exceptions that can be applied. Consult shipping documents for descriptions that are specific to the shipment.

Section 15: Regulatory Information (non-mandatory)

US FEDERAL TSCA CAS# 56-81-5 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List. **Chemical Test Rules** None of the chemicals in this product are under a Chemical Test Rule. **Section 12b** None of the chemicals are listed under TSCA Section 12b. **TSCA Significant New Use Rule** None of the chemicals in this material have a SNUR under TSCA. **SARA Section 302 (RQ)** None of the chemicals in this material have an RQ. **Section 302 (TPQ)** None of the chemicals in this product have a TPQ. **SARA Codes** CAS # 56-81-5: chronic. **Section 313** No chemicals are reportable under Section 313. **Clean Air Act:** This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depleters. This material does not contain any Class 2 Ozone depleters. **Clean Water Act:** None of the chemicals in this product are listed as Hazardous Substances under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. **OSHA:** None of the chemicals in this product are considered highly hazardous by OSHA. **STATE** CAS# 56-81-5 can be found on the following state right to know lists: Pennsylvania, Minnesota, Massachusetts, California No Significant Risk Level. None of the chemicals in this product are listed. **European/International Regulations** **European Labeling in Accordance with EC Directives Hazard Symbols:** Not available. **Risk Phrases: Safety Phrases: WGK (Water Danger/Protection)** CAS# 56-81-5: 0 **Canada** CAS# 56-81-5 is listed on Canada's DSL List. CAS# 56-81-5 is listed on Canada's DSL List. This product does not have a WHMIS classification. CAS# 56-81-5 is not listed on Canada's Ingredient Disclosure List. **Exposure Limits** CAS# 56-81-5: OEL: AUSTRALIA: TWA 10 mg/m³ OEL: BELGIUM: TWA 10 mg/m³ OEL: FINLAND: TWA 20 mg/m³ OEL: FRANCE: TWA 10 mg/m³ OEL: THE NETHERLANDS: TWA 10 mg/m³ OEL: UNITED KINGDOM: TWA 10 mg/m³ OEL: IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV OEL IN NEW ZEALAND, SINGAPORE, VIE NAM check ACGI TLV

California Prop. 65

This product does not contain any chemicals known to State of California to cause cancer, birth, or any other reproductive defects.

SARA Hazard Classification Acute Health Hazard

SARA 313 Component(s)

Reportable quantity - Components

GLYCERINE 56-81-5 none

Health Flammability Reactivity Other

	Health	Flammability	Reactivity	Other
HMIS	1	1	0	
NFPA	1	1	0	

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Section 16: Other Information

National Fire Protection Association (NFPA) Ratings



Disclaimer:

Premier Chemicals & Services ("Premier") expressly disclaims all express or implied warranties of merchantability and fitness for a particular purpose, with respect to the product or information provided herein. All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Premier makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Premier's control, and, therefore, users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes, and they assume all risks of their use, handling, and disposal of the product, or from the publication or use of, or reliance upon, information contained herein. This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process.

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1. Identification

Product identifier	Methanol
Other means of identification	
Product code	KMe_CH3OH_US_EN
Recommended use	Industrial feedstock
Recommended restrictions	Use in accordance with supplier's recommendations.
Manufacturer/Importer/Supplier/Distributor information	
Company name	Koch Methanol LLC P.O. Box 2219, Wichita, KS 67201-2219 316-828-7672 kochmsds@kochind.com

Emergency

For Chemical Emergency
Call CHEMTREC day or night
1.800.424.9300
Mexico - 1.800.681.9531
Outside USA/Canada
1.703.527.3887
(collect calls accepted)

2. Hazard(s) identification

Physical hazards	Flammable liquids	Category 2
Health hazards	Acute toxicity, oral	Category 3
	Acute toxicity, dermal	Category 3
	Acute toxicity, inhalation	Category 3
	Specific target organ toxicity, single exposure	Category 1 (central nervous system, optic nerve)

OSHA defined hazards

Not classified.

Label elements



Signal word
Danger

Hazard statement
Highly flammable liquid and vapor. Toxic if swallowed. Toxic in contact with skin. Toxic if inhaled. Causes damage to organs (central nervous system, optic nerve).

Precautionary statement

Prevention	Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe mist/vapors. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.
Response	If swallowed: Immediately call a poison center/doctor. Rinse mouth. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor. Take off immediately all contaminated clothing and wash it before reuse. In case of fire: Use appropriate media to extinguish.
Storage	Store in a well-ventilated place. Keep container tightly closed. Keep cool. Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.

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6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist/vapors. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Use appropriate containment to avoid environmental contamination. Transfer by mechanical means such as vacuum truck to a salvage tank or other suitable container for recovery or safe disposal. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. Take precautionary measures against static discharge. Use only non-sparking tools. This product is miscible in water. Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water. Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground. Use appropriate containment to avoid environmental contamination.

7. Handling and storage

Precautions for safe handling	Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Explosion-proof general and local exhaust ventilation. Minimize fire risks from flammable and combustible materials (including combustible dust and static accumulating liquids) or dangerous reactions with incompatible materials. Handling operations that can promote accumulation of static charges include but are not limited to: mixing, filtering, pumping at high flow rates, splash filling, creating mists or sprays, tank and container filling, tank cleaning, sampling, gauging, switch loading, vacuum truck operations. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. Do not breathe mist/vapors. Do not taste or swallow. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. When using, do not eat, drink or smoke. Use only outdoors or in a well-ventilated area. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Wash contaminated clothing before reuse. Observe good industrial hygiene practices. For additional information on equipment bonding and grounding, refer to the Canadian Electrical Code in Canada, (CSA C22.1), or the American Petroleum Institute (API) Recommended Practice 2003, "Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents" or National Fire Protection Association (NFPA) 77, "Recommended Practice on Static Electricity" or National Fire Protection Association (NFPA) 70, "National Electrical Code".
Conditions for safe storage, including any incompatibilities	Store locked up. Keep away from heat, sparks and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Eliminate sources of ignition. Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity. Store in a cool, dry place out of direct sunlight. Store in tightly closed container. Store in a well-ventilated place. Keep in an area equipped with sprinklers. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits		
US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)		
Material	Type	Value
Methanol	PEL	260 mg/m3 200 ppm
Components	Type	Value
Methanol (CAS 67-56-1)	PEL	260 mg/m3 200 ppm

Methanol	SDS US
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Hazard(s) not otherwise classified (HNOC)	Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapor. May cause flash fire or explosion.
Supplemental information	None.

3. Composition/information on ingredients

Substances			
Chemical name	Common name and synonyms	CAS number	%
Methanol		67-56-1	> 99

Composition comments	All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume. This Safety Data Sheet is not a guarantee of product specification or NPK value(s). NPK content is on specified sales orders, customer invoices, or product specification sheets obtained from supplier.
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4. First-aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a poison center or doctor/physician.
Skin contact	Take off immediately all contaminated clothing. Rinse skin with water/shower. Get medical advice/attention if you feel unwell. Get medical attention if irritation develops and persists. Wash contaminated clothing before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
Most important symptoms/effects, acute and delayed	Narcosis. Headache. Dizziness. Nausea, vomiting. Behavioral changes. Decrease in motor functions. Direct contact with eyes may cause temporary irritation.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
General information	Take off immediately all contaminated clothing. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media	Alcohol resistant foam. Carbon dioxide (CO2). Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	Vapors may form explosive mixtures with air. Vapors may travel considerable distance to a source of ignition and flash back. This product is a poor conductor of electricity and can become electrostatically charged. If sufficient charge is accumulated, ignition of flammable mixtures can occur. To reduce potential for static discharge, use proper bonding and grounding procedures. This liquid may accumulate static electricity when filling properly grounded containers. Static electricity accumulation may be significantly increased by the presence of small quantities of water or other contaminants. Material will float and may ignite on surface of water. During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	Highly flammable liquid and vapor.

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US. ACGIH Threshold Limit Values		
Material	Type	Value
Methanol	STEL	250 ppm
	TWA	200 ppm
Components	Type	Value
Methanol (CAS 67-56-1)	STEL	250 ppm
	TWA	200 ppm
US. NIOSH: Pocket Guide to Chemical Hazards		
Material	Type	Value
Methanol	STEL	325 mg/m3 250 ppm
	TWA	260 mg/m3 200 ppm
Components	Type	Value
Methanol (CAS 67-56-1)	STEL	325 mg/m3 250 ppm
	TWA	260 mg/m3 200 ppm

Biological limit values				
ACGIH Biological Exposure Indices				
Material	Value	Determinant	Specimen	Sampling Time
Methanol	15 mg/l	Methanol	Urine	*
Components	Value	Determinant	Specimen	Sampling Time
Methanol (CAS 67-56-1)	15 mg/l	Methanol	Urine	*
* - For sampling details, please see the source document.				

Exposure guidelines

US - California OELs: Skin designation	
Methanol (CAS 67-56-1)	Can be absorbed through the skin.
US - Minnesota Haz Subs: Skin designation applies	
Methanol (CAS 67-56-1)	Skin designation applies.
US - Tennessee OELs: Skin designation	
Methanol (CAS 67-56-1)	Can be absorbed through the skin.
US ACGIH Threshold Limit Values: Skin designation	
Methanol (CAS 67-56-1)	Danger of cutaneous absorption
US. NIOSH: Pocket Guide to Chemical Hazards	
Methanol (CAS 67-56-1)	Can be absorbed through the skin.

Appropriate engineering controls	Explosion-proof general and local exhaust ventilation. Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station and safety shower.
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Individual protection measures, such as personal protective equipment	
Eye/face protection	Wear safety glasses with side shields (or goggles).
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves. Butyl rubber gloves are recommended.
Skin protection	
Other	Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.
Respiratory protection	Chemical respirator with organic vapor cartridge and full facepiece.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.

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General hygiene considerations

When using do not smoke. Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	Colorless liquid.
Physical state	Liquid.
Form	Liquid.
Color	Colorless.
Odor	Alcoholic.
Odor threshold	2000 ppm
pH	Not available.
Melting point/freezing point	-144.4 °F (-98 °C) estimated
Initial boiling point and boiling range	148.1 °F (64.5 °C) estimated
Flash point	51.8 °F (11.0 °C) Tag Closed Cup
Evaporation rate	2.1 (butyl acetate = 1)
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not determined
Flammability limit - upper (%)	Not determined
Vapor pressure	Not determined
Vapor density	1.1 (air=1)
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not determined
Partition coefficient (n-octanol/water)	-0.77 estimated
Auto-ignition temperature	725 °F (385 °C)
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	0.79 g/cm³
Explosive properties	Not explosive.
Flash point class	Flammable IB
Molecular formula	CH3OH
Molecular weight	32.04 g/mol
Oxidizing properties	Not oxidizing.
Surface tension	22.61 mN/m (68 °F (20 °C))

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Strong bases. Strong oxidizing agents. Metals.
Hazardous decomposition products	Carbon monoxide. Formaldehyde.

Hazardous waste code	D001: Waste Flammable material with a flash point <140 F The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT	
UN number	UN1230
UN proper shipping name	Methanol
Transport hazard class(es)	
Class	3
Subsidiary risk	6.1
Label(s)	3
Packing group	II
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	IB2, T7, TP2
Packaging exceptions	150
Packaging non bulk	202
Packaging bulk	242

DOT BULK	
BULK	
UN number	UN1230
UN proper shipping name	Methanol
Transport hazard class(es)	
Class	3
Subsidiary risk	6.1
Label(s)	3
Packing group	II
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	IB2, T7, TP2
Packaging exceptions	150
Packaging non bulk	202
Packaging bulk	242

IATA	
UN number	UN1230
UN proper shipping name	Methanol
Transport hazard class(es)	
Class	3
Subsidiary risk	6.1
Label(s)	3, 6.1
Packing group	II
Environmental hazards	No.
ERG Code	3L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IMDG	
UN number	UN1230
UN proper shipping name	METHANOL
Transport hazard class(es)	
Class	3
Subsidiary risk	6.1
Label(s)	3, 6.1
Packing group	II
Environmental hazards	
Marine pollutant	No.
EmS	F-E, S-D
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

11. Toxicological information

Information on likely routes of exposure	
Inhalation	Toxic if inhaled. May cause damage to organs by inhalation.
Skin contact	Toxic in contact with skin.
Eye contact	Direct contact with eyes may cause temporary irritation.
Ingestion	Toxic if swallowed.
Symptoms related to the physical, chemical and toxicological characteristics	Narcosis. Headache. Dizziness. Nausea, vomiting. Behavioral changes. Decrease in motor functions.
Information on toxicological effects	
Acute toxicity	Toxic if inhaled. Toxic in contact with skin. Toxic if swallowed. Even small amounts (30-250 ml methanol) may be fatal. Symptoms are stomach ache, nausea, vomiting, dullness, visual disorder and blindness.
Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation	Direct contact with eyes may cause temporary irritation.
Respiratory or skin sensitization	
Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	Not classifiable as to carcinogenicity to humans.
IARC Monographs. Overall Evaluation of Carcinogenicity	Not listed.
NTP Report on Carcinogens	Not listed.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)	Not listed.
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Causes damage to organs (central nervous system, optic nerve).
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.
Chronic effects	Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. No data is available on the degradability of this substance.
Persistence and degradability	
Bioaccumulative potential	Log Pow: < 1. Not expected to bioaccumulate on the basis of the low octanol-water partition coefficient.
Partition coefficient n-octanol / water (log Kow)	Methanol (CAS 67-56-1) -0.77
Mobility in soil	The product is insoluble in water. Expected to be highly mobile in soil.
Other adverse effects	The product contains a substance which has a photochemical ozone creation potential.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Incinerate the material under controlled conditions in an approved incinerator. Do not incinerate sealed containers. If discarded, this product is considered a RCRA ignitable waste, D001. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	This product is a liquid and when transported in bulk is covered under MARPOL 73/78 Annex II. This product is listed in the IBC Code.
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15. Regulatory information

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Methanol (CAS 67-56-1)

Listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

Toxic Substances Control Act (TSCA)

This substance is on the TSCA 8(b) inventory and is designated "active".

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical

Yes

Classified hazard categories


Flammable (gases, aerosols, liquids, or solids)
Acute toxicity (any route of exposure)
Specific target organ toxicity (single or repeated exposure)
Hazard not otherwise classified (HNOC)

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Methanol	67-56-1	> 99

Other federal regulations	
Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List	Methanol (CAS 67-56-1)
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)	Not regulated.
Safe Drinking Water Act (SDWA)	Listed.

US state regulations	
US. Massachusetts RTK - Substance List	Methanol (CAS 67-56-1)
US. New Jersey Worker and Community Right-to-Know Act	Methanol (CAS 67-56-1)
US. Pennsylvania Worker and Community Right-to-Know Law	Methanol (CAS 67-56-1)
US. Rhode Island RTK	Methanol (CAS 67-56-1)


California Proposition 65	WARNING: This product can expose you to Methanol, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov .
	
California Proposition 65 - CRT: Listed date/Developmental toxin	Methanol (CAS 67-56-1) Listed: March 16, 2012
US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))	Methanol (CAS 67-56-1)

International inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	21-December-2020
Revision date	-
Version #	01
HMIS® ratings	Health: 3* Flammability: 3 Physical hazard: 0
NFPA ratings	
List of abbreviations	EC50: Effective Concentration, 50%. LC50: Lethal Concentration, 50%. LD50: Lethal Dose 50%. PEL: Permissible Exposure Limit. TWA: Time Weighted Average.
References	IARC Monographs. Overall Evaluation of Carcinogenicity
Disclaimer	NOTICE: The information contained in this document is based on data considered to be accurate as of the preparation date of this Safety Data Sheet (SDS) and was prepared pursuant to applicable Government regulation(s). This SDS may not be used as a commercial specification sheet of manufacturer or seller, and no warranty or representation, expressed or implied, is made as to the accuracy or comprehensiveness of the above data and safety information, nor is any authorization given or implied to practice any patented invention without a license. Additional information may be needed to evaluate other uses of the product, including use of the product in combination with any materials or in any processes other than those specifically referenced. Information provided about any hazards that may be associated with the product is not meant to suggest that use of the product in a given application will necessarily result in any exposure or risk to workers or the general public. Purchasers and users of the product are responsible for determining that this product is suitable for the intended use and application. No responsibility can be assumed by vendor for any damage or injury resulting from failure to adhere to recommended uses, or from any hazards inherent to the product. Purchasers and users assume all risk of use, storage and handling of the product in compliance with applicable federal, state and local laws and regulations. Purchasers and users of the product should explicitly advise their employees, agents, contractors and customers who will use the product of this SDS.

Methanol	SDS US
956702 Version #: 01 Revision date: - Issue date: 21-December-2020	9 / 9

Aqua Ammonia (5-19.9%)
Section 2. Hazards identification

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients
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Substance/mixture	: Mixture
Other means of identification	: Aqua Ammonia, Ammonium Hydroxide
Product code	: 001196

Ingredient name	%	CAS number
Aqua Ammonia	100	1336-21-6
WATER	80.1 - 95	7732-18-5
ammonia	5 - 19.9	7664-41-7

Any concentration shown as a range is to protect confidentiality or is due to batch variation.
There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact	: Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.
Inhalation	: Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
Skin contact	: Get medical attention immediately. Call a poison center or physician. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Ingestion	: Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact	: No known significant effects or critical hazards.
Inhalation	: May cause respiratory irritation.
Skin contact	: Causes severe burns.

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SAFETY DATA SHEET



Aqua Ammonia (5-19.9%)

Section 1. Identification

GHS product identifier	: Aqua Ammonia (5-19.9%)
Other means of identification	: Aqua Ammonia, Ammonium Hydroxide
Product type	: Liquid.
Product use	: Synthetic/Analytical chemistry.
Synonym	: Aqua Ammonia, Ammonium Hydroxide
SDS #	: 001196
Supplier's details	: Airgas USA, LLC and its affiliates 259 North Radnor-Chester Road Suite 100 Radnor, PA 19087-5283 1-610-687-5253

24-hour telephone : 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture	: SKIN CORROSION - Category 1B SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 AQUATIC HAZARD (ACUTE) - Category 1

GHS label elements

Hazard pictograms



Signal word : Danger

Hazard statements : May displace oxygen and cause rapid suffocation.
Causes severe skin burns and eye damage.
May cause respiratory irritation.
Very toxic to aquatic life.

Precautionary statements

General	: Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.
Prevention	: Wear protective gloves. Wear eye or face protection. Wear protective clothing. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Avoid breathing vapor. Wash hands thoroughly after handling.
Response	: Collect spillage. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.
Storage	: Store locked up.
Disposal	: Dispose of contents and container in accordance with all local, regional, national and international regulations.

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Aqua Ammonia (5-19.9%)
Section 4. First aid measures

Frostbite	: Try to warm up the frozen tissues and seek medical attention.
Ingestion	: No known significant effects or critical hazards.
Over-exposure signs/symptoms	: Adverse symptoms may include the following: pain, watering, redness
Eye contact	: Adverse symptoms may include the following: respiratory tract irritation, coughing
Inhalation	: Adverse symptoms may include the following: pain or irritation, redness, blistering may occur
Skin contact	: Adverse symptoms may include the following: stomach pains
Ingestion	: Adverse symptoms may include the following: stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	: In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
Specific treatments	: No specific treatment.
Protection of first-aiders	: No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media	: Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	: None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst. This material is very toxic to aquatic life. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : Decomposition products may include the following materials: nitrogen oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
For emergency responders	: If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

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Section 6. Accidental release measures

Methods and materials for containment and cleaning up

- Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Avoid release to the environment. Do not ingest. Empty containers retain product residue and can be hazardous. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Do not reuse container. Do not breathe vapor or mist.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Aqua Ammonia WATER ammonia	None. None. California PEL for Chemical Contaminants (Table AC-1) (United States). PEL: 25 ppm 8 hours. STEL: 35 ppm 15 minutes. ACGIH TLV (United States, 3/2017). TWA: 25 ppm 8 hours. TWA: 17 mg/m ³ 8 hours. STEL: 35 ppm 15 minutes. STEL: 24 mg/m ³ 15 minutes. OSHA PEL 1989 (United States, 3/1989). STEL: 35 ppm 15 minutes. STEL: 27 mg/m ³ 15 minutes. NIOSH REL (United States, 10/2016). TWA: 25 ppm 10 hours. TWA: 18 mg/m ³ 10 hours.

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Section 8. Exposure controls/personal protection

	STEL: 35 ppm 15 minutes. STEL: 27 mg/m ³ 15 minutes. OSHA PEL (United States, 6/2016). TWA: 50 ppm 8 hours. TWA: 35 mg/m ³ 8 hours.
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- Appropriate engineering controls** : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

- Skin protection**
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Appearance	
Physical state	: Liquid.
Color	: Colorless.
Odor	: Pungent.
Odor threshold	: 5 ppm
pH	: Approx. 11.6 for 1 N Sol'n. in water
Melting point	: 22°F (5% solution) to -34°F (19.9% solution)
Boiling point	: Lowest known value: 38°C (100.4°F) (ammonia). Weighted average: 68.21°C (154.8°F)
Critical temperature	: Not available.
Flash point	: Not available.

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Section 9. Physical and chemical properties

Evaporation rate	: Not available.
Flammability (solid, gas)	: Extremely flammable in the presence of the following materials or conditions: Oxidizing
Lower and upper explosive (flammable) limits	: Lower: 16% Upper: 25%
Vapor pressure	: 3-10 PSI @ 16 °C
Vapor density	: Vapor density 0.6 (Air = 1) (ammonia)
Specific Volume (ft³/lb)	: 20.79
Gas Density (lb/ft³)	: 0.0481
Relative density	: 0.6
Solubility	: Soluble in water. Soluble in alcohol and ether.
Solubility in water	: Complete 540 g/l
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: 651 °C (1,204°F) (ammonia vapor)
Decomposition temperature	: Not available.
Viscosity	: Not available.
Flow time (ISO 2431)	: Not available.

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: No specific data.
Incompatible materials	: Yellow Metals (brass & copper)

- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

- Hazardous polymerization** : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Aqua Ammonia ammonia	LD50 Oral LC50 Inhalation Gas.	Rat Rat	350 mg/kg 7338 ppm	- 1 hours

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Aqua Ammonia	Eyes - Severe irritant	Rabbit	-	250 Micrograms	-
	Eyes - Severe irritant	Rabbit	-	0.5 minutes 1 milligrams	-

Sensitization

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Section 11. Toxicological information

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Aqua Ammonia	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

- Information on the likely routes of exposure** : Not available.
- Potential acute health effects**
- Eye contact** : No known significant effects or critical hazards.
- Inhalation** : May cause respiratory irritation.
- Skin contact** : Causes severe burns.
- Ingestion** : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : Adverse symptoms may include the following:, pain, watering, redness
- Inhalation** : Adverse symptoms may include the following:, respiratory tract irritation, coughing
- Skin contact** : Adverse symptoms may include the following:, pain or irritation, redness, blistering may occur
- Ingestion** : Adverse symptoms may include the following:, stomach pains

Delayed and immediate effects and also chronic effects from short and long term exposure

- Short term exposure**
- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.
- Long term exposure**
- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.
- Potential chronic health effects**
- Not available.
- General** : No known significant effects or critical hazards.
- Carcinogenicity** : No known significant effects or critical hazards.

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Section 11. Toxicological information

Mutagenicity	: No known significant effects or critical hazards.
Teratogenicity	: No known significant effects or critical hazards.
Developmental effects	: No known significant effects or critical hazards.
Fertility effects	: No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Aqua Ammonia ammonia	Acute LC50 37 ppm Fresh water Acute EC50 29.2 mg/l Marine water Acute LC50 2080 µg/l Fresh water Acute LC50 0.53 ppm Fresh water Acute LC50 300 µg/l Fresh water Chronic NOEC 0.204 mg/l Marine water	Fish - Gambusia affinis - Adult Algae - Ulva fasciata - Zoea Crustaceans - Gammarus pulex Daphnia - Daphnia magna Fish - Hypophthalmichthys nobilis Fish - Dicentrarchus labrax	96 hours 96 hours 48 hours 48 hours 96 hours 62 days

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
WATER	-1.38	-	low

Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

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Section 15. Regulatory information

Clean Air Act Section 602

Class II Substances

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

Name	%	EHS	SARA 302 TPQ		SARA 304 RQ	
			(lbs)	(gallons)	(lbs)	(gallons)
ammonia	5 - 19.9	Yes.	500	-	100	-

SARA 304 RQ : 502.5 lbs / 228.1 kg

SARA 311/312

Classification : Refer to Section 2: Hazards Identification of this SDS for classification of substance.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	ammonia	1336-21-6	100
	ammonia	7664-41-7	5 - 19.9
Supplier notification	ammonia	1336-21-6	100
	ammonia	7664-41-7	5 - 19.9

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : The following components are listed: AMMONIUM HYDROXIDE; AMMONIUM WATER; AMMONIA; AMMONIA, ANHYDROUS

New York : The following components are listed: Ammonium hydroxide; Ammonia

New Jersey : The following components are listed: AMMONIUM HYDROXIDE; AMMONIA

Pennsylvania : The following components are listed: AMMONIUM HYDROXIDE; AMMONIA

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia : All components are listed or exempted.

Canada : All components are listed or exempted.

China : All components are listed or exempted.

Europe : All components are listed or exempted.






Japan : All components are listed or exempted.

Japan inventory (ENCS): All components are listed or exempted.

Japan inventory (ISHL): Not determined.

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Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN2672	UN2672	UN2672	UN2672	UN2672
UN proper shipping name	Ammonium Hydroxide or Ammonia solutions	AMMONIA SOLUTION	AMMONIA SOLUTION	AMMONIA SOLUTION	Ammonia solution
Transport hazard class(es)	8 	8 	8 	8 	8 
Packing group	III	III	III	III	III
Environmental hazards	Yes.	Yes.	Yes. The environmentally hazardous substance mark is not required.	Yes.	Yes. The environmentally hazardous substance mark is not required.

Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product.

Additional information

DOT Classification : This product is not regulated as a marine pollutant when transported on inland waterways in sizes of ≤5 L or ≤5 kg or by road, rail, or inland air in non-bulk sizes, provided the packagings meet the general provisions of §§ 173.24 and 173.24a. Reportable quantity 1000 lbs / 454 kg. Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.

TDG Classification : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.40-2.42 (Class 8), 2.7 (Marine pollutant mark). The marine pollutant mark is not required when transported by road or rail.

IMDG : The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.

IATA : The environmentally hazardous substance mark may appear if required by other transportation regulations.

Special precautions for user : Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according : Not available.

to Annex II of MARPOL and the IBC Code

Section 15. Regulatory information

U.S. Federal regulations : TSCA 8(a) CDR Exempt/Partial exemption: Not determined

Clean Water Act (CWA) 311: ammonia; ammonia

Clean Air Act (CAA) 112 regulated toxic substances: ammonia

Clean Air Act Section 112 : Not listed

(b) Hazardous Air

Pollutants (HAPs)

Clean Air Act Section 602 : Not listed

Class I Substances

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Section 15. Regulatory information

Malaysia	: All components are listed or exempted.
New Zealand	: All components are listed or exempted.
Philippines	: All components are listed or exempted.
Republic of Korea	: All components are listed or exempted.
Taiwan	: All components are listed or exempted.
Thailand	: Not determined.
Turkey	: Not determined.
United States	: All components are listed or exempted.
Viet Nam	: Not determined.

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health	3
Flammability	0
Physical hazards	0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)

Health	3	Flammability	0
Instability/Reactivity	0	Special	

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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
SKIN CORROSION - Category 1B	Expert judgment
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3	Calculation method
AQUATIC HAZARD (ACUTE) - Category 1	Calculation method

History

Date of printing : 2/15/2018

Date of issue/Date of revision : 2/15/2018

Date of previous issue : 2/15/2018

Version : 0.1

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Section 16. Other information

Key to abbreviations	: ATE = Acute Toxicity Estimate
	BCF = Bioconcentration Factor
References	GHS = Globally Harmonized System of Classification and Labelling of Chemicals
	IATA = International Air Transport Association
Other special considerations	IBC = Intermediate Bulk Container
	IMDG = International Maritime Dangerous Goods
Notice to reader	LogPow = logarithm of the octanol/water partition coefficient
	MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
	UN = United Nations
	: Not available.
	: Not available

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

**Safety Data Sheet**

acc. to OSHA HCS (29CFR 1910.1200) and WHMIS 2015 Regulations

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1 Identification

- **Product identifier**
- **Trade name:** **Natural Gas, Dry**
- **CAS Number:** 68410-63-9
- **Other means of identification:** Methane, Petroleum Gas, Methyl Hydride, Treated Gas, Process Gas
- **Recommended use and restriction on use**
- **Recommended use:** Fuel
- **Restrictions on use:** No relevant information available.
- **Details of the supplier of the Safety Data Sheet**
- **Manufacturer/Supplier:** Williams, Inc.
One Williams Center
Tulsa, OK 74172
USA
855-945-5762 (Toll-Free)
ehs@williams.com
- **Emergency telephone number:** CHEMTREC
1-800-424-9300 (US/Canada)
+01 703-527-3887 (International)

2 Hazard(s) identification

- **Classification of the substance or mixture**
Flam. Gas 1 H220 Extremely flammable gas.
Press. Gas H280 Contains gas under pressure; may explode if heated.
Simple Asphyxiant May displace oxygen and cause rapid suffocation.
- **Label elements**
- **GHS label elements**
The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms:**


GHS02 GHS04
- **Signal word:** Danger
- **Hazard statements:**
H220 Extremely flammable gas.
H280 Contains gas under pressure; may explode if heated.
May displace oxygen and cause rapid suffocation.
- **Precautionary statements:**
P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 Eliminate all ignition sources if safe to do so.
P410+P403 Protect from sunlight. Store in a well-ventilated place.

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Date of issue/Date of revision : 2/15/2018 Date of previous issue : 2/15/2018 Version : 0.1 12/12

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Trade name: Natural Gas, Dry

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- **Other hazards** There are no other hazards not otherwise classified that have been identified.

3 Composition/information on ingredients

- **Chemical characterization:** Substances
- **CAS No. Description** 68410-63-9 Natural gas
- **Components:**

75-08-1 ethyl mercaptan (if odorized)	 Flam. Liq. 2, H225  Acute Tox. 4, H302; Acute Tox. 4, H332	<0.1%
---------------------------------------	--	-------
- **Additional information:**
For the listed ingredient(s), the identity and/or exact percentage(s) are being withheld as a trade secret.
For the wording of the listed Hazard Statements, refer to section 16.

4 First-aid measures

- **Description of first aid measures**
- **After inhalation:**
Supply fresh air.
Provide oxygen treatment if affected person has difficulty breathing.
If experiencing respiratory symptoms: Call a poison center/doctor.
- **After skin contact:**
In cases of frostbite from liquefied gas or from high-pressure systems, rinse with plenty of water. Do not remove clothing.
- **After eye contact:**
Remove contact lenses if worn.
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
- **After swallowing:** Unlikely route of exposure.
- **Most important symptoms and effects, both acute and delayed:**
Dizziness
Coughing
Frostbite from liquefied gas or high-pressure systems.
Disorientation
- **Danger:** May displace oxygen and cause rapid suffocation.
- **Indication of any immediate medical attention and special treatment needed:**
If necessary oxygen respiration treatment.

5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:**
Foam
Water fog / haze
Gaseous extinguishing agents
Carbon dioxide
- **For safety reasons unsuitable extinguishing agents:** Water stream.

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- **Special hazards arising from the substance or mixture**
Danger of receptacles bursting because of high vapor pressure if heated.
Extremely flammable gas.
- **Advice for firefighters**
- **Protective equipment:**
Wear self-contained respiratory protective device.
Wear fully protective suit.
- **Additional information:**
Eliminate all ignition sources if safe to do so.
In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.
Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation.
Keep away from ignition sources.
Take precautionary measures against static discharge.
Use only non-sparking tools.
Protect from heat.
For large spills, use respiratory protective device against the effects of fumes/dust/aerosol.
- **Environmental precautions** No special measures required.
- **Methods and material for containment and cleaning up** Allow to evaporate.
- **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

- **Handling**
- **Precautions for safe handling:** Use enclosed means of conveyance.
- **Information about protection against explosions and fires:**
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.
Ground/bond container and receiving equipment.
Emergency cooling must be available in case of nearby fire.
Flammable gas-air mixtures may be formed in empty containers/receptacles.
- **Conditions for safe storage, including any incompatibilities**
- **Requirements to be met by storerooms and receptacles:**
Avoid storage near extreme heat, ignition sources or open flame.
- **Information about storage in one common storage facility:** Store away from oxidizing agents.
- **Further information about storage conditions:**
Store in a cool place. Heat will increase pressure and may lead to the receptacle bursting.
- **Specific end use(s)** No relevant information available.

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Trade name: Natural Gas, Dry

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8 Exposure controls/personal protection

Control parameters

Components with limit values that require monitoring at the workplace:

68410-63-9 Natural gas, dried

TLV (USA)	refer to App. F in TLVs and BEIs book; NIC-D, EX
EL (Canada)	Simple asphyxiant, EX
EV (Canada)	Long-term value: 1,000 ppm revoked as of 01/01/18
LMPE (Mexico)	Long-term value: 1000 ppm

75-08-1 ethyl mercaptan

PEL (USA)	Ceiling limit value: 25 mg/m ³ , 10 ppm
REL (USA)	Ceiling limit value: 1.3* mg/m ³ , 0.5* ppm *15 min
TLV (USA)	Long-term value: 1.3 mg/m ³ , 0.5 ppm
EL (Canada)	Long-term value: 0.5 ppm
EV (Canada)	Long-term value: 1.3 mg/m ³ , 0.5 ppm
LMPE (Mexico)	Long-term value: 0.5 ppm

Exposure controls

General protective and hygienic measures:

The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Wash hands before breaks and at the end of work.

Engineering controls: Provide adequate ventilation.

Breathing equipment:

Not required under normal conditions of use.



Self-contained respiratory protective device should be used in case of large spills or leaks.

Protection of hands:

Wear gloves for protection against thermal and mechanical hazards according to OSHA and NIOSH rules.

Eye protection:



Safety glasses

Follow relevant national guidelines concerning the use of protective eyewear.

Body protection: Wear appropriate protective clothing.

Limitation and supervision of exposure into the environment

No relevant information available.

Risk management measures No relevant information available.

9 Physical and chemical properties

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Trade name: Natural Gas, Dry

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Extremely flammable gas.
Reacts with halogenated compounds.
Develops readily flammable gases / fumes.
Reacts with oxidizing agents.
Can form explosive mixtures in air if heated above flash point and/or when sprayed or atomized.
Hazardous gases may be released if heated above the decomposition point.

Conditions to avoid

Excessive heat.
Keep ignition sources away - Do not smoke.

Incompatible materials

Oxidizers
Halogenated compounds.

Hazardous decomposition products

Under fire conditions only:
Carbon monoxide and carbon dioxide

11 Toxicological information

Information on toxicological effects

Acute toxicity: Based on available data, the classification criteria are not met.

LD/LC50 values that are relevant for classification: None.

Primary irritant effect:

On the skin: Based on available data, the classification criteria are not met.

On the eye: Based on available data, the classification criteria are not met.

Sensitization: Based on available data, the classification criteria are not met.

IARC (International Agency for Research on Cancer):

Substance is not listed.

NTP (National Toxicology Program):

Substance is not listed.

OSHA-Ca (Occupational Safety & Health Administration):

Substance is not listed.

Probable route(s) of exposure:

Inhalation.
Eye contact.
Skin contact.

Acute effects (acute toxicity, irritation and corrosivity):

May displace oxygen and cause rapid suffocation.

Germ cell mutagenicity: Based on available data, the classification criteria are not met.

Carcinogenicity: Based on available data, the classification criteria are not met.

Reproductive toxicity: Based on available data, the classification criteria are not met.

STOT-single exposure: Based on available data, the classification criteria are not met.

STOT-repeated exposure: Based on available data, the classification criteria are not met.

Aspiration hazard: Based on available data, the classification criteria are not met.

12 Ecological information

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Trade name: Natural Gas, Dry

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Information on basic physical and chemical properties

Appearance:

Form: Gaseous

Color: Colorless

Odor: Normally odorless. Pungent odor observed if mercaptans are present.

Odor threshold: Not determined.

pH-value: Not determined.

Melting point/Melting range: Not determined.

Boiling point/Boiling range: Not determined.

Flash point: -184 °C (-299.2 °F)

Flammability (solid, gaseous): Extremely flammable gas.

Auto-ignition temperature: 537 °C (998.6 °F)

Decomposition temperature: Not determined.

Danger of explosion: Product is not explosive. However, formation of explosive air/vapor mixtures are possible.

Explosion limits

Lower: 2 Vol %

Upper: 10 Vol %

Oxidizing properties: Not determined.

Vapor pressure at 25 °C (77 °F): 40 mmHg (0.77 psi)

Density: Not determined.

Relative density: Not determined.

Vapor density: Not determined.

Relative vapor density at 20 °C (68 °F): 0.5 (air = 1)

Evaporation rate: Not applicable.

Solubility in / Miscibility with

Water: Not miscible or difficult to mix.

Partition coefficient (n-octanol/water): Not determined.

Viscosity

Dynamic: Not determined.

Kinematic: Not determined.

Other information No relevant information available.

10 Stability and reactivity

Reactivity: No data available for self-reactivity.

Chemical stability: Stable under normal temperatures and pressures.

Thermal decomposition / conditions to be avoided:

Danger of receptacles bursting because of high vapor pressure if heated.

Possibility of hazardous reactions

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Toxicity

Aquatic toxicity No relevant information available.

Persistence and degradability No relevant information available.

Bioaccumulative potential: No relevant information available.

Mobility in soil: No relevant information available.

Additional ecological information

General notes: Not known to be hazardous to water.

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

Other adverse effects No relevant information available.

13 Disposal considerations

Waste treatment methods

Recommendation:

Contact waste processors for recycling information.

The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes.

Uncleaned packagings

Recommendation: Disposal must be made according to official regulations.

14 Transport information

UN-Number

DOT, ADR, IMDG, IATA UN1971

UN proper shipping name

DOT, IATA
ADR, IMDG Natural gas, compressed
NATURAL GAS, COMPRESSED

Transport hazard class(es)

DOT



Class 2.1

Label 2.1

ADR



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- Class 2.1 1F
- Label 2.1
- IMDG, IATA
- Packing group This UN-number is not assigned a packing group.
- Environmental hazards
- Marine pollutant: No
- Special precautions for user Not applicable.
- Danger code (Kemler): 21
- EMS Number: F-D,S-U
- Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.

Transport/Additional information:

· IATA



Cargo Aircraft Only.

15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
- United States (USA)
- SARA

Section 302 (extremely hazardous substances):

Substance is not listed.

Section 355 (extremely hazardous substances):

Substance is not listed.

Section 313 (Specific toxic chemical listings):

Substance is not listed.

TSCA (Toxic Substances Control Act)

Substance is listed.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

75-08-1 ethyl mercaptan

10000

Proposition 65 (California)

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- Chemicals known to cause cancer: Substance is not listed.
- Chemicals known to cause developmental toxicity for females: Substance is not listed.
- Chemicals known to cause developmental toxicity for males: Substance is not listed.
- Chemicals known to cause developmental toxicity: Substance is not listed.
- EPA (Environmental Protection Agency): Substance is not listed.
- IARC (International Agency for Research on Cancer): Substance is not listed.
- Canadian Domestic Substances List (DSL) (Substances not listed.): Substance is listed.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Abbreviations and acronyms:

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
CAS: Chemical Abstracts Service (division of the American Chemical Society)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bio-accumulable, Toxic
v-PvB: very Persistent and very Bioaccumulative
OSHA: Occupational Safety & Health Administration
Flam. Gas 1: Flammable gases – Category 1
Press. Gas: Gases under pressure – Compressed gas
Flam. Liq. 2: Flammable liquids – Category 2
Acute Tox. 4: Acute toxicity – Category 4

Sources

Website, European Chemicals Agency (echa.europa.eu)
Website, US EPA Substance Registry Services (ofmpub.epa.gov/sor internet/registry/substreg/home/overview/home.do)
Website, Chemical Abstracts Registry, American Chemical Society (www.cas.org)
Patty's Industrial Hygiene, 6th ed., Rose, Vernon, ed. ISBN: 978-0-470-07488-6
Casarett and Doull's Toxicology: The Basic Science of Poisons, 8th Ed., Klaassen, Curtis D., ed., ISBN: 978-0-07-176923-5.
Safety Data Sheets, Individual Manufacturers

SDS Prepared by:

ChemTel Inc.
1305 North Florida Avenue
Tampa, Florida USA 33602-2902
Toll Free North America 1-888-255-3924 Intl. +01 813-248-0573

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Trade name: Natural Gas, Dry

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Website: www.chemtelinc.com

Date of first issue: 29.02.2016
Date of last issue: -
Revision Date: 29.02.2016
Version: 1.0



SAFETY DATA SHEET

DNX

1. Identification

Product identifier

Product name: DNX

Recommended use of the chemical and restrictions on use

Recommended use: Denox catalyst.

Supplier's details

Manufacture

Company: Umicore Catalyst USA, LLC
Address: 9900 Bayport Blvd, Pasadena, TX 77507
United States of America
Telephone: 918-637-6732 or 281-814-8431
Telefax:
E-mail address: Bayport_EHS@am.umicore.com

Emergency telephone

Chemtrec - Transportation Emergencies: 800-424-9300

2. Hazards identification

Classification of the substance or mixture

- Germ cell mutagenicity Category 2
- Reproductive toxicity Category 2
- Serious eye damage Category 1
- Specific target organ systemic toxicity - repeated exposure Category 2
- Chronic aquatic toxicity Category 3

Label elements

Product identifier: DNX

Hazard pictograms



Signal Word: Danger

○ Contains: Divanadium pentoxide

○ Hazard Statements

- H341: Suspected of causing genetic defects.
- H361d: Suspected of damaging the unborn child.
- H318: Causes serious eye damage.
- H373: May cause damage to organs through prolonged or repeated exposure if inhaled.
- H412: Harmful to aquatic life with long lasting effects.

○ Precautionary Statements

- P273: Avoid release to the environment.
- P280: Wear protective gloves/ protective clothing/ eye protection/ face protection.
- P305 + P351 + IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
- P308 + P313: IF exposed or concerned: Get medical advice/ attention.

Other hazards which do not result in classification

No information available.

3. Composition/information on ingredients

Mixture

Ingredients	CAS-No.	EC-No.	%w/w
Titanium dioxide	13463-67-7	236-675-5	>=70 - <=80
Amorphous Silica	7631-86-9	231-545-4	>=7 - <=18
Vitreous fibres	65997-17-3	266-046-0	>=1 - <=10
Tungsten trioxide	1314-35-8	215-231-4	>=2 - <=9
Divanadium pentoxide	1314-62-1	215-239-8	>=0 - <=4

No crystalline silica forms found.

4. First aid measures

Description of necessary first-aid measures

- General advice: IF exposed or if you feel unwell.: Get medical advice/ attention.
- Inhalation: Remove to fresh air. IF exposed or if you feel unwell: Call a POISON CENTER or doctor/ physician.
- Skin contact: Take off contaminated clothing and wash it before reuse. Wash with water and soap.
- Eye contact: Immediately flush eye(s) with plenty of water. Take victim immediately to hospital. Continue rinsing eyes during transport to hospital. Remove contact lenses, if present and easy to do. Continue rinsing.
- Ingestion: Clean mouth with water and drink afterwards plenty of water. Get medical advice/ attention if you feel unwell.

SAFETY DATA SHEET DNX
USA

Reference to other sections

For personal protection see section 8. For disposal considerations see section 13.

7. Handling and storage

Precautions for safe handling

Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Minimize dust generation and accumulation. Provide appropriate exhaust ventilation at places where dust is formed. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Do not eat, drink or smoke when using this product. Handle in accordance with good industrial hygiene and safety practice. For personal protection see section 8.

Conditions for safe storage, including any incompatibilities

Keep container tightly closed. Product may be damaged by water.

8. Exposure controls/personal protection

Control parameters

Exposure controls

Exposure limits may vary. It is recommended that information about locally applicable exposure limits is obtained.

Ingredients	Exposure Limit Values		Source
Titanium dioxide (13463-67-7)	TLV-TWA	10 mg/m3	ACGIH (2014:03)
	PEL	15 mg/m3	OSHA Z-1 (1993:06)
Amorphous Silica (7631-86-9)	TLV-TWA	6 mg/m3	ACGIH (2012)
	PEL		OSHA Z-1 (1993)
Tungsten trioxide (1314-35-8) - as W	TLV-TWA	5 mg/m3	ACGIH (2014:03)
	TLV-STEL	10 mg/m3	ACGIH (2014:03)
	PEL	5 mg/m3	OSHA Z-1 (1993)
	TLV-STEL	10 mg/m3	OSHA Z-1 (1993)
Divanadium pentoxide (1314-62-1) - Respirable dust ((as V2O5))	TLV-TWA	0.05 mg/m3	ACGIH (2012)
	PEL	0.5 mg/m3	OSHA Z-1 (1993:06)
	PEL	0.1 mg/m3	OSHA Z-1 (1993:06)

Individual protection measures, such as personal protective equipment

- Eye/face protection Safety goggles

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USA

Most important symptoms/effects, acute and delayed

- Inhalation: Inhalation of excessive amounts of dust may cause irritation of the respiratory system, symptoms may include coughing and difficulty in breathing.
- Skin contact: May cause skin irritation.
- Eye contact: Causes serious eye damage.
- Chronic effects from long term exposure: Substances which cause concern for man owing to possible mutagenic effects but for which the available information is not adequate for making a satisfactory assessment. Suspected of causing genetic defects. Possible risk of irreversible effects. Substances which cause concern for humans owing to possible developmental toxic effects. Vanadium pentoxide is in EU classified as a mutagenic substance in category 3 i.e. may cause possible risk of irreversible effects. Vanadium pentoxide is also in EU classified as toxic for reproduction in category 3, i.e. possible risk of harm to the unborn child.

Indication of immediate medical attention and special treatment needed, if necessary

- Symptoms: None known.

5. Fire-fighting measures

The product itself does not burn.

Extinguishing media

- Suitable extinguishing media: Product is compatible with standard fire-fighting agents.

Specific hazards arising from the chemical

No hazards to be specially mentioned.

Special protective equipment and precautions for fire-fighters

Wear full protective clothing and self-contained breathing apparatus.

Further information

Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Do not handle until all safety precautions have been read and understood. Ensure adequate ventilation. Avoid breathing dust. Follow safe handling advice and personal protective equipment recommendations.

Environmental precautions

Do not flush into surface water or sanitary sewer system.

Methods and materials for containment and cleaning up

Clean up promptly by scoop or vacuum. Use approved industrial vacuum cleaner for removal.

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USA

- Skin protection
- Hand protection Wear protective gloves.
Glove material: Nitrile rubber
- Body Protection Dust impervious protective suit. Safety shoes recommended when handling heavy containers.
- Respiratory protection Suitable mask with particle filter P3 (European Norm 143)
- Other protection Wash hands thoroughly after handling. Remove contaminated clothing and protective equipment before entering eating areas. Contaminated work clothing should not be allowed out of the workplace. Change working clothes after each work-shift.

9. Physical and chemical properties

Property	Value
Appearance ○ Physical state: ○ Form: ○ Color:	solid Porous blocks (monoliths). Greenish yellow.
	Odor: odorless
	Odor Threshold: Not relevant.
pH:	Not applicable
Melting point/freezing point:	> 1,400 °C / > 2,550 °F
Initial boiling point and boiling range:	No data available
Flash point:	Not relevant.
Evaporation rate:	Not relevant.
Flammability (solid, gas):	The product is not flammable.
Upper/lower flammability or explosive limits	
○ Lower explosion limit / lower flammability limit:	Not explosive
○ Upper explosion limit / upper flammability limit:	Not relevant.
Vapor pressure:	Not applicable
Vapor density:	Not relevant.
Density:	Not applicable
Solubility(ies) ○ Water solubility: ○ Solubility in other solvents:	Negligible – metals leaching may occur.
	Not relevant.
Partition coefficient: n-octanol/water:	Not applicable

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USA

Autoignition temperature:	No applicable
Decomposition temperature:	No information available.
Viscosity:	No relevant.
Explosive properties:	No explosive
Oxidizing properties:	The substance or mixture is not classified as oxidizing.
Other information:	No information available.

10. Stability and reactivity

Reactivity

Stable under normal conditions.

Chemical stability

Stable under normal conditions.

Possibility of hazardous reactions

No dangerous reaction known under conditions of normal use.

Conditions to avoid

No data available

Incompatible materials

Water and moisture for catalyst integrity.

Hazardous decomposition products

None known.

11. Toxicological information

Information on likely routes of exposure

- Inhalation: Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough. Dust and fumes from vanadium compounds can irritate the respiratory system; symptoms may include nose bleeding, sore throat, cough, bronchitis, expectoration, chest pain; serious exposure may cause pneumonia and pulmonary oedema. The symptoms of pulmonary oedema often do not become manifest until several hours have passed and they are aggravated by physical effort. Rest and medical observation is therefore essential. Vanadium compounds may cause green discoloration of the tongue.
- Eye contact: Causes serious eye damage.
- Skin contact: May cause skin irritation.
- Ingestion: Ingestion may cause irritation of the mouth and throat and may cause discomfort.
- Long term effects: Substances which cause concern for man owing to possible mutagenic effects but for which the available information is not adequate for making

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USA

a satisfactory assessment. Suspected of causing genetic defects. Possible risk of irreversible effects. Substances which cause concern for humans owing to possible developmental toxic effects. Prolonged or repeated inhalation may cause damage to the lungs. Vanadium pentoxide is in EU classified as a mutagenic substance in category 3 i.e. may cause possible risk of irreversible effects. Vanadium pentoxide is also in EU classified as toxic for reproduction in category 3, i.e. possible risk of harm to the unborn child. IARC: (International Agency for Research on Cancer) Group 2B. Possibly carcinogenic to humans

Acute toxicity

» Oral	
Titanium dioxide:	TDLo(Rat): 60 gm/kg
Amorphous Silica:	LD50 Oral(Rat): > 5,000 mg/kg
Vitreous fibres:	No data available
Tungsten trioxide:	LD50(Rat): > 2,000 mg/kg
Divanadium pentoxide:	LD50(Rat): > 467 mg/kg
Product:	No toxicology information is available.
» Dermal	
Amorphous Silica:	LD50 Dermal(Rabbit): > 2,000 mg/kg
Tungsten trioxide:	LD50 Dermal(Rat): > 2,000 mg/kg
Divanadium pentoxide:	LD50 Dermal(Rat): > 2,500 mg/kg
Product:	No toxicology information is available.
» Inhalation	
Titanium dioxide:	TCLo(Rat, 6 h / 4 weeks): 250 mg/m ³ TCLo(Mouse, 6 h / 13 weeks): 10 mg/m ³
Amorphous Silica:	LC0(Rat, 4 h): > 2.08 mg/l
Tungsten trioxide:	LC50(Rat, 24 h): > 5.36 mg/l
Divanadium pentoxide:	LC50(Rat, 4 h / 12 days): > 2.42 mg/l
Product:	No toxicology information is available.

Skin corrosion/irritation

Product: No information available.

Serious eye damage/eye irritation

Product: No information available.

Respiratory or skin sensitization

Product: No information available.

Germ cell mutagenicity

Product: No information available.

Carcinogenicity

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USA

Titanium dioxide:	Listed in: IARC: Category 2B
Product:	No information available.
Specific target organ systemic toxicity - single exposure	
Product:	No information available.
Specific target organ systemic toxicity - repeated exposure	
Product:	No information available.
Aspiration hazard	
Product:	No information available.
Further information	
Product:	No information available.

12. Ecological information

Ecotoxicity

Harmful to aquatic life with long lasting effects.

- » Acute toxicity
No information available.
- » Chronic toxicity
No information available.
- » Other organisms relevant to the environment
No information available.

Persistence and degradability

Product: No information available.

Bioaccumulative potential

Product: No information available.

Mobility in soil

Product: No information available.

Results of PBT and vPvB assessment

Product: No information available.

Other adverse effects

Product: No information available.

13. Disposal considerations

Waste treatment methods

Can be offered for metal recovery.
Dispose of waste in accordance with applicable Federal, State and Local regulations. Umicore Catalyst USA, LLC takes no responsibility for the classification of used or contaminated material.

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Consult federal, state and local regulations regarding proper disposal of container.

14. Transport information

UN number:	None
Proper shipping name:	None
Transport hazard class(es)	
Packing group:	None
Environmental hazards	
ADR/RID:	None
IMDG:	None
IATA:	None
49 CFR:	None
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:	Not applicable for product as supplied.
Special precautions for user:	No special precautions are needed in handling this material.

15. Regulatory information

Safety, health and environmental regulations specific for the product in question

Federal Regulations

- **TSCA Section 12(b) Export Notification**
No substances are subject to TSCA 12(b) export notification requirements.
- **OSHA Special Regulated Substances (29 CFR 1910.1001-1050)**
No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Emergency Planning and Community Right-To-Know Act (EPCRA)

- Section 302 - Extremely Hazardous Substances

The following components are subject to reporting levels established by SARA Title III, Section 302:

Ingredients	Note
Divanadium pentoxide (1314-62-1):	Threshold quantity: lbs 100/10000

- Section 304 - Emergency Release Notification

Ingredients	Note
Divanadium pentoxide (1314-62-1):	Reportable quantity: 1000 lbs

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- Section 313 - Toxic Chemicals

The following components are subject to reporting levels established by SARA Title III, Section 313:

Ingredients	Note
Divanadium pentoxide (1314-62-1):	De minimis concentration: 1.0 % Reporting threshold for manufacturing and processing: 25000 lbs Reporting threshold for other uses: 10000 lbs Chemical Category Code: N770

- Section 311/312 - Chemical Reporting

Hazard categories
Fire
Sudden Release of Pressure
Reactivity
✓ Immediate (Acute) Health Hazard
✓ Delayed (Chronic) Health Hazard

o Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

- Hazardous Substances (40 CFR 302.4)

Ingredients	Note
Divanadium pentoxide (1314-62-1):	Reportable quantity: 1000 lbs

o Clean Air Act

- Section 112 r Accidental Release Prevention (40 CFR 68.130)

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

o Clean Water Act

- Section 311 Hazardous Substances (40 CFR 117.3)

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

Ingredients	Note
Divanadium pentoxide (1314-62-1):	Reportable quantity: 1,000 lbs

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States Regulations

o California Proposition 65

Ingredients	Note
Vitreous fibres (65997-17-3):	Carcinogen
Divanadium pentoxide (1314-62-1):	Carcinogen
Titanium dioxide (13463-67-7):	Carcinogen

16. Other information

Key or legend to abbreviations and acronyms used in the safety data sheet

- o DNEL Derived No Effect Level
- o PNEC Predicted No Effect Concentration
- o ACGIH US. ACGIH Threshold Limit Values
- o OSHA Z-1 US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
- o PEL Permissible exposure limit
- o TLV-STEL Threshold limit value - Short-term exposure limit
- o TLV-TWA Threshold limit value - Time weighted average

Key literature references and sources for data

- o RTECS (Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, 4676 Columbia Pkwy., Cincinnati, Ohio 45226, USA).
- o HSDB (Hazardous Substances Data Bank - TOXNET (Toxicology Data Network)).
- o IUCLID (European Commission, Joint Reserch Centre, Institute for Health and consumer Protection, European Chemicals Bureau).

NFPA 704: National Fire Protection Association

Health	3	Fire	0	Reactivity	0
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0= minimal hazard, 1=slight hazard, 2=moderate hazard, 3=severe hazard, 4=extreme hazard

The above information is believed to be accurate and is based on our present state of knowledge and experience. However, no warranty or representation with respect to such information is intended or given. This information is intended to be used for safety information contained herein is confidential; it may not be used for any purpose other than for which it has been issued, and may not be used by or disclosed to third parties without written approval of Umicore Catalyst USA, LLC.

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SAFETY DATA SHEET

CLARIANT

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Substance key: SC0000901524	Revision Date: 06/21/2016
Version : 3 - 0 / USA	Date of printing :06/23/2016

SECTION 1. IDENTIFICATION

Identification of the company:	Clariant Corporation 4000 Monroe Road Charlotte, NC, 28205 Telephone No.: +1 704-331-7000
Information of the substance/preparation:	Product Safety 1-704-331-7710 Emergency tel. number: +1 800-424-9300 CHEMTREC

Trade name:	ActiSorb® S2 Extr 4.5	0230
Material number:	246721	
Chemical family:	Mixture of zinc oxide and calciumaluminate	
Primary product use:	Catalyst	

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification	
Eye irritation	: Category 2B
GHS label elements	
Signal word	: Warning
Hazard statements	: H320 Causes eye irritation.
Precautionary statements	: Prevention: P264 Wash skin thoroughly after handling. Response: P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 If eye irritation persists: Get medical advice/ attention.
Other hazards	
Hazards Not Otherwise Classified:	No particular hazards known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture	: Mixture
Chemical nature	: Mixture of zinc oxide and calciumaluminate

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Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
Zinc oxide	1314-13-2	>= 70 - < 90

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

SECTION 4. FIRST AID MEASURES

General advice	: none
If inhaled	: Remove to fresh air. Call a physician if irritation develops or persists. Call a physician if symptoms occur.
In case of skin contact	: Before washing use a dry brush to remove dust from skin. Wash area with mild soap and copious amounts of water. If skin irritation occurs: Get medical advice/ attention.
In case of eye contact	: Do not rub affected area. Rinse immediately with plenty of lukewarm water, also under the eyelids, for at least 15 minutes. Get medical attention.
If swallowed	: Route of exposure unlikely. IF SWALLOWED: Immediately call a POISON CENTER/doctor.
Most important symptoms and effects, both acute and delayed	: The possible symptoms known are those derived from the labelling (see section 2). No additional symptoms are known.
Notes to physician	: Prolonged or repeated contact under poor hygienic conditions may produce a papular, pustular eczema or dermatitis called oxide pox.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	: The product itself does not burn. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	: No information available.
Specific hazards during firefighting	: None known.
	Used catalyst may have different hazards or properties than the original product. This MSDS does not apply to the used catalyst. Contact Technical Services at 502-634-7200 for more information.

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Further information : Wear full protective clothing and NIOSH/MSHA-approved positive pressure, self-contained breathing apparatus.

Special protective equipment : No special precautions required.
for firefighters

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Ensure adequate ventilation.
Avoid dust formation.
Use personal protective equipment.
Avoid contact with skin, eyes and clothing.
Wearing appropriate personal protective equipment, contain spill and collect into a suitable container.
Minimize airborne particulates.
Keep container tightly closed.
Material should be swept up or vacuumed, using ventilation to control the level of airborne dust. Avoid using compressed air or any method that creates airborne dust. If cleanup may create airborne dust, personnel should wear eye, skin, and respiratory protection.
Do not use compressed air for cleaning purposes.
Refer to Section 8 for more information.

Environmental precautions : Do not flush into surface water or sanitary sewer system.

Methods and materials for containment and cleaning up : Take up uncontaminated material and pass on for further processing.
Take up contaminated material by mechanical means, load into clean containers, and dispose of in accordance with legal regulations.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion : In case of inappropriate handling, spent catalyst can be self-heating when in contact with air.

Advice on safe handling : Avoid contact with skin, eyes and clothing.
Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
Minimize dust generation and accumulation.

Conditions for safe storage : Keep tightly closed in a dry and cool place.

Technical measures/Precautions : Keep container tightly closed and dry.

Keep container tightly closed.
Keep container dry.

Materials to avoid : No materials to be especially mentioned.

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R, or P95 or 100 or equivalent in the absence of proper environmental control. Type of respirator depends on level of exposure.

Hand protection : Chemical resistant gloves

Eye protection : Follow facility guidelines in the absence of dusts.
Tightly fitting safety goggles

Skin and body protection : Wear protective clothing, including long sleeves and gloves, to prevent skin contact.
Thoroughly wash clothing before reuse.

Hygiene measures : Wash skin thoroughly after handling.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : extrusions

Colour : grey

Odour : none

Odour Threshold : Not relevant

pH : not tested.

Melting point : > 1,000 °C

Boiling point : Not applicable

Flash point : Not applicable

Evaporation rate : Not applicable

Flammability (solid, gas) : not determined

Upper explosion limit : not tested.

Lower explosion limit : not tested.

Combustion number : not determined

Vapour pressure : Not applicable

Relative vapour density : Not applicable

Relative density : not tested.

Density : not tested.

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SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Zinc oxide	1314-13-2	TWA (Respirable fraction)	2 mg/m3	ACGIH
Further information: metal fume fever				
		STEL (Respirable fraction)	10 mg/m3	ACGIH
Further information: metal fume fever				
		TWA (Dust)	5 mg/m3	NIOSH REL
		TWA (Fumes)	5 mg/m3	NIOSH REL
		ST (Fumes)	10 mg/m3	NIOSH REL
		C (Dust)	15 mg/m3	NIOSH REL
		TWA (total dust)	15 mg/m3	OSHA Z-1
		TWA (respirable fraction)	5 mg/m3	OSHA Z-1
		TWA (Total)	10 mg/m3	OSHA P0
		TWA (Respirable fraction)	5 mg/m3	OSHA P0
		TWA	5 mg/m3	OSHA Z-1
		TWA	5 mg/m3	OSHA P0
		STEL	10 mg/m3	OSHA P0
		TWA (Fumes)	5 mg/m3	OSHA Z-1
		TWA (Total dust)	10 mg/m3	OSHA P0
		TWA (respirable dust fraction)	5 mg/m3	OSHA P0
		TWA (Fumes)	5 mg/m3	OSHA P0
		STEL (Fumes)	10 mg/m3	OSHA P0

Engineering measures : Use adequate exhaust ventilation and/or dust collection to keep dust levels below exposure limits.

Personal protective equipment

Respiratory protection : Wear NIOSH approved particulate filtering respirator rated N.

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Bulk density : 1,090 kg/m3

Solubility(ies)
Water solubility : insoluble

Solubility in other solvents : not tested.

Partition coefficient: n-octanol/water : not determined

Auto-ignition temperature : Not applicable

Decomposition temperature : no data available

Viscosity
Viscosity, dynamic : Not applicable

Viscosity, kinematic : Not applicable

Flow time : Not applicable

Explosive properties : no data available

Oxidizing properties : not tested.

Sublimation point : not determined

Minimum ignition energy : not tested.

Particle size : not tested.

SECTION 10. STABILITY AND REACTIVITY

Reactivity : Stable under recommended storage conditions.

Chemical stability : The product is chemically stable.

Possibility of hazardous reactions : None known.

Conditions to avoid : None known.

Incompatible materials : None known.

Hazardous decomposition products : No decomposition if stored and applied as directed.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Eye contact

Skin contact

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Ingestion
Inhalation

Acute toxicity**Product:**

Acute oral toxicity : Remarks: no data available
Acute inhalation toxicity : Remarks: no data available
Acute dermal toxicity : Remarks: no data available

Components:**Zinc oxide:**

Acute oral toxicity : LD50 (Rat, male and female): > 5,000 mg/kg
Method: OECD Test Guideline 401
GLP: No information available.

Acute inhalation toxicity : LC50 (Rat, male and female): > 5.7 mg/l
Exposure time: 4 h
Method: OECD Test Guideline 403
GLP: No information available.

Acute dermal toxicity : LC50 (Rat, male and female): > 2,000 mg/kg
Method: OECD Test Guideline 402
GLP: yes

Acute toxicity (other routes of administration) : LD50 (Rat): 240 mg/kg
Application Route: Intraperitoneal injection

Skin corrosion/irritation**Product:**

Species: Rabbit
Exposure time: 24 h
Method: Draize Test
Result: Mild skin irritant
Remarks: Information based on the active ingredient.

Components:**Zinc oxide:**

Species: Rabbit
Result: No skin irritation

Serious eye damage/eye irritation**Product:**

Species: Rabbit
Result: Mild eye irritant
Exposure time: 24 h
Method: Draize Test

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Remarks: Information based on the active ingredient.

Components:**Zinc oxide:**

Species: Rabbit
Result: No eye irritation

Respiratory or skin sensitisation**Product:**

Remarks: no data available

Components:**Zinc oxide:**

Species: Guinea pig
Result: non-sensitizing

Carcinogenicity

IARC Not listed

OSHA Not listed

NTP Not listed

Repeated dose toxicity**Components:****Zinc oxide:**

Species: Rat, male and female
NOAEL: ca. 68 mg/kg
Application Route: oral (feed)
Exposure time: 13 w
Number of exposures: daily
Dose: 300 - 3000 - 30000 ppm
Group: yes
Method: OECD Test Guideline 408
GLP: no
Remarks: By analogy with a product of similar composition

Species: Rat, male
NOAEL: 0.0015 mg/l
Application Route: Inhalation
Exposure time: 13 w
Number of exposures: 6 h/day, 5 days/week
Dose: 0,3 - 1,5 - 4,5 mg/m3
Group: yes
Method: OECD Test Guideline 413
GLP: yes

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Experience with human exposure**Product:**

General Information : The possible symptoms known are those derived from the labelling (see section 2).

SECTION 12. ECOLOGICAL INFORMATION**Ecotoxicity****Product:**

Toxicity to fish : Remarks: no data available

Components:**Zinc oxide:**

Toxicity to fish : (Ceriodaphnia dubia (water flea)): 0.67 mg/l
Exposure time: 48 h
Remarks: pH <7

Toxicity to algae : (Selenastrum capricornutum (green algae)): 0.21 mg/l
Exposure time: 72 h
Remarks: pH >7 -8,5

M-Factor (Acute aquatic toxicity) : 1

M-Factor (Chronic aquatic toxicity) : 1

Persistence and degradability**Product:**

Biodegradability : Remarks: no data available

Components:**Zinc oxide:**

Biodegradability : Remarks: The methods for determining biodegradability are not applicable to inorganic substances.

Bioaccumulative potential**Product:**

Bioaccumulation : Remarks: no data available

Components:**Zinc oxide:**

Bioaccumulation : Remarks: Not applicable

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Mobility in soil**Product:**

Distribution among environmental compartments : Remarks: no data available

Components:**Zinc oxide:**

Distribution among environmental compartments : Medium: water - soil
log Koc: 2.2

Other adverse effects**Product:**

Additional ecological information : water endangering

Components:**Zinc oxide:**

Results of PBT and vPvB assessment : Remarks: Not relevant for inorganic substances

Additional ecological information : water endangering

SECTION 13. DISPOSAL CONSIDERATIONS**Disposal methods**

RCRA - Resource Conservation and Recovery Act
Authorization Act : This product, if discarded as sold, is not a Federal RCRA hazardous waste.
Waste Code : NONE

Waste from residues : Dispose of this product in accordance with applicable local, state and federal regulations. Recover metal components by reprocessing whenever possible.

Contaminated packaging : Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

DOT not restricted

IATA

Proper shipping name: Environmentally hazardous substance, solid, n.o.s.
Class: 9

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Packing group: III
UN/ID number: UN 3077
Primary risk: 9
Remarks: Shipment permitted
Hazard inducer(s): zinc oxide

IMDG

Proper shipping name: Environmentally hazardous substance, solid, n.o.s.
Class: 9
Packing group: III
UN no.: UN 3077
Primary risk: 9
Hazard inducer(s): zinc oxide
Marine pollutant: Marine Pollutant
EmS: F-A S-F

Further information:

This product is not regulated for surface transportation, based on 49 CFR 173.154(d)(1).
Not regulated in single or combination packagings containing a net quantity per single or inner packaging of 5 L or less for liquids, or having a net mass of 5 kg or less for solids. (IATA SP A197; IMDG 2.10.2.7, 49 CFR 171.4(c)(2))

SECTION 15. REGULATORY INFORMATION**EPCRA - Emergency Planning and Community Right-to-Know Act****CERCLA Reportable Quantity**

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Acute Health Hazard

SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : This product contains the chemical or chemicals listed below which are subject to the supplier notification requirements of Section 313 of the Superfund Amendments and Reauthorization Act of 1986 ("SARA") and the requirements of 40 CFR Part 372:

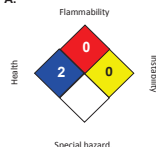
Zinc compounds	Not Assigned	95 %
Zinc powder - zinc dust (stabilized)	7440-66-6	76 %

Clean Water Act

Contains the following Priority Pollutant(s) at concentrations greater than 0.1%: Zinc

The components of this product are reported in the following inventories:

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NFPA:

Revision Date : 06/21/2016

This information corresponds to the present state of our knowledge and is intended as a general description of our products and their possible applications. Clariant makes no warranties, express or implied, as to the information's accuracy, adequacy, sufficiency or freedom from defect and assumes no liability in connection with any use of this information. Any user of this product is responsible for determining the suitability of Clariant's products for its particular application. NO EXPRESS OR IMPLIED WARRANTY IS MADE OF THE MERCHANTABILITY, SUITABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE OF ANY PRODUCT OR SERVICE. Nothing included in this information waives any of Clariant's General Terms and Conditions of Sale, which control unless it agrees otherwise in writing. Any existing intellectual/industrial property rights must be observed. Due to possible changes in our products and applicable national and international regulations and laws, the status of our products could change. Material Safety Data Sheets providing safety precautions, that should be observed when handling or storing Clariant products, are available upon request and are provided in compliance with applicable law. You should obtain and review the applicable Material Safety Data Sheet information before handling any of these products. For additional information, please contact Clariant.

US / EN

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TSCA

All components of this product are listed or excluded from listing on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) Inventory.

SECTION 16. OTHER INFORMATION**Full text of other abbreviations**

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Further information

Substance key: SC0000902310	Revision Date: 07/16/2015
Version : 2 - 2 / USA	Date of printing :07/29/2015

SECTION 1. IDENTIFICATION

Identification of the company: Clariant Corporation
4000 Monroe Road
Charlotte, NC, 28205
Telephone No.: +1 704 331 7000

Information of the substance/preparation:
Product Safety 1-704-331-7710
Emergency tel. number: +1 800-424-9300 CHEMTREC

Trade name: HDMax® 200 TRX 2.5 (aka Secondary Reformer 103-D)
Material number: 246196
Chemical family: Oxides of cobalt, molybdenum and aluminium
Primary product use: Catalyst

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Eye irritation : Category 2A

Skin sensitisation : Category 1

Carcinogenicity : Category 2

Specific target organ toxicity - single exposure : Category 3 (Respiratory system)

Specific target organ toxicity - repeated exposure : Category 2 (Lungs, Respiratory Tract, Liver, Bone)

GHS Label element

Hazard pictograms :  

Signal word : Warning

Hazard statements : H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H351 Suspected of causing cancer.
H373 May cause damage to organs (Lungs, Respiratory Tract, Liver, Bone) through prolonged or repeated exposure.

Precautionary statements : **Prevention:**

HDMax® 200 TRX 2.5 (aka Secondary Reformer 103-D)

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P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P272 Contaminated work clothing should not be allowed out of the workplace.
P280 Wear eye protection/ face protection.
P280 Wear protective gloves.
P281 Use personal protective equipment as required.
Response:
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 + P312 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P363 Wash contaminated clothing before reuse.
Storage:
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

The substance does not meet the criteria for PBT or vPvB substance.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

- Substance / Mixture • Mixture
- Chemical nature • Oxides of cobalt, molybdenum and aluminium

Hazardous components

Chemical Name	CAS-No.	Concentration (%)
Molybdenum trioxide	1313-27-5	5 - 20
Cobalt oxide	1307-96-6	1 - 10
Aluminium oxide	1344-28-1	70 - 94

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

HDMax® 200 TRX 2.5 (aka Secondary Reformer 103-D)

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firefighting

Used catalyst may have different hazards or properties than the original product.
This MSDS does not apply to the used catalyst.
Contact Technical Services at 502-634-7200 for more information.

Further information : Wear full protective clothing and NIOSH/MSHA-approved positive pressure, self-contained breathing apparatus.

Special protective equipment for firefighters : No special precautions required.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Ensure adequate ventilation.
Avoid dust formation.
Use personal protective equipment.
Avoid contact with skin, eyes and clothing.
Wearing appropriate personal protective equipment, contain spill and collect into a suitable container.
Minimize airborne particulates.
Keep container tightly closed.
Material should be swept up or vacuumed, using ventilation to control the level of airborne dust. Avoid using compressed air or any method that creates airborne dust. If cleanup may create airborne dust, personnel should wear eye, skin, and respiratory protection.
Wear proper protective equipment. Carefully shovel or sweep up spilled material and place in suitable container. Avoid generating dust. Do not discharge into storm drains or the aquatic environment.
Refer to Section 8 for more information.

Environmental precautions : Do not flush into surface water or sanitary sewer system.

Methods and materials for containment and cleaning up : Take up uncontaminated material and pass on for further processing.
Take up contaminated material by mechanical means, load into clean containers, and dispose of in accordance with legal regulations.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion : In case of inappropriate handling, spent catalyst can be self-heating when in contact with air.

Advice on safe handling : Avoid contact with skin, eyes and clothing.
Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
Minimize dust generation and accumulation.

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SECTION 4. FIRST AID MEASURES

- General advice : Take off all contaminated clothing immediately.
Show this safety data sheet to the doctor in attendance.
- If inhaled : INHALATION: If exposed to excessive levels of dust or fumes, remove to fresh air and get medical attention. Get medical attention if cough and other symptoms develop.
Remove to fresh air.
- In case of skin contact : Avoid contact with skin.
Wash area with mild soap and copious amounts of water.
Remove contaminated clothing and shoes.
Wash clothing before reuse.
If skin irritation occurs: Get medical advice/ attention.
- In case of eye contact : Do not rub affected area.
Rinse immediately with plenty of lukewarm water, also under the eyelids, for at least 15 minutes.
Obtain medical attention.
- If swallowed : Do NOT induce vomiting.
Call your local Poison Control Center (In the U.S. call 1-800-222-1222).
- Most important symptoms and effects, both acute and delayed : The possible symptoms known are those derived from the labelling (see section 2).
No additional symptoms are known.
- Notes to physician : Chronic ingestion may cause blood abnormalities (polycythemia), increased clotting time, hyperplasia of the bone marrow and thyroid gland, cardiomyopathy, and damage to the pancreas in sensitive individuals.
May produce molybdenum induced gout. May cause pulmonary fibrosis and cough. May affect the liver, kidneys and red blood cells. May cause anemia. May cause hyperthyroidism. Monitor uric acid, CBC with differential, liver function, and renal function. (Source: Hazardous Substance Database, HSDB, National Library of Medicine)

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : The product itself does not burn.
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : No information available.
- Specific hazards during : None known.

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- Conditions for safe storage : Keep tightly closed in a dry and cool place.
- Technical measures/Precautions : Keep container tightly closed and dry.

Keep container tightly closed.
Keep container dry.
- Materials to avoid : No materials to be especially mentioned.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Components with workplace control parameters**

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Aluminium oxide	1344-28-1	TWA (total dust)	15 mg/m3	OSHA Z-1
		TWA (respirable fraction)	5 mg/m3	OSHA Z-1
		TWA (Total)	10 mg/m3	OSHA P0
		TWA (Respirable fraction)	5 mg/m3	OSHA P0
		TWA (Respirable fraction)	1 mg/m3	ACGIH
Further information: Lower Respiratory Tract irritation, Pneumoconiosis, Neurotoxicity, Not classifiable as a human carcinogen, varies				

All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by the Particulates Not Otherwise Regulated (PNOR) limit which is 5 mg/m3 for respirable fraction and 15 mg/m3 for total dust. ACGIH exposure guidelines of less than 3 mg/m3 (respirable) and 10 mg/m3 (inhalable) have been established for particles (insoluble/poorly soluble) not otherwise specified (PNOS).

Engineering measures : Use ventilation adequate to keep exposures below recommended exposure limits. See the safety datasheet.

Personal protective equipment

Respiratory protection : Wear NIOSH approved particulate filtering respirator rated N, R, or P95 or 100 or equivalent in the absence of proper environmental control. Type of respirator depends on level of

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exposure.

Hand protection	Remarks	: butyl-rubber PVC Viton (R) Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.
Eye protection		: Follow facility guidelines in the absence of dusts. Tightly fitting safety goggles If respiratory protection is needed under dusty conditions, a full facepiece respirator is recommended to provide both eye and respiratory protection.
Skin and body protection		: Wear protective clothing, including long sleeves and gloves, to prevent skin contact. Thoroughly wash clothing before reuse.
Hygiene measures		: Keep working clothes separately. Keep away from food, drink and animal feeding stuffs. Wash hands before breaks and immediately after handling the product. Preventive skin protection (protective ointment for the skin)

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: extrusions
Particle size :	not tested.
Colour	: blue
Odour	: none
Odour Threshold	: cannot be determined
pH	: no data available
Melting point	: > 800 °C
Boiling point	: Not applicable
Flash point	: Not applicable
Evaporation rate	: Not applicable
Flammability (solid, gas)	: not determined

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Conditions to avoid	: None known.
Incompatible materials	: None known.
Hazardous decomposition products	: No decomposition if stored and applied as directed.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Eye contact
Skin contact
Ingestion
Inhalation

Acute toxicity

Product:

Acute inhalation toxicity	: Remarks: no data available
Acute dermal toxicity	: Remarks: no data available

Components:

Molybdenum trioxide:

Acute oral toxicity	: LD50 (Rat, male and female): 2,689 - 3,830 mg/kg Method: OECD Test Guideline 401 GLP: yes
---------------------	---

Acute inhalation toxicity	: LC50 (Rat, male and female): > 5.84 mg/l Exposure time: 4 h Method: OECD Test Guideline 403 GLP: yes
---------------------------	---

Acute dermal toxicity	: LD50 (Rat, male and female): > 2,000 mg/kg Method: OECD Test Guideline 402 GLP: yes
-----------------------	---

Cobalt oxide:

Acute oral toxicity	: LD50 (Rat, male and female): 202 mg/kg Method: OECD Test Guideline 401 GLP: No information available.
---------------------	---

Acute inhalation toxicity	: LC50 (Rat, male and female): 0.06 mg/l Exposure time: 4 h Method: OECD Test Guideline 436 GLP: yes
---------------------------	---

Acute dermal toxicity	: LD50 (Rat, male and female): > 2,000 mg/kg Method: OECD Test Guideline 402 GLP: yes Remarks: By analogy with a product of similar composition
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Upper explosion limit	: not tested.
Lower explosion limit	: not tested.
Combustion number :	not determined
Vapour pressure	: Not applicable
Relative vapour density	: Not applicable
Relative density	: not tested.
Density	: no data available
Bulk density	: 450 - 710 kg/m3
Solubility(ies)	
Water solubility	: not tested.
Solubility in other solvents	: not tested.
Partition coefficient: n-octanol/water	: not determined
Auto-ignition temperature	: Not applicable
Decomposition temperature	: no data available
Viscosity	
Viscosity, dynamic	: Not applicable
Viscosity, kinematic	: Not applicable
Flow time	: Not applicable
Explosive properties	: no data available
Oxidizing properties	: not tested.
Sublimation point	: not determined

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: Stable under recommended storage conditions.
Chemical stability	: The product is chemically stable.
Possibility of hazardous reactions	: None known.

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Aluminium oxide:	
Acute oral toxicity	: LD50 (Rat, male and female): > 10,000 mg/kg Method: OECD Test Guideline 401 GLP: No information available.
Acute inhalation toxicity	: LC50 (Rat, male and female): > 2.3 mg/l Exposure time: 4 h Method: OECD Test Guideline 403 GLP: yes
Acute dermal toxicity	: Remarks: Not applicable

Skin corrosion/irritation

Product:

Remarks: no data available

Components:

Molybdenum trioxide:

Species: Rabbit
Exposure time: 4 h
Method: OECD Test Guideline 404
Result: No skin irritation
GLP: yes

Cobalt oxide:

Species: reconstructed human epidermis (RHE)
Exposure time: 15 min
Method: OECD Test Guideline 439
Result: No skin irritation
GLP: yes

Species: Rabbit
Exposure time: 24 h
Method: OECD Test Guideline 404
Result: No skin irritation
GLP: No information available.

Serious eye damage/eye irritation

Product:

Remarks: no data available

Components:

Molybdenum trioxide:

Result: Severe eye irritation

Cobalt oxide:

Species: Bovine cornea
Result: Mild eye irritation

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Exposure time: 240 min
Method: OECD Test Guideline 437
GLP: yes

Aluminium oxide:
Species: rabbit eye
Result: No eye irritation
Method: FDA guideline
GLP: No information available.

Respiratory or skin sensitisation**Product:**

Remarks: no data available

Components:

Molybdenum trioxide:
Test Type: Guinea pig maximization test
Exposure routes: Dermal
Species: Guinea pig
Method: OECD Test Guideline 406
Result: Does not cause skin sensitisation.
GLP: yes

Cobalt oxide:
Test Type: Mouse local lymphnode assay
Exposure routes: Dermal
Species: Mouse
Method: OECD Test Guideline 429
Result: Causes sensitisation.
GLP: yes

Exposure routes: Inhalation
Species: Humans
Method: diagnosis in humans
Result: May cause sensitisation of susceptible persons.
GLP: no

Aluminium oxide:
Test Type: Draize Test
Exposure routes: Dermal
Species: Guinea pig
Method: Draize Test
Result: non-sensitizing
GLP: no

Test Type: Respiratory system
Exposure routes: inhalation (dust/mist/fume)
Species: Mouse
Method: Other
Result: non-sensitizing
GLP: no

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Germ cell mutagenicity**Components:**

Molybdenum trioxide:
Genotoxicity in vitro

: Test Type: Ames test
Species: Salmonella typhimurium
Concentration: 100 - 5000 µg/plate
Metabolic activation: with and without
Method: OECD Test Guideline 471
Result: negative
GLP: yes

: Test Type: Chromosome Aberration Test
Species: Human lymphocytes
Concentration: 100 - 1439 µg/ml
Metabolic activation: with and without
Method: Other
Result: negative
GLP: yes

: Test Type: sister chromatid exchange assay
Species: Chinese hamster ovary cells
Metabolic activation: with and without
Method: Other
Result: negative
GLP: No information available.

Germ cell mutagenicity - Assessment : It is concluded that the product is not mutagenic based on evaluation of several mutagenicity tests.

Cobalt oxide:

Genotoxicity in vitro

: Test Type: In vitro gene mutation study in mammalian cells
Species: mouse lymphoma cells
Concentration: 5 - 120 µg/ml
Metabolic activation: with and without
Method: OECD Test Guideline 476
Result: negative
GLP: yes

Genotoxicity in vivo : Test Type: Chromosome Aberration Test
Species: Rat (male and female)
Strain: Sprague-Dawley
Cell type: Bone marrow cells
Application Route: oral (gavage)
Exposure time: 16 h
Dose: 100 mg/kg
Method: OECD Test Guideline 475
Result: negative
GLP: no

Test Type: Chromosome Aberration Test
Species: Mouse (male and female)

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Cell type: Bone marrow cells
Application Route: oral (gavage)
Exposure time: 48 h
Dose: 125 - 250 - 500 mg/kg
Method: OECD Test Guideline 474
Result: negative
GLP: yes
Test substance: other TS

Germ cell mutagenicity - Assessment : It is concluded that the product is not mutagenic based on evaluation of several mutagenicity tests.

Aluminium oxide:
Genotoxicity in vitro : Test Type: In vitro gene mutation study in mammalian cells
Species: mouse lymphoma cells
Concentration: 6,1 - 780 µg/ml
Metabolic activation: with and without
Method: OECD Test Guideline 476
Result: negative
GLP: yes
Remarks: By analogy with a product of similar composition

Genotoxicity in vivo : Test Type: Chromosome Aberration Test
Species: Rat (female)
Strain: wistar
Cell type: Bone marrow cells
Application Route: oral (gavage)
Exposure time: Single exposure
Dose: 500 - 1000 - 2000 mg/kg
Method: OECD Test Guideline 475
Result: positive
GLP: No information available.

Test Type: Micronucleus test
Species: Rat (female)
Strain: wistar
Cell type: Bone marrow cells
Application Route: oral (gavage)
Exposure time: Single exposure
Dose: 500 - 1000 - 2000 mg/kg
Method: OECD Test Guideline 474
Result: positive
GLP: No information available.

Germ cell mutagenicity - Assessment : Weight of evidence does not support classification as a germ cell mutagen.

Carcinogenicity**Components:**

Molybdenum trioxide:
Carcinogenicity - Assessment : Limited evidence of carcinogenicity in animal studies

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Cobalt oxide:
Carcinogenicity - Assessment

: Carcinogenicity classification not possible from current data.

Aluminium oxide:
Carcinogenicity - Assessment

: Carcinogenicity classification not possible from current data.

IARC

Listed

OSHA

Not listed

NTP

Not listed

Reproductive toxicity**Components:**

Molybdenum trioxide:
Effects on fertility

: Test Type: Fertility/early embryonic development
Species: Rat
Sex: male and female
Dose: 7,5 - 25,5 - 90 mg/kg
Exposure time: 91 - 92 d
Frequency of Treatment: daily
Group: yes
NOAEL: > 90 mg/kg.
Method: OECD combined repeated dose and reproductive/developmental toxicity screening test
GLP: yes
Remarks: By analogy with a product of similar composition

Effects on foetal development

: Species: Rat
Application Route: oral (feed)
Exposure time: gestation days 6-20
Dose: 4,5-15-30-60 mg/kg
Group: yes
>60 mg/kg
> 60 mg/kg
Number of exposures: daily
Test period: 20 d
Method: OECD Test Guideline 414
GLP: yes
Remarks: By analogy with a product of similar composition

Reproductive toxicity - Assessment

: No reproductive toxicity to be expected.
No teratogenic effects to be expected.

Cobalt oxide:
Effects on fertility

Remarks: The study is not necessary from a scientific

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	perspective.
Effects on foetal development	: Remarks: The study is not necessary from a scientific perspective.
Reproductive toxicity - Assessment	: Classification as "toxic for reproduction" is not justifiable. Classification as "teratogenic" is not justifiable.
Aluminium oxide: Effects on fertility	: Species: Rat Sex: male and female Dose: 57 - 189 - 567 mg/kg Frequency of Treatment: daily Sprague-Dawley Test period: 1 a Group: yes NOAEL: ca. 567 mg/kg, F1: ca. 57 mg/kg, Method: Other GLP: yes Remarks: By analogy with a product of similar composition
Effects on foetal development	: Species: Rat Application Route: oral (gavage) Exposure time: gestation day 6 to 15 Dose: 126 - 251 - 503 mg/kg Group: yes 503 mg/kg > 100 mg/kg Number of exposures: twice daily Method: OECD Test Guideline 414 GLP: No information available. Remarks: By analogy with a product of similar composition
Reproductive toxicity - Assessment	: Classification as "toxic for reproduction" is not justifiable. No teratogenic effects to be expected.

STOT - single exposure**Components:****Molybdenum trioxide:**

Assessment: May cause respiratory irritation.

Cobalt oxide:

Assessment: The substance or mixture is not classified as specific target organ toxicant, single exposure.

Aluminium oxide:

Assessment: The substance or mixture is not classified as specific target organ toxicant, single exposure.

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STOT - repeated exposure**Components:****Molybdenum trioxide:**

Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Cobalt oxide:

Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aluminium oxide:

Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Repeated dose toxicity**Components:****Molybdenum trioxide:**Species: Rat, male and female
NOAEL: ca. 25.5 mg/kg
Application Route: oral (feed)
Exposure time: 91 - 92 d
Number of exposures: daily
Dose: 7.5 - 25.5 - 90 mg/kg
Group: yes
Method: OECD Test Guideline 408
GLP: yes
Remarks: By analogy with a product of similar compositionSpecies: Rat, male and female
Application Route: Inhalation
Exposure time: 13 w
Number of exposures: 6,5 h per day, 5 d per week
Dose: 1 - 3 - 10 - 30 - 100 mg/m3
Group: yes
Method: OECD Test Guideline 413
GLP: yes

Application Route: Skin contact

Remarks: The study is not necessary from a scientific perspective.

Cobalt oxide:Species: Rat, male and female
NOAEL: 5 - 40 mg/kg
Application Route: oral (gavage)
Exposure time: >= 46-47 d
Number of exposures: daily
Dose: 5 - 15 - 40 - 100 mg/kg
Group: yes
Method: OECD Test Guideline 422
GLP: yes
Remarks: By analogy with a product of similar composition

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Species: Rat, male and female
NOAEL: 15 mg/kg
Application Route: oral (gavage)
Exposure time: 28 d
Number of exposures: daily
Dose: 15 - 50 - 150 mg/kg
Group: yes
Method: Directive 84/449/EEC, B.7
GLP: yes
Remarks: By analogy with a product of similar compositionSpecies: Rat, male and female
Application Route: Inhalation
Exposure time: 105 w
Number of exposures: 6 h per day, 5 d per week
Dose: 0,31 - 1,03 - 2,98 mg/m3
Group: yes
Method: Other
GLP: yes
Remarks: By analogy with a product of similar compositionApplication Route: Skin contact
Remarks: not available**Aluminium oxide:**Species: Rat, male and female
NOAEL: 57 mg/kg
Application Route: Drinking water
Exposure time: 1 a
Number of exposures: continuously
Dose: 57 - 189 - 567 mg/kg
Group: yes
Method: OECD Test Guideline 426
GLP: yes
Remarks: By analogy with a product of similar compositionSpecies: Rat
Application Route: Inhalation
Exposure time: 6 m
Number of exposures: 6 hr/day; 5 days a week
Dose: 15-30-50-70-100 mg/m3
Method: OECD Test Guideline 413
GLP: No information available.Application Route: Skin contact
Remarks: The study is not necessary from a scientific perspective.**Aspiration toxicity****Components:****Molybdenum trioxide:**

No aspiration toxicity classification

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Cobalt oxide:
No aspiration toxicity classification**Aluminium oxide:**
No aspiration toxicity classification**Experience with human exposure****Product:**

General Information : The possible symptoms known are those derived from the labelling (see section 2).

SECTION 12. ECOLOGICAL INFORMATION**Ecotoxicity****Product:**

Toxicity to fish : Remarks: no data available

Components:**Molybdenum trioxide:**Toxicity to fish : EC50 (Pimephales promelas (fathead minnow)): 866 - 1,017 mg/l
Exposure time: 96 h
Test Type: static test
Analytical monitoring: no data available
Method: Other
GLP: No information available.Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): ca. 310 mg/l
Exposure time: 48 h
Test Type: static test
Analytical monitoring: no data available
Method: Other
GLP: No information available.Toxicity to algae : NOEC (Pseudokirchneriella subcapitata (green algae)): 60 - 124 mg/l
End point: Growth rate
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Test substance: sodium molybdate
Method: OECD Test Guideline 201
GLP: no
Remarks: By analogy with a product of similar composition

EC50 (Pseudokirchneriella subcapitata (green algae)): > 434 - 630 mg/l

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	End point: Growth rate Exposure time: 72 h Test Type: static test Analytical monitoring: yes Test substance: sodium molybdate Method: OECD Test Guideline 201 GLP: no Remarks: By analogy with a product of similar composition
Toxicity to fish (Chronic toxicity)	: NOEC (Oncorhynchus mykiss (rainbow trout)): ca. 73 mg/l Exposure time: 78 d Test Type: flow through Analytical monitoring: yes Test substance: sodium molybdate Method: OECD Test Guideline 210 GLP: no Remarks: By analogy with a product of similar composition NOEC (Pimephales promelas (fathead minnow)): ca. 42 mg/l Exposure time: 34 d Test Type: flow through Analytical monitoring: yes Test substance: sodium molybdate Method: OECD Test Guideline 210 GLP: no Remarks: By analogy with a product of similar composition
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	: NOEC (Daphnia magna (Water flea)): ca. 75 mg/l Exposure time: 21 d End point: Reproduction rate Test Type: semi-static test Analytical monitoring: yes Test substance: sodium molybdate Method: OECD Test Guideline 211 GLP: no Remarks: By analogy with a product of similar composition NOEC (Daphnia magna (Water flea)): ca. 168 mg/l Exposure time: 21 d End point: Reproduction rate Test Type: semi-static test Analytical monitoring: yes Test substance: sodium molybdate Method: OECD Test Guideline 211 GLP: no Remarks: By analogy with a product of similar composition
Toxicity to bacteria	: EC50 (activated sludge of a predominantly domestic sewage): 820 mg/l End point: Bacteria toxicity (respiration inhibition) Exposure time: 3 h Test Type: aquatic Analytical monitoring: yes

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	concentration.
Toxicity to daphnia and other aquatic invertebrates	: NOEC (Daphnia magna (Water flea)): < 0.008 mg/l Exposure time: 48 h Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 202 GLP: yes
Toxicity to algae	: EC50 (Pseudokirchneriella subcapitata (green algae)): 80 mg/l End point: Growth rate Exposure time: 69 h Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 201 GLP: yes Remarks: The details of the toxic effect relate to the nominal concentration. EC50 (Lemna minor (duckweed)): 0.0901 mg/l End point: Growth rate Exposure time: 7 d Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 221 GLP: No information available. Remarks: By analogy with a product of similar composition
Toxicity to fish (Chronic toxicity)	: NOEC (Oncorhynchus mykiss (rainbow trout)): 2.2 mg/l Exposure time: 81 d Test Type: flow through Analytical monitoring: yes Method: Other GLP: yes Remarks: By analogy with a product of similar composition NOEC (Cyprinodon variegatus (sheepshead minnow)): 31.2 mg/l Exposure time: 28 d Test Type: flow through Analytical monitoring: yes Method: Other GLP: yes Remarks: By analogy with a product of similar composition
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	: NOEC (Daphnia magna (Water flea)): 0.0608 mg/l Exposure time: 21 d End point: Reproduction rate Test Type: semi-static test Analytical monitoring: yes Method: OECD Test Guideline 211 GLP: No information available. Remarks: By analogy with a product of similar composition

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	Method: OECD Test Guideline 209 GLP: yes
Toxicity to soil dwelling organisms	: NOEC (Eisenia sp.): 11.8 - 116.9 mg/kg Exposure time: 56 d End point: Reproduction Test substance: sodium molybdate Method: OECD Test Guideline 222 GLP: no Remarks: By analogy with a product of similar composition
Plant toxicity	: EC10 (Trifolium pratense): 0.6 - 2,615 mg/kg Exposure time: 21 d End point: Growth Test substance: sodium molybdate Method: Other GLP: no Remarks: By analogy with a product of similar composition EC10 (Lolium perenne): 45 - 5,214 mg/kg Exposure time: 21 d End point: Growth Test substance: sodium molybdate Method: Other GLP: no Remarks: By analogy with a product of similar composition
Sediment toxicity	: NOEC (Hyalella azteca (Scud)): 1112 mg/l Analytical monitoring: yes Sediment: Natural sediment Exposure duration: 96 h Basis for effect: mortality Test substance: Natural sediment Analytical monitoring: yes Method: Other GLP: no Remarks: By analogy with a product of similar composition
Toxicity to terrestrial organisms	: NOEC (other avian): ca. 600 mg/kg Exposure time: 28 d End point: weight Test substance: sodium molybdate Method: Other GLP: no
Cobalt oxide: Toxicity to fish	: NOEC (Danio rerio (zebra fish)): > 136 mg/l Exposure time: 96 h Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 203 GLP: yes Remarks: The details of the toxic effect relate to the nominal

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	NOEC (Mysidopsis bahia (opossum shrimp)): 1.77 mg/l Exposure time: 28 d End point: mortality Test Type: flow through Analytical monitoring: yes Method: Other GLP: No information available. Remarks: By analogy with a product of similar composition
Toxicity to bacteria	: EC50 (activated sludge, domestic): ca. 150 mg/l End point: Bacteria toxicity (growth inhibition) Exposure time: 0.5 h Test Type: aquatic Analytical monitoring: yes Method: OECD Test Guideline 209 GLP: yes Remarks: By analogy with a product of similar composition
Toxicity to soil dwelling organisms	: Remarks: Not applicable
Plant toxicity	: Remarks: Not applicable
Sediment toxicity	: NOEC (Lumbriculus variegatus (Worm)): ca. 2800 mg/kg dry weight (d.w.) Analytical monitoring: yes Sediment: Natural sediment Exposure duration: 28 d Basis for effect: mortality Test substance: Natural sediment Analytical monitoring: yes Method: Other GLP: no Remarks: By analogy with a product of similar composition NOEC (Hyalella azteca (Scud)): ca. 210 mg/kg dry weight (d.w.) Analytical monitoring: yes Sediment: Natural sediment Exposure duration: 42 d Basis for effect: mortality Test substance: Natural sediment Analytical monitoring: yes Method: Other GLP: no Remarks: By analogy with a product of similar composition
Toxicity to terrestrial organisms	: Remarks: Not applicable
Aluminium oxide: Toxicity to fish	: NOEC (Salmo trutta (brown trout)): > 0.072 mg/l

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	Exposure time: 96 h Test Type: semi-static test Analytical monitoring: yes Method: OECD Test Guideline 203 GLP: yes
Toxicity to daphnia and other aquatic invertebrates	: NOEC (Daphnia magna (Water flea)): > 0.071 mg/l Exposure time: 48 h Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 202 GLP: yes
Toxicity to algae	: NOEC (Pseudokirchneriella subcapitata (green algae)): >= 0.052 mg/l End point: Growth rate Exposure time: 72 h Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 201 GLP: yes EC50 (Pseudokirchneriella subcapitata (green algae)): 1.05 mg/l End point: Growth rate Exposure time: 72 h Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 201 GLP: yes Remarks: By analogy with a product of similar composition
Toxicity to fish (Chronic toxicity)	: NOEC (Pimephales promelas (fathead minnow)): 56.48 mg/l Exposure time: 7 d Test Type: semi-static test Analytical monitoring: yes Method: Other GLP: yes Remarks: By analogy with a product of similar composition
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	: NOEC (Daphnia magna (Water flea)): 0.076 mg/l Exposure time: 21 d End point: Reproduction rate Test Type: semi-static test Analytical monitoring: yes Method: OECD Test Guideline 211 GLP: yes Remarks: By analogy with a product of similar composition
Toxicity to bacteria	: GLP: Remarks: Not applicable
Toxicity to soil dwelling	: Remarks: Not applicable

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Distribution among environmental compartments	: adsorption Medium: water - soil Method: Other Remarks: Not expected to adsorb on soil.
Cobalt oxide: Distribution among environmental compartments	: adsorption Medium: water - soil log Koc: ca. 3.48
Aluminium oxide: Distribution among environmental compartments	: Remarks: Not applicable
Other adverse effects Product: Additional ecological information	: highly water endangering information
Components: Molybdenum trioxide: Environmental fate and pathways	: not available
Results of PBT and vPvB assessment	: Remarks: Not relevant for inorganic substances
Additional ecological information	: Do not allow to enter ground water, waterways or waste water.
Components: Cobalt oxide: Environmental fate and pathways	: not available
Results of PBT and vPvB assessment	: Remarks: Not applicable
Additional ecological information	: Do not allow to enter ground water, waterways or waste water.
Components: Aluminium oxide: Environmental fate and pathways	: not available
Results of PBT and vPvB assessment	: Remarks: Not applicable
Additional ecological information	: Do not allow to enter ground water, waterways or waste water.

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organisms	
Plant toxicity	: Remarks: Not applicable
Sediment toxicity	: Remarks: Not applicable
Toxicity to terrestrial organisms	: Remarks: Not applicable
Persistence and degradability Product: Biodegradability	: Remarks: no data available
Components: Molybdenum trioxide: Biodegradability	: Remarks: Not applicable
Cobalt oxide: Biodegradability	: Remarks: Not applicable
Aluminium oxide: Biodegradability	: Remarks: Not applicable
Bioaccumulative potential Product: Bioaccumulation	: Remarks: no data available
Components: Molybdenum trioxide: Bioaccumulation	: Species: Other Bioconcentration factor (BCF): 10 Method: calculated Remarks: Bioaccumulation is unlikely.
Cobalt oxide: Bioaccumulation	: Remarks: Not applicable
Aluminium oxide: Bioaccumulation	: Remarks: Not applicable
Mobility in soil Product: Distribution among environmental compartments	: Remarks: no data available
Components: Molybdenum trioxide:	

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information	
SECTION 13. DISPOSAL CONSIDERATIONS	
Disposal methods RCRA - Resource Conservation and Recovery Authorization Act Waste Code	: Although not a RCRA hazardous waste, check with local and state regulations for proper disposal. : NONE
Waste from residues	: Dispose of this product in accordance with applicable local, state and federal regulations. Recover metal components by reprocessing whenever possible.
Contaminated packaging	: Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

DOT Regulation: Proper shipping name: Hazard class: Packing group: UN/NA-number: Primary hazard class: Technical Name: Emergency Response Guide:	Environmentally hazardous substances, solid, n.o.s. 9 III UN 3077 9 Cobalt oxide 171
IATA Proper shipping name: Class: Packing group: UN/ID number: Primary risk: Remarks: Hazard inducer(s):	Environmentally hazardous substance, solid, n.o.s. 9 III UN 3077 9 Shipment permitted Cobalt oxide
IMDG Proper shipping name: Class: Packing group: UN no.: Primary risk: Hazard inducer(s): Marine pollutant: EmS:	Environmentally hazardous substance, solid, n.o.s. 9 III UN 3077 9 Cobalt oxide Marine Pollutant F-A S-F

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SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Acute Health Hazard
Chronic Health Hazard

SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : This product contains the chemical or chemicals listed below which are subject to the supplier notification requirements of Section 313 of the Superfund Amendments and Reauthorization Act of 1986 ("SARA") and the requirements of 40 CFR Part 372:

Molybdenum trioxide	1313-27-5	20 %
Cobalt Compounds	Not Assigned	10 %
Cobalt	7440-48-4	7.9 %

Clean Water Act

Contains no known priority pollutants at concentrations greater than 0.1%.

The components of this product are reported in the following inventories:

TSCA : All components of this product are listed or excluded from listing on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) Inventory.

Inventories

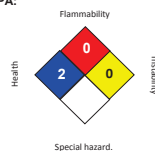
AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

SECTION 16. OTHER INFORMATION

Further information

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NFPA:



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This information is supplied under the OSHA Hazard Communication Standard, 29 CFR 1910.1200, and is offered in good faith based on data available to us that we believe to be true and accurate. The recommended industrial hygiene and safe handling procedures are believed to be generally applicable to the material. However, each user should review these recommendations in the specific context of the intended use and determine whether they are appropriate for that use. No warranty, express or implied, is made regarding the accuracy of this data, the hazards connected with the use of the material, or the results to be obtained from the use thereof. We assume no responsibility for damage or injury from the use of the product described herein. Data provided here are typical and not intended for use as product specifications.

US / USA

MSDS (Material Safety Data Sheet) Of Activated Alumina

1. PRODUCT AND COMPANY IDENTIFICATION

Commodity Name: Activated Alumina
Chemical Name: Aluminum oxide
Synonyms: Alumina; Activated Alumina; γ -p Alumina
CAS No.: 1344-28-1
Molecular Weight: 101.96
Chemical Formula: Al_2O_3

Company: Jiangsu Sanji Industrial Co., Ltd.
Address: Yudu Town, Jiangyan District, Taizhou City, Jiangsu Province, CHINA.
Telephone: 86-523-88641929
Fax: 86-523-88641928
Email: jyxuzi@hotmail.com
Emergency call: 13801422526

2. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient	CAS No	Percent
Aluminum oxid	1344-28-1	90-100%

3. HAZARDS IDENTIFICATION

CAUTION! MAY IRRITATE RESPIRATORY TRACT.
Potential Health Effects

Eye:

No adverse effects expected but dust may cause mechanical irritation.

Skin:

May cause irritation with redness and pain.

Ingestion:

No adverse effects expected

Inhalation:

Hazard is principally that of a nuisance dust. Coughing or shortness of breath may occur in cases of excessive inhalation

Chronic:

No adverse effects expected.

Aggravation of Pre-existing Conditions:

Not expected to be a health hazard

4. FIRST AID MEASURES

Inhalation:

Remove to fresh air. Get medical attention for any breathing difficulty.

Ingestion:

Give several glasses of water to drink to dilute. If large amounts were swallowed, get medical advice.

Skin Contact:

Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention if irritation develops.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention if irritation persists.

5. FIRE FIGHTING MEASURES

Fire:

Not considered to be a fire hazard.

Explosion:

Not considered to be an explosion hazard.

Fire Extinguishing Media:

Use any means suitable for extinguishing surrounding fire.

Special Information:

Use protective clothing and breathing equipment appropriate for the surrounding fire and to protect against the aluminum oxide dust that may be dispersed in the air.

6. ACCIDENTAL RELEASE MEASURES

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal.

7. HANDLING AND STORAGE

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Airborne Exposure Limits:

Alumina (Aluminum Oxide):

-OSHA Permissible Exposure Limit (PEL):

alpha alumina, 15 mg/m³ total dust, 5 mg/m³ respirable fraction

-ACGIH Threshold Limit Value (TLV):

aluminum oxide, 10 mg/m³ (TWA) inhalable (total) particulate matter containing no asbestos and < 1% crystalline silica, A4

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the

exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear protective gloves and clean body-covering clothing.

Eye Protection:

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: White bead.

Odor: No.

Solubility: Insoluble in water.

Density: 4.0 at 20C

pH: 7.

Volatile: 0.

Boiling Point: 2980C (5398F)

Melting Point: ca. 2000C (ca. 3632F)

Vapor Density (Air=1): Not applicable.

Vapor Pressure (mm Hg): Not applicable.

Evaporation Rate (BuAc=1): Not applicable.

10. STABILITY AND REACTIVITY

Stability: Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products: No information found.

Hazardous Polymerization: Will not occur.

Incompatibilities: Chlorine trifluoride, Ethylene oxide.

Conditions to Avoid: Incompatibles.

11. TOXICOLOGICAL INFORMATION

Investigated as a mutagen, reproductive effector.

Cancer Lists

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Aluminum Oxide (1344-28-1)	No	No	None

12. ECOLOGICAL INFORMATION

Environmental Fate: No information found.

Environmental Toxicity: No information found.

16. OTHER INFORMATION

Key: NE= Not Established NA= Not Applicable (R) = Registered Trademark

Disclaimer:

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13. DISPOSAL CONSIDERATIONS

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. TRANSPORT INFORMATION

Hazards Identification: None

The product is not classified in Explosives.

The product is not classified in flammable substance.

The product is not classified in oxidizing substances and organic peroxides.

The product is not classified in toxic and infectious substances.

The product is not classified in radioactive material.

The product is not classified in corrosives.

The product is not classified in other dangerous properties.

Land - Road/Railway: Not restricted.

Inland waterways: Not restricted.

Sea: Not restricted.

Air: Not restricted.

The substance is not subject to transport.

The goods are packaged according to the packaging requirement of ordinary goods.

15. REGULATORY INFORMATION

Chemical Inventory Status - Part 1

Ingredient	TSCA	EC	Japan	Australia
Aluminum Oxide (1344-28-1)	Yes	Yes	Yes	Yes

Chemical Inventory Status - Part 2

Ingredient	Korea	DSL	NDSL	Phil.	Canada
Aluminum Oxide (1344-28-1)	Yes	Yes	No	Yes	

Federal, State & International Regulations - Part 1

Ingredient	RQ	TPQ	List	Chemical Catg.	SARA 302	SARA 313
Aluminum Oxide (1344-28-1)	No	No	Yes	No		

Federal, State & International Regulations - Part 2

Ingredient	CERCLA	261.33	8(d)	-RCRA-	-TSCA-
Aluminum Oxide (1344-28-1)	No	No	No		

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: No Fire: No Pressure: No
Reactivity: No (Pure / sold)

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Date of printing: 12/06/2016

SECTION 1. IDENTIFICATION

Identification of the company:	Clariant Produkte (Deutschland) GmbH Lenbachplatz 6 München, 80333 Telephone No.: +49 (0)89/5110-0
Information of the substance/preparation:	Product Stewardship +1-704-331-7710 Emergency tel. number: +1 800-424-9300 CHEMTREC

Trade name: MEGAMAX® 800 Tab 6x4
Material number: 246689

Primary product use: Catalyst

Chemical family: Mixture of zinc oxide, copper oxide and aluminium oxide

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Eye irritation : Category 2B

Specific target organ toxicity : Category 2 (Lungs)
- repeated exposure

GHS label elements

Hazard pictograms



Signal word : Warning

Hazard statements : H320 Causes eye irritation.
H373 May cause damage to organs (Lungs) through prolonged or repeated exposure.

Precautionary statements

Prevention:

P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.

Response:

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P314 Get medical advice/ attention if you feel unwell.
P337 + P313 If eye irritation persists: Get medical advice/

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attention.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

The substance does not meet the criteria for PBT or vPvB substance.
Hazards Not Otherwise Classified:
Inhalation of dust may cause pneumoconiosis.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture	: Mixture
Substance name	: Mixture of zinc oxide, copper oxide and aluminium oxide

Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
Copper oxide	1317-38-0	55 - 70
Zinc oxide	1314-13-2	20 - 35
Aluminium oxide	1344-28-1	1 - 15
Graphite	7782-42-5	< 5

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

SECTION 4. FIRST AID MEASURES

General advice	: none
If inhaled	: Remove to fresh air. Call a physician if irritation develops or persists. Call a physician if symptoms occur.
In case of skin contact	: Before washing use a dry brush to remove dust from skin. Wash area with mild soap and copious amounts of water. If skin irritation occurs: Get medical advice/ attention.
In case of eye contact	: Do not rub affected area. Rinse immediately with plenty of lukewarm water, also under the eyelids, for at least 15 minutes. Get medical attention.
If swallowed	: Route of exposure unlikely. IF SWALLOWED: Immediately call a POISON CENTER/doctor.
Most important symptoms and effects, both acute and delayed	: The possible symptoms known are those derived from the labelling (see section 2). No additional symptoms are known.
Notes to physician	: There is an increased risk of inhalation in patients with Wilson's disease. Inhalation of the FUMES of metal oxides

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into clean containers, and dispose of in accordance with legal regulations.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion	: In case of inappropriate handling, spent catalyst can be self-heating when in contact with air.
Advice on safe handling	: Avoid contact with skin, eyes and clothing. Do not breathe dust/ fume/ gas/ mist/ vapours/ spray. Minimize dust generation and accumulation.
Conditions for safe storage	: Keep tightly closed in a dry and cool place.
Technical measures/Precautions	: Keep container tightly closed and dry. Keep container tightly closed. Keep container dry.
Materials to avoid	: No materials to be especially mentioned.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Components with workplace control parameters**

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Copper oxide	1317-38-0	TWA (Fumes)	0.1 mg/m3 (Copper)	NIOSH REL
		Further information: Also see specific listing for Copper (dusts and mists)		
		TWA (Fumes)	0.1 mg/m3 (Copper)	NIOSH REL
		Further information: Also see specific listing for Copper (dusts and mists)		
Zinc oxide	1314-13-2	TWA (Respirable fraction)	2 mg/m3	ACGIH
		Further information: metal fume fever		
		STEL (Respirable fraction)	10 mg/m3	ACGIH
		Further information: metal fume fever		
		TWA (Dust)	5 mg/m3	NIOSH REL
		TWA (Fumes)	5 mg/m3	NIOSH REL
		ST (Fumes)	10 mg/m3	NIOSH REL

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may cause metal fume fever including irritation of the eyes and respiratory tract and flu-like symptoms.
Prolonged or repeated contact under poor hygienic conditions may produce a papular, pustular eczema or dermatitis called oxide pox.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	: The product itself does not burn. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	: Do not use a solid water stream as it may scatter and spread fire.
Specific hazards during firefighting	: Fire may cause evolution of: breathable copper oxide dust None known.
Further information	: Wear full protective clothing and NIOSH/MSHA-approved positive pressure, self-contained breathing apparatus. Evacuate area. Fight fire with normal precautions from a reasonable distance.
Special protective equipment for firefighters	: In the event of fire, wear self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	: Ensure adequate ventilation. Avoid dust formation. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Wearing appropriate personal protective equipment, contain spill and collect into a suitable container. Minimize airborne particulates. Keep container tightly closed. Material should be swept up or vacuumed, using ventilation to control the level of airborne dust. Avoid using compressed air or any method that creates airborne dust. If cleanup may create airborne dust, personnel should wear eye, skin, and respiratory protection. Refer to Section 8 for more information.
Environmental precautions	: Do not flush into surface water or sanitary sewer system.
Methods and materials for containment and cleaning up	: Take up uncontaminated material and pass on for further processing. Take up contaminated material by mechanical means, load

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		C (Dust)	15 mg/m3	NIOSH REL
		TWA (total dust)	15 mg/m3	OSHA Z-1
		TWA (respirable fraction)	5 mg/m3	OSHA Z-1
		TWA (Total)	10 mg/m3	OSHA P0
		TWA (Respirable fraction)	5 mg/m3	OSHA P0
		TWA	5 mg/m3	OSHA Z-1
		TWA	5 mg/m3	OSHA P0
		STEL	10 mg/m3	OSHA P0
		TWA (Fumes)	5 mg/m3	OSHA Z-1
		TWA (Total dust)	10 mg/m3	OSHA P0
		TWA (respirable dust fraction)	5 mg/m3	OSHA P0
		TWA (Fumes)	5 mg/m3	OSHA P0
		STEL (Fumes)	10 mg/m3	OSHA P0
Aluminium oxide	1344-28-1	TWA (total dust)	15 mg/m3	OSHA Z-1
		TWA (respirable fraction)	5 mg/m3	OSHA Z-1
		TWA (Total)	10 mg/m3	OSHA P0
		TWA (Respirable fraction)	5 mg/m3	OSHA P0
		TWA (Respirable fraction)	1 mg/m3	ACGIH
		Further information: Lower Respiratory Tract irritation, Pneumoconiosis, Neurotoxicity, Not classifiable as a human carcinogen, varies		
Graphite	7782-42-5	TWA (Respirable)	2.5 mg/m3	NIOSH REL
		Further information: Also see specific listing for Graphite (synthetic).		
		TWA	15 Million particles per cubic foot	OSHA Z-3
		Further information: Based on impinger samples counted by light-field techniques, mppcf X 35.3 = million particles per cubic meter = particles per c.c		
		TWA (Total)	10 mg/m3	OSHA P0
		TWA (Respirable)	5 mg/m3	OSHA P0

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		fraction)		
		TWA (total dust)	15 mg/m3	OSHA Z-1
		TWA (respirable fraction)	5 mg/m3	OSHA Z-1
		TWA (Respirable fraction)	2 mg/m3	ACGIH
Further information: Pneumoconiosis				
		TWA (Respirable fraction)	2.5 mg/m3	OSHA P0
		TWA (Dust)	15 Million particles per cubic foot	OSHA Z-3
Further information: Based on impinger samples counted by light-field techniques., mppcf X 35.3 = million particles per cubic meter = particles per c.c				
		TWA (Total dust)	10 mg/m3	OSHA P0
		TWA (respirable dust fraction)	5 mg/m3	OSHA P0
		TWA (respirable dust fraction)	2.5 mg/m3	OSHA P0
		PEL (Total dust)	10 mg/m3	CAL PEL
		PEL (respirable dust fraction)	5 mg/m3	CAL PEL
Further information: The concentration and percentage of the particulate used for this limit are determined from the fraction passing a size selector with the following characteristics: Aerodynamic Diameter in Micrometers (unit density sphere)..... Percent Passing Selector 0 100 1 97 2 91 3 74 4 50 5 30 6 17 7 9 8 5 10 1				
		PEL (Respirable dust)	2.5 mg/m3	CAL PEL

Engineering measures : Use adequate exhaust ventilation and/or dust collection to keep dust levels below exposure limits.

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Relative density	: not tested.
Density	: not tested.
Bulk density	: ca. 1,050 kg/m3
Solubility(ies)	
Water solubility	: insoluble
Solubility in other solvents	: not tested.
Partition coefficient: n-octanol/water	: not determined
Auto-ignition temperature	: Not applicable
Decomposition temperature	: no data available
Viscosity	
Viscosity, dynamic	: Not applicable
Viscosity, kinematic	: Not applicable
Flow time	: Not applicable
Explosive properties	: no data available
Oxidizing properties	: not tested.
Sublimation point	: not determined
Minimum ignition energy	: not tested.
Particle size	: not tested.

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: Stable under recommended storage conditions.
Chemical stability	: No decomposition if stored and applied as directed.
Possibility of hazardous reactions	: No dangerous reaction known under conditions of normal use.
Conditions to avoid	: Avoid dust formation. Keep away from heat.
Incompatible materials	: Acids and bases
Hazardous decomposition products	: No decomposition if stored and applied as directed. In case of fire hazardous decomposition products may be produced such as:

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Personal protective equipment

Respiratory protection	: Wear NIOSH approved particulate filtering respirator rated N, R, or P95 or 100 or equivalent in the absence of proper environmental control. Type of respirator depends on level of exposure.
Hand protection	
Remarks	: Chemical resistant gloves
Eye protection	: Follow facility guidelines in the absence of dusts. Tightly fitting safety goggles
Skin and body protection	: Wear protective clothing, including long sleeves and gloves, to prevent skin contact. Thoroughly wash clothing before reuse.
Hygiene measures	: Wash off with warm water and soap.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: tablet, powder
Colour	: black, olive
Odour	: none
Odour Threshold	: Not relevant
pH	: not tested.
Melting point	: > 800 °C
Boiling point	: Not applicable
Flash point	: Not applicable
Evaporation rate	: Not applicable
Flammability (solid, gas)	: not determined
Upper explosion limit	: not tested.
Lower explosion limit	: not tested.
Combustion number	: not determined
Vapour pressure	: Not applicable
Relative vapour density	: Not applicable

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see heading 5

SECTION 11. TOXICOLOGICAL INFORMATION**Information on likely routes of exposure**

Eye contact
Skin contact
Ingestion
Inhalation

Acute toxicity**Components:****Copper oxide:**

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 423

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 402

Zinc oxide:

Acute oral toxicity : LD50 (Rat, male and female): > 5,000 mg/kg
Method: OECD Test Guideline 401
GLP: No information available.

Acute inhalation toxicity : LC50 (Rat, male and female): > 5.7 mg/l
Exposure time: 4 h
Method: OECD Test Guideline 403
GLP: No information available.

Acute dermal toxicity : LC50 (Rat, male and female): > 2,000 mg/kg
Method: OECD Test Guideline 402
GLP: yes

Acute toxicity (other routes of administration) : LD50 (Rat): 240 mg/kg
Application Route: Intraperitoneal injection

Aluminium oxide:

Acute oral toxicity : LD50 (Rat, male and female): > 10,000 mg/kg
Method: OECD Test Guideline 401
GLP: No information available.

Acute inhalation toxicity : LC50 (Rat, male and female): > 2.3 mg/l
Exposure time: 4 h
Method: OECD Test Guideline 403
GLP: yes

Acute dermal toxicity : Remarks: Not applicable

Graphite:



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Acute oral toxicity : Remarks: Test data for the substance are not available.

Skin corrosion/irritation**Product:**

Species: Rabbit
Exposure time: 24 h
Method: Draize Test
Result: Mild skin irritant
Remarks: Information based on the active ingredient.

Components:**Copper oxide:**

Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation

Zinc oxide:

Species: Rabbit
Result: No skin irritation

Aluminium oxide:

Species: Rabbit
Exposure time: 24 h
Method: OECD Test Guideline 404
Result: No skin irritation
GLP: No information available.

Serious eye damage/eye irritation**Product:**

Species: Rabbit
Result: Mild eye irritant
Exposure time: 24 h
Method: Draize Test
Remarks: Information based on the active ingredient.

Components:**Copper oxide:**

Species: Rabbit
Result: No eye irritation
Method: OECD Test Guideline 405

Zinc oxide:

Species: Rabbit
Result: No eye irritation



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Aluminium oxide:

Species: rabbit eye
Result: No eye irritation
Method: FDA guideline
GLP: No information available.

Respiratory or skin sensitisation**Product:**

Remarks: not tested.

Components:**Copper oxide:**

Species: Guinea pig
Method: OECD Test Guideline 406
Result: non-sensitizing

Zinc oxide:

Species: Guinea pig
Result: non-sensitizing

Aluminium oxide:

Test Type: Draize Test
Exposure routes: Dermal
Species: Guinea pig
Method: Draize Test
Result: non-sensitizing
GLP: no

Test Type: Respiratory system
Exposure routes: inhalation (dust/mist/fume)
Species: Mouse
Method: Other
Result: non-sensitizing
GLP: no

Germ cell mutagenicity**Components:****Aluminium oxide:**

Genotoxicity in vitro : Test Type: In vitro gene mutation study in mammalian cells
Species: mouse lymphoma cells
Concentration: 6,1 - 780 µg/ml
Metabolic activation: with and without
Method: OECD Test Guideline 476
Result: negative
GLP: yes
Remarks: By analogy with a product of similar composition



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Genotoxicity in vivo : Test Type: Chromosome Aberration Test
Species: Rat (female)
Strain: wistar
Cell type: Bone marrow cells
Application Route: oral (gavage)
Exposure time: Single exposure
Dose: 500 - 1000 - 2000 mg/kg
Method: OECD Test Guideline 475
Result: positive
GLP: No information available.

Test Type: Micronucleus test
Species: Rat (female)
Strain: wistar
Cell type: Bone marrow cells
Application Route: oral (gavage)
Exposure time: Single exposure
Dose: 500 - 1000 - 2000 mg/kg
Method: OECD Test Guideline 474
Result: positive
GLP: No information available.

Germ cell mutagenicity - Assessment : Weight of evidence does not support classification as a germ cell mutagen.

Carcinogenicity**Components:****Aluminium oxide:**

Carcinogenicity - Assessment : Carcinogenicity classification not possible from current data.

IARC

Not listed

OSHA

Not listed

NTP

Not listed

Reproductive toxicity**Components:****Aluminium oxide:**

Effects on fertility : Species: Rat
Sex: male and female
Dose: 57 - 189 - 567 mg/kg
Frequency of Treatment: daily
Sprague-Dawley
Application Route: Drinking water
Test period: 1 a
Group: yes
NOAEL: ca. 567 mg/kg,



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F1: ca. 57 mg/kg,
Method: Other
GLP: yes
Remarks: By analogy with a product of similar composition

Effects on foetal development : Species: Rat
Application Route: oral (gavage)
Exposure time: gestation day 6 to 15
Dose: 126 - 251 - 503 mg/kg
Group: yes
503 mg/kg
> 100 mg/kg
Number of exposures: twice daily
Method: OECD Test Guideline 414
GLP: No information available.
Remarks: By analogy with a product of similar composition

Reproductive toxicity - Assessment : Classification as "toxic for reproduction" is not justifiable.
No teratogenic effects to be expected.

STOT - single exposure**Components:****Aluminium oxide:**

Assessment: The substance or mixture is not classified as specific target organ toxicant, single exposure.

STOT - repeated exposure**Components:****Aluminium oxide:**

Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Repeated dose toxicity**Components:****Zinc oxide:**

Species: Rat, male and female
NOAEL: ca. 68 mg/kg
Application Route: oral (feed)
Exposure time: 13 w
Number of exposures: daily
Dose: 300 - 3000 - 30000 ppm
Group: yes
Method: OECD Test Guideline 408
GLP: no
Remarks: By analogy with a product of similar composition

Species: Rat, male
NOAEL: 0.0015 mg/l



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Application Route: Inhalation
Exposure time: 13 w
Number of exposures: 6 h/day, 5 days/week
Dose: 0,3 - 1,5 - 4,5 mg/m³
Group: yes
Method: OECD Test Guideline 413
GLP: yes

Aluminium oxide:

Species: Rat, male and female
NOAEL: 57 mg/kg
Application Route: Drinking water
Exposure time: 1 a
Number of exposures: continuously
Dose: 57 - 189 - 567 mg/kg
Group: yes
Method: OECD Test Guideline 426
GLP: yes
Remarks: By analogy with a product of similar composition

Species: Rat
LOAEL: 0,070 mg/l
Application Route: Inhalation
Exposure time: 6 m
Number of exposures: 6 h/day; 5 days a week
Dose: 15-30-50-70-100 mg Al/m³
Method: OECD Test Guideline 413
GLP: No information available.

Application Route: Skin contact
Remarks: The study is not necessary from a scientific perspective.

Aspiration toxicity**Components:****Aluminium oxide:**

No aspiration toxicity classification

Experience with human exposure**Product:**

General Information : The possible symptoms known are those derived from the labelling (see section 2).

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity**Components:****Copper oxide:**

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Toxicity to fish : Remarks: For this material no values were determined. The classification is based on read across data analogous substances.

Zinc oxide:

Toxicity to fish : (Ceriodaphnia dubia (water flea)): 0.67 mg/l
Exposure time: 48 h
Remarks: pH <7

Toxicity to algae : (Selenastrum capricornutum (green algae)): 0.21 mg/l
Exposure time: 72 h
Remarks: pH >7 -8,5

M-Factor (Acute aquatic toxicity) : 1

M-Factor (Chronic aquatic toxicity) : 1

Aluminium oxide:

Toxicity to fish : NOEC (Salmo trutta (brown trout)): > 0.072 mg/l
Exposure time: 96 h
Test Type: semi-static test
Analytical monitoring: yes
Method: OECD Test Guideline 203
GLP: yes

Toxicity to daphnia and other aquatic invertebrates : NOEC (Daphnia magna (Water flea)): > 0.071 mg/l
Exposure time: 48 h
Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 202
GLP: yes

Toxicity to algae : NOEC (Pseudokirchneriella subcapitata (green algae)): >= 0.052 mg/l
End point: Growth rate
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 201
GLP: yes

EC50 (Pseudokirchneriella subcapitata (green algae)): 1.05 mg/l
End point: Growth rate
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 201
GLP: yes
Remarks: By analogy with a product of similar composition



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Substance key: SC0000102090	Revision Date: 06/03/2016
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Toxicity to fish (Chronic toxicity) : NOEC (Pimephales promelas (fathead minnow)): 56.48 mg/l
Exposure time: 7 d
Test Type: semi-static test
Analytical monitoring: yes
Method: Other
GLP: yes
Remarks: By analogy with a product of similar composition

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.076 mg/l
Exposure time: 21 d
End point: Reproduction rate
Test Type: semi-static test
Analytical monitoring: yes
Method: OECD Test Guideline 211
GLP: yes
Remarks: By analogy with a product of similar composition

Toxicity to bacteria : GLP:
Remarks: Not applicable

Toxicity to soil dwelling organisms : Remarks: Not applicable

Plant toxicity : Remarks: Not applicable

Sediment toxicity : Remarks: Not applicable

Toxicity to terrestrial organisms : Remarks: Not applicable

Graphite:
Toxicity to fish : Remarks: Test data for the substance are not available.

Persistence and degradability**Components:****Copper oxide:**

Biodegradability : Remarks: The methods for determining biodegradability are not applicable to inorganic substances.

Zinc oxide:
Biodegradability : Remarks: The methods for determining biodegradability are not applicable to inorganic substances.

Aluminium oxide:
Biodegradability : Remarks: Not applicable

Graphite:

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Biodegradability : Remarks: The methods for determining biodegradability are not applicable to inorganic substances.

Bioaccumulative potential**Components:****Copper oxide:**

Bioaccumulation : Remarks: Not applicable

Zinc oxide:

Bioaccumulation : Remarks: Not applicable

Aluminium oxide:

Bioaccumulation : Remarks: Not applicable

Graphite:

Bioaccumulation : Remarks: Test data for the substance are not available.

Mobility in soil**Components:****Copper oxide:**

Distribution among environmental compartments : Remarks: After release, adsorbs onto soil.

Zinc oxide:

Distribution among environmental compartments : Medium: water - soil
log Koc: 2.2

Aluminium oxide:

Distribution among environmental compartments : Remarks: Not applicable

Graphite:

Distribution among environmental compartments : Remarks: Test data for the substance are not available.

Other adverse effects**Components:****Copper oxide:**

Results of PBT and vPvB assessment : Remarks: Not relevant for inorganic substances

Additional ecological information : slightly water endangering

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Zinc oxide:	
Results of PBT and vPvB assessment	: Remarks: Not relevant for inorganic substances
Additional ecological information	: water endangering
Aluminium oxide:	
Environmental fate and pathways	: not available
Results of PBT and vPvB assessment	: Remarks: Not applicable
Additional ecological information	: Do not allow to enter ground water, waterways or waste water.
Graphite:	
Results of PBT and vPvB assessment	: Remarks: Not relevant for inorganic substances
Additional ecological information	: none

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods	
RCRA - Resource Conservation and Recovery Authorization Act	: Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations.
Waste from residues	: Dispose of this product in accordance with applicable local, state and federal regulations. Recover metal components by reprocessing whenever possible.
Contaminated packaging	: Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

DOT Regulation:	
Proper shipping name:	Environmentally hazardous substances, solid, n.o.s.
Hazard class:	9
Packing group:	III
UN/NA-number:	UN 3077
Primary hazard class:	9

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Zinc compounds	Not Assigned	35 %
Zinc powder (pyrophoric)	7440-66-6	28 %

The components of this product are reported in the following inventories:

TSCA	All components of this product are listed or excluded from listing on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) Inventory.
------	--

SECTION 16. OTHER INFORMATION

Full text of other abbreviations

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardization; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EMS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECS - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Further information

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Technical Name:	zinc oxide Copper oxide
IATA	
Proper shipping name:	Environmentally hazardous substance, solid, n.o.s.
Class:	9
Packing group:	III
UN/ID number:	UN 3077
Primary risk:	9
Remarks:	Shipment permitted
Hazard inducer(s):	zinc oxide Copper oxide
IMDG	
Proper shipping name:	Environmentally hazardous substance, solid, n.o.s.
Class:	9
Packing group:	III
UN no.:	UN 3077
Primary risk:	9
Hazard inducer(s):	zinc oxide Copper oxide
Marine pollutant:	Marine Pollutant
EmS:	F-A S-F
Further information:	Non-dangerous good of class 9 for packagings < 5L / 5 kg

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards	: Acute Health Hazard Chronic Health Hazard
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SARA 302	: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
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SARA 313	: This product contains the chemical or chemicals listed below which are subject to the supplier notification requirements of Section 313 of the Superfund Amendments and Reauthorization Act of 1986 ("SARA") and the requirements of 40 CFR Part 372.
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Copper Compound	Not Assigned	70 %
Copper	7440-50-8	56 %

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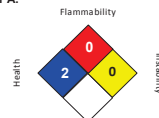
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NFPA:



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This information corresponds to the present state of our knowledge and is intended as a general description of our products and their possible applications. Clariant makes no warranties, express or implied, as to the information's accuracy, adequacy, sufficiency or freedom from defect and assumes no liability in connection with any use of this information. Any user of this product is responsible for determining the suitability of Clariant's products for its particular application. NO EXPRESS OR IMPLIED WARRANTY IS MADE OF THE MERCHANTABILITY, SUITABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE OF ANY PRODUCT OR SERVICE. Nothing included in this information waives any of Clariant's General Terms and Conditions of Sale, which control unless it agrees otherwise in writing. Any existing intellectual/industrial property rights must be observed. Due to possible changes in our products and applicable national and international regulations and laws, the status of our products could change. Material Safety Data Sheets providing safety precautions, that should be observed when handling or storing Clariant products, are available upon request and are provided in compliance with applicable law. You should obtain and review the applicable Material Safety Data Sheet information before handling any of these products. For additional information, please contact Clariant.

US / EN

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Substance key: SC0000101020	Revision Date: 03/07/2018
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SECTION 1. IDENTIFICATION

Identification of the company:	Clariant Produkte (Deutschland) GmbH Arabellastrasse 4a München, 81925 Telephone No.: +49 (0)89/5110-0 Information of the substance/preparation: Product Stewardship, +1-704-331-7710 Emergency tel. number: +1 800-424-9300 CHEMTREC
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Trade name:	ReforMax® 100 Tab 4.7x4.7
Material number:	246543
Primary product use:	Catalyst
Chemical family:	Mixture of nickel oxide and other inorganic compounds

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200

Skin sensitisation : Category 1

Carcinogenicity (Inhalation) : Category 1A

Specific target organ toxicity
- repeated exposure : Category 1

GHS label elements

Hazard pictograms



Signal word : Danger

Hazard statements : H317 May cause an allergic skin reaction.
H350i May cause cancer by inhalation.
H372 Causes damage to organs through prolonged or repeated exposure.

Precautionary statements : **Prevention:**
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.

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	Wash clothing before reuse. If skin irritation occurs: Get medical advice/ attention.
In case of eye contact	: Do not rub affected area. Rinse immediately with plenty of lukewarm water, also under the eyelids, for at least 15 minutes. Obtain medical attention.
If swallowed	: Do NOT induce vomiting. Call your local Poison Control Center (In the U.S. call 1-800-222-1222).
Most important symptoms and effects, both acute and delayed	: None known.
Notes to physician	: Skin sensitization may lead to chronic eczema "nickel itch". Lung damage is cumulative and may include cancer of lung, nasal cavity and larynx. May cause pulmonary eosinophilia (Loeffler's Syndrome).

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	: The product itself does not burn. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	: Do not use a solid water stream as it may scatter and spread fire.
Specific hazards during firefighting	: In case of fire can be formed: Breathable nickel oxide dust
Further information	: Wear full protective clothing and NIOSH/MSHA-approved positive pressure, self-contained breathing apparatus. Evacuate area. Fight fire with normal precautions from a reasonable distance.
Special protective equipment for firefighters	: In the event of fire, wear self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	: Ensure adequate ventilation. Avoid dust formation. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Refer to Section 8 for more information.
---	--

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P272 Contaminated work clothing should not be allowed out of the workplace.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P363 Wash contaminated clothing before reuse.

Storage:

P405 Store locked up.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Substance name : Mixture of nickel oxide and other inorganic compounds

Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
Nickel monoxide	1313-99-1	50 - 60
Aluminium oxide	1344-28-1	15 - 25
Magnesium oxide	1309-48-4	2 - 10
Amorphous silicon dioxide	7631-86-9	2 - 10
Calcium oxide	1305-78-8	1 - 10
Rare earth oxides	68188-83-0	1 - 10

SECTION 4. FIRST AID MEASURES

General advice	: Take off all contaminated clothing immediately. Show this safety data sheet to the doctor in attendance.
If inhaled	: INHALATION: If exposed to excessive levels of dust or fumes, remove to fresh air and get medical attention. Get medical attention if cough and other symptoms develop. Remove to fresh air.
In case of skin contact	: Avoid contact with skin. Wash area with mild soap and copious amounts of water. Remove contaminated clothing and shoes.

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Environmental precautions	: Do not flush into surface water or sanitary sewer system.
Methods and materials for containment and cleaning up	: Sweep up or vacuum up spillage and collect in suitable container for disposal.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion	: In case of inappropriate handling, spent catalyst can be self-heating when in contact with air.
Advice on safe handling	: Avoid contact with skin, eyes and clothing. Do not breathe dust/ fume/ gas/ mist/ vapours/ spray. Minimize dust generation and accumulation. Used catalysts may have different hazards or properties than the original product. This SDS does not apply to used catalysts.
Conditions for safe storage	: Keep tightly closed in a dry and cool place.
Technical measures/Precautions	: Keep container tightly closed and dry. Keep container tightly closed. Keep container dry.
Materials to avoid	: No materials to be especially mentioned.
Further information on storage stability	: Stable under recommended storage conditions.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Aluminium oxide	1344-28-1	TWA (total dust)	15 mg/m3	OSHA Z-1
		TWA (respirable fraction)	5 mg/m3	OSHA Z-1
		TWA (Total dust)	10 mg/m3	OSHA P0
		TWA (respirable dust fraction)	5 mg/m3	OSHA P0
		TWA (Respirable fraction)	1 mg/m3 (Aluminium)	ACGIH
Magnesium oxide	1309-48-4	TWA	10 mg/m3	ACGIH

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		(Inhalable fraction)		
		TWA (fume, total particulate)	15 mg/m3	OSHA Z-1
		TWA (Fume - total particulate)	10 mg/m3	OSHA P0
Amorphous silicon dioxide	7631-86-9	TWA (Dust)	20 Million particles per cubic foot (Silica)	OSHA Z-3
		TWA (Dust)	80 mg/m3 / %SiO2 (Silica)	OSHA Z-3
Calcium oxide	1305-78-8	TWA	2 mg/m3	ACGIH
		TWA	2 mg/m3	NIOSH REL
		TWA	5 mg/m3	OSHA Z-1
		TWA	5 mg/m3	OSHA P0

All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by the Particulates Not Otherwise Regulated (PNOR) limit which is 5 mg/m3 for respirable fraction and 15 mg/m3 for total dust. ACGIH exposure guidelines of less than 3 mg/m3 (respirable) and 10 mg/m3 (inhalable) have been established for particles (insoluble/poorly soluble) not otherwise specified (PNOS).

Engineering measures : Use ventilation adequate to keep exposures below recommended exposure limits. See the safety datasheet.

Personal protective equipment

Respiratory protection : Wear NIOSH approved particulate filtering respirator rated N, R, or P95 or 100 or equivalent in the absence of proper environmental control. Type of respirator depends on level of exposure.

Hand protection
Remarks : butyl-rubber PVC Viton (R) Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection : Follow facility guidelines in the absence of dusts. Tightly fitting safety goggles
If respiratory protection is needed under dusty conditions, a

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full facepiece respirator is recommended to provide both eye and respiratory protection.

Skin and body protection : Wear protective clothing, including long sleeves and gloves, to prevent skin contact. Thoroughly wash clothing before reuse.

Hygiene measures : Keep working clothes separately. Keep away from food, drink and animal feedings. Wash hands before breaks and immediately after handling the product. Preventive skin protection (protective ointment for the skin)

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : spheres

Colour : grey, to, white

Odour : odourless

Odour Threshold : Not relevant

pH : Not applicable insoluble

Melting point : > 1,000 °C

Boiling point : Not applicable

Flash point : Not applicable

Evaporation rate : Not applicable

Self-ignition : not tested.

Burning number : not determined

Upper explosion limit / upper flammability limit : not tested.

Lower explosion limit / Lower flammability limit : not tested.

Vapour pressure : Not applicable

Relative vapour density : Not applicable

Relative density : not tested.

Density : 1.1 g/cm3 (30 °C)

Bulk density : 1,200 kg/m3

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Solubility(ies)
Water solubility : insoluble

Solubility in other solvents : not tested.

Partition coefficient: n-octanol/water : Not applicable

Auto-ignition temperature : Not applicable

Viscosity
Viscosity, dynamic : Not applicable

Viscosity, kinematic : Not applicable

Flow time : Not applicable

Explosive properties : no data available

Oxidizing properties : not tested.

Sublimation point : not determined

Dust explosion class : not capable of dust explosion

Minimum ignition energy : not tested.

Particle size : not tested.

SECTION 10. STABILITY AND REACTIVITY

Reactivity : No dangerous reaction known under conditions of normal use.

Chemical stability : The product is chemically stable.

Possibility of hazardous reactions : Nickel catalysts can form nickel tetracarbonyl Ni(CO)4 in the presence of carbon monoxide. Nickel carbonyl is highly flammable and highly toxic and can cause cyanosis and chemical pneumonia which can be fatal. Symptoms may be delayed for several hours or days. Extreme care and specialized handling is required if carbon monoxide is present in the catalyst process. Hazardous reactions are possible at temperatures including, but not limited to, ambient temperatures depending on pressure and carbon monoxide concentrations.

Conditions to avoid : Avoid dust formation.

Incompatible materials : Acids and bases

Hazardous decomposition products : No decomposition if stored and applied as directed. In case of fire hazardous decomposition products may be

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produced such as:
see heading 5

SECTION 11. TOXICOLOGICAL INFORMATION**Information on likely routes of exposure**

Eye contact
Skin contact
Ingestion
Inhalation

Acute toxicity**Product:**

Acute oral toxicity : Acute toxicity estimate: > 5,000 mg/kg
Method: Calculation method

Acute inhalation toxicity : Acute toxicity estimate: > 10 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Calculation method

Acute dermal toxicity : Remarks: no data available

Components:**Nickel monoxide:**

Acute oral toxicity : LD50 (Rat, male and female): > 5,000 mg/kg
Method: OECD Test Guideline 401
GLP: yes

Acute inhalation toxicity : LC50 (Rat, male and female): > 5.08 mg/l
Exposure time: 4 h
Method: OECD Test Guideline 403
GLP: yes

Acute dermal toxicity : Remarks: not required

Aluminium oxide:

Acute oral toxicity : LD50 (Rat, male and female): > 10,000 mg/kg
Method: OECD Test Guideline 401
GLP: No information available.

Acute inhalation toxicity : LC50 (Rat, male and female): > 2.3 mg/l
Exposure time: 4 h
Method: OECD Test Guideline 403
GLP: yes

Acute dermal toxicity : Remarks: Not applicable

Magnesium oxide:

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Acute oral toxicity : LD50 (Rat, male and female): 3,870 - 3,990 mg/kg

Acute inhalation toxicity : LC50 (Rat, male and female): > 1.5 mg/l
Exposure time: 4 h
Method: OECD Test Guideline 403
GLP: yes
Remarks: By analogy with a product of similar composition

Acute dermal toxicity : Remarks: Not applicable
Product dust may be irritating to eyes, skin and respiratory system.

Amorphous silicon dioxide:

Acute oral toxicity : LD50 (Rat, male and female): > 5,000 mg/kg
Method: OECD Test Guideline 401
GLP: yes

Acute inhalation toxicity : LC50 (Rat, male and female): > 2.08 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
GLP: yes

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg
Method: Other
GLP: no

Calcium oxide:

Acute oral toxicity : LD50 (Rat, female): > 2,000 mg/kg
Method: OECD Test Guideline 425

Acute inhalation toxicity : Remarks: no data available

Acute dermal toxicity : Remarks: no data available

Skin corrosion/irritation**Product:**

Remarks: no data available

Components:**Nickel monoxide:**

Species: Rabbit
Exposure time: 4 h
Assessment: No skin irritation
Method: OECD Test Guideline 404
Result: Mild skin irritation
GLP: yes

Aluminium oxide:

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Species: Rabbit
Exposure time: 24 h
Method: OECD Test Guideline 404
Result: No skin irritation
GLP: No information available.

Magnesium oxide:

Species: Humans
Exposure time: 15 min
Method: REGULATION (EC) No 761/2009, ANNEX III, B46
Result: No skin irritation
GLP: yes
Remarks: By analogy with a product of similar composition

Remarks: May cause skin and eye irritation in susceptible persons.

Amorphous silicon dioxide:

Species: Rabbit
Exposure time: 4 h
Method: OECD Test Guideline 404
Result: No skin irritation
GLP: yes

Calcium oxide:

Species: Rabbit
Method: Other
Result: Irritating to skin.
Remarks: By analogy with a product of similar composition

Serious eye damage/eye irritation**Product:**

Remarks: no data available

Components:**Nickel monoxide:**

Species: rabbit eye
Result: Mild eye irritation
Exposure time: 4 d
Assessment: No eye irritation
Method: OECD Test Guideline 405
GLP: yes

Aluminium oxide:

Species: rabbit eye
Result: No eye irritation
Method: FDA guideline
GLP: No information available.

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Magnesium oxide:

Species: rabbit eye
Result: No eye irritation
Exposure time: 24 h
Method: OECD Test Guideline 405
GLP: yes
Remarks: By analogy with a product of similar composition

Remarks: May cause eye or skin irritation with susceptible persons.

Amorphous silicon dioxide:

Species: rabbit eye
Result: No eye irritation
Exposure time: 24 h
Method: OECD Test Guideline 405
GLP: yes

Calcium oxide:

Species: Rabbit
Result: irritating
Assessment: Risk of serious damage to eyes.
Method: OECD Test Guideline 405

Respiratory or skin sensitisation**Product:**

Remarks: no data available

Components:**Nickel monoxide:**

Exposure routes: Skin contact
Species: Humans
Result: Causes sensitisation.
Remarks: By analogy with a product of similar composition

Aluminium oxide:

Test Type: Draize Test
Exposure routes: Dermal
Species: Guinea pig
Method: Draize Test
Result: non-sensitizing
GLP: no

Test Type: Respiratory system
Exposure routes: inhalation (dust/mist/fume)
Species: Mouse
Method: Other
Result: non-sensitizing
GLP: no

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Magnesium oxide:

Test Type: Guinea pig maximization test
Exposure routes: Dermal
Species: Guinea pig
Method: OECD Test Guideline 406
Result: non-sensitizing
GLP: yes
Remarks: By analogy with a product of similar composition

Test Type: Mouse local lymphnode assay
Exposure routes: Dermal
Species: Mouse
Method: OECD Test Guideline 429
Result: Sensitising
GLP: yes
Remarks: By analogy with a product of similar composition

Amorphous silicon dioxide:

Remarks: Not relevant

Calcium oxide:

Remarks: no data available

Assessment: Causes skin irritation., Causes serious eye damage.

Germ cell mutagenicity**Components:****Nickel monoxide:**

Genotoxicity in vitro : Test Type: In vitro gene mutation study in mammalian cells
Test system: mouse lymphoma cells
Concentration: 1,3 - 10 mM
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative
GLP: yes

Germ cell mutagenicity - Assessment : In vitro tests did not show mutagenic effects

Aluminium oxide:

Genotoxicity in vitro : Test Type: In vitro gene mutation study in mammalian cells
Test system: mouse lymphoma cells
Concentration: 6,1 - 780 µg/ml
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative
GLP: yes

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	Remarks: By analogy with a product of similar composition
Genotoxicity in vivo	: Test Type: Chromosome Aberration Test Species: Rat (female) Strain: wistar Cell type: Bone marrow cells Application Route: oral (gavage) Exposure time: Single exposure Dose: 500 - 1000 - 2000 mg/kg Method: OECD Test Guideline 475 Result: positive GLP: No information available. Test Type: Micronucleus test Species: Rat (female) Strain: wistar Cell type: Bone marrow cells Application Route: oral (gavage) Exposure time: Single exposure Dose: 500 - 1000 - 2000 mg/kg Method: OECD Test Guideline 474 Result: positive GLP: No information available.
Germ cell mutagenicity - Assessment	: Weight of evidence does not support classification as a germ cell mutagen.
Magnesium oxide:	
Genotoxicity in vitro	: Test Type: Ames test Test system: Salmonella typhimurium Method: Ames test Result: negative GLP: No information available. Test Type: Chromosome aberration test in vitro Test system: Human lymphocytes Concentration: 0.125 - 41.7 µg Mg/ml Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 473 Result: negative GLP: yes Remarks: By analogy with a product of similar composition Test Type: In vitro gene mutation study in mammalian cells Test system: mouse lymphoma cells Concentration: 0.3 % Mg Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 476 Result: negative GLP: no Remarks: By analogy with a product of similar composition
Germ cell mutagenicity -	: Not mutagenic in Ames Test

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Assessment	
Amorphous silicon dioxide:	
Genotoxicity in vitro	: Test Type: Chromosome aberration test in vitro Test system: Chinese hamster ovary cells Concentration: 38 - 1000 µg/ml Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 473 Result: negative GLP: yes Test Type: In vitro gene mutation study in mammalian cells Test system: Chinese hamster ovary cells Concentration: 10 - 500 µg/ml Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 476 Result: negative GLP: yes Test Type: Ames test Test system: Salmonella typhimurium Concentration: 667 - 10000 µg/plate Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471 Result: negative GLP: yes
Genotoxicity in vivo	: Test Type: HGPRT assay Species: Rat (male) Strain: Fischer F344 Application Route: Inhalation Exposure time: 13 w, 6 h/d, 5 d/wk Dose: ca. 50 mg/m3 Method: Other Result: negative GLP: No information available.
Germ cell mutagenicity - Assessment	: It is concluded that the product is not mutagenic based on evaluation of several mutagenicity tests.
Calcium oxide:	
Genotoxicity in vitro	: Test Type: Ames test Test system: Salmonella typhimurium Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471 Result: negative
Germ cell mutagenicity - Assessment	: In vitro tests did not show mutagenic effects

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Carcinogenicity	
Components:	
Nickel monoxide:	
Carcinogenicity - Assessment	: May cause cancer by inhalation.
Aluminium oxide:	
Carcinogenicity - Assessment	: Carcinogenicity classification not possible from current data.
Magnesium oxide:	
Carcinogenicity - Assessment	: Not classifiable as a human carcinogen.
Amorphous silicon dioxide:	
Carcinogenicity - Assessment	: Not classifiable as a human carcinogen.
Calcium oxide:	
Species: Rat, (male and female)	
Application Route: Oral	
Exposure time: 104 w	
Dose: 0, 2.5 or 5 % calcium lactate	
NOAEL: 391 mg/kg bw/day	
Method: carcinogenicity study	
Remarks: By analogy with a product of similar composition	
Carcinogenicity - Assessment	: Not classifiable as a human carcinogen.
IARC	Listed
OSHA	Not listed
NTP	Listed
Reproductive toxicity	
Components:	
Nickel monoxide:	
Effects on fertility	: Test Type: Two-generation study Species: Rat, male and female Strain: Sprague-Dawley Application Route: oral (gavage) Dose: 0,2-0,6-1,1-2,2 mgNi/kg General Toxicity - Parent: NOAEL: 2.2 mg/kg body weight General Toxicity F1: NOAEL: 2.2 mg/kg body weight General Toxicity F2: NOAEL: 2.2 mg/kg body weight

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	Method: OECD Test Guideline 416 GLP: yes Remarks: By analogy with a product of similar composition
	Test Type: Fertility/early embryonic development Species: Rat, male and female Strain: Fischer F344 Application Route: Inhalation Dose: 0,02-0,05-0,1-0,2-0,4 mgNi/m3 Duration of Single Treatment: 6 h Frequency of Treatment: 5 days/week General Toxicity - Parent: NOAEL: 0 mg/l Method: Other GLP: No information available. Remarks: By analogy with a product of similar composition
Effects on foetal development	: Test Type: Two-generation study Species: Rat, male and female Strain: Sprague-Dawley Application Route: oral (gavage) Dose: 0,2-0,6-1,1-2,2 mgNi/kg General Toxicity Maternal: NOAEL: 2.2 mg/kg body weight Teratogenicity: NOAEL: 2.2 mg/kg body weight Method: Other GLP: yes Remarks: By analogy with a product of similar composition
Reproductive toxicity - Assessment	: No reproductive toxicity to be expected. No teratogenic effects to be expected.
Aluminium oxide:	
Effects on fertility	: Species: Rat, male and female Strain: Sprague-Dawley Application Route: Drinking water Dose: 57 - 189 - 567 mg/kg General Toxicity - Parent: NOAEL: ca. 567 mg/kg body weight General Toxicity F1: NOAEL: ca. 57 mg/kg body weight Method: Other GLP: yes Remarks: By analogy with a product of similar composition
Effects on foetal development	: Species: Rat Strain: wistar Application Route: oral (gavage) Dose: 126 - 251 - 503 mg/kg Frequency of Treatment: 2 daily General Toxicity Maternal: NOAEL: > 100 mg/kg body weight Teratogenicity: NOAEL: 503 mg/kg body weight Method: OECD Test Guideline 414 GLP: No information available. Remarks: By analogy with a product of similar composition
Reproductive toxicity -	: Classification as "toxic for reproduction" is not justifiable.

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Assessment	No teratogenic effects to be expected.
Magnesium oxide: Effects on fertility	: Test Type: Fertility/early embryonic development Species: Rat, male and female Strain: wistar Application Route: oral (gavage) Dose: 46 - 138 - 417 mg Mg/kg General Toxicity - Parent: NOAEL: >= 690 mg/kg body weight Method: OECD Test Guideline 422 GLP: yes Remarks: By analogy with a product of similar composition
Effects on foetal development	: Species: Rat Strain: wistar Application Route: oral (gavage) Dose: 46 - 138 - 417 mg Mg/kg General Toxicity Maternal: NOAEL: >= 690 mg/kg body weight Teratogenicity: NOAEL: >= 690 mg/kg body weight Method: OECD Test Guideline 422 GLP: yes Remarks: By analogy with a product of similar composition
Reproductive toxicity - Assessment	: Classification as "toxic for reproduction" is not justifiable. Classification as "teratogenic" is not justifiable.
Amorphous silicon dioxide: Effects on fertility	: Test Type: One generation study Species: Rat, male and female Strain: Sprague-Dawley Application Route: oral (feed) Dose: 497 (m), 509 (f) mg/kg General Toxicity - Parent: NOAEL: 497 mg/kg body weight General Toxicity F1: NOAEL: 497 mg/kg body weight Method: OECD Test Guideline 415 GLP: no
Effects on foetal development	: Species: Rat Strain: wistar Application Route: oral (gavage) Dose: 13.5 - 62.7 - 292 - 1350mg/kg General Toxicity Maternal: NOAEL: 1,350 mg/kg body weight Teratogenicity: NOAEL: 1,350 mg/kg body weight Method: OECD Test Guideline 414 GLP: no
Reproductive toxicity - Assessment	: No reproductive toxicity to be expected. No teratogenic effects to be expected.
Calcium oxide: Effects on foetal	: Test Type: Pre-natal

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development	Species: Mouse, females Strain: CD1 Application Route: Oral Dose: 4,4; 20,4; 94,8; 440 mg/kg Developmental Toxicity: NOAEL: 440 mg/kg body weight Method: OECD Test Guideline 414
Reproductive toxicity - Assessment	: No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.

STOT - single exposure**Components:****Nickel monoxide:**

Assessment: The substance or mixture is not classified as specific target organ toxicant, single exposure.

Magnesium oxide:

Assessment: The substance or mixture is not classified as specific target organ toxicant, single exposure.

Amorphous silicon dioxide:

Assessment: The substance or mixture is not classified as specific target organ toxicant, single exposure.

Calcium oxide:

Exposure routes: inhalation (dust/mist/fume)
Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.
Remarks: Based on human experience.

STOT - repeated exposure**Components:****Nickel monoxide:**

Assessment: Causes damage to organs through prolonged or repeated exposure.

Magnesium oxide:

Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Amorphous silicon dioxide:

Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Calcium oxide:

Assessment: The substance or mixture is not classified as specific target organ toxicant,

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repeated exposure.

Repeated dose toxicity**Components:****Nickel monoxide:**

Species: Rat, male and female
NOAEL: 2.2 mg/kg
LOAEL: 6.7 mg/kg
Application Route: oral (gavage)
Exposure time: 2 a
Number of exposures: daily
Dose: 2,2 - 6,7 - 11,2 mg/kg
Group: yes
Method: Repeated dose toxicity
GLP: yes
Remarks: By analogy with a product of similar composition

Species: Rat, male and female
NOAEL: 0.0025 mg/l
Application Route: Inhalation
Exposure time: 13 w
Number of exposures: 6 hr/day, 5 days/week
Dose: 0,6-1,2-2,5-5-10 mg/m3
Group: yes
Method: OECD Test Guideline 413
GLP: No information available.

Application Route: Skin contact
Remarks: not available

Aluminium oxide:

Species: Rat, male and female
NOAEL: 57 mg/kg
Application Route: Drinking water
Exposure time: 1 a
Number of exposures: continuously
Dose: 57 - 189 - 567 mg/kg
Group: yes
Method: OECD Test Guideline 426
GLP: yes
Remarks: By analogy with a product of similar composition

Species: Rat
LOAEL: 0.070 mg/l
Application Route: Inhalation
Exposure time: 6 m
Number of exposures: 6 hr/day; 5 days a week
Dose: 15-30-50-70-100 mg Al/m3
Method: OECD Test Guideline 413
GLP: No information available.

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Application Route: Skin contact
Remarks: The study is not necessary from a scientific perspective.

Magnesium oxide:

Species: Rat, male and female
NOAEL: ca. 690 mg/kg
Application Route: oral (gavage)
Exposure time: 29 d (m), 41-45 (f)
Number of exposures: daily
Dose: 46 - 138 - 417 mg Mg/kg
Group: yes
Method: OECD Test Guideline 422
GLP: yes
Remarks: By analogy with a product of similar composition

Species: Rat
Application Route: inhalation (dust/mist/fume)
Exposure time: 1 - 6 m
Method: Repeated Dose Toxicity (chronic Toxicity)
Target Organs: Bronchia, Respiratory system
Symptoms: Irritability, Fibroma, Oedema

Application Route: Skin contact
Remarks: This information is not available.

Amorphous silicon dioxide:

Species: Rat, male and female
NOAEL: 4,000 - 4,500 mg/kg
Application Route: oral (feed)
Exposure time: 13 w
Number of exposures: continuously
Dose: 0,5 - 2 - 6,7 % SI in diet
Group: yes
Method: OECD Test Guideline 408
GLP: yes

Species: Rat, male and female
NOAEL: 0.0013 mg/l
LOAEL: 0.0059 mg/l
Application Route: Inhalation
Exposure time: 13 w
Number of exposures: 6 hr/day; 5 days a week
Dose: 1,3 - 5,9 - 31 mg/m3
Group: yes
Method: OECD Test Guideline 413
GLP: yes

Application Route: Skin contact
Remarks: This information is not available.

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Calcium oxide:

Remarks: This information is not available.

Repeated dose toxicity - Assessment : Causes skin irritation., Causes serious eye damage.

Aspiration toxicity**Components:****Nickel monoxide:**

No aspiration toxicity classification

Aluminium oxide:

No aspiration toxicity classification

Magnesium oxide:

No aspiration toxicity classification

Amorphous silicon dioxide:

No aspiration toxicity classification

Calcium oxide:

no data available

Further information**Product:**

Remarks: No data is available on the product itself.

Handle in accordance with good industrial hygiene and safety practice.

SECTION 12. ECOLOGICAL INFORMATION**Ecotoxicity****Product:**

Toxicity to fish : Remarks: no data available

Toxicity to daphnia and other aquatic invertebrates : Remarks: no data available

Toxicity to algae : Remarks: no data available

Components:**Nickel monoxide:**

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Toxicity to fish	: EC50 (Oncorhynchus mykiss (rainbow trout)): 15.3 mg/l Ni Exposure time: 96 h Test Type: semi-static test Analytical monitoring: yes Method: Other GLP: No information available. Remarks: By analogy with a product of similar composition
Toxicity to daphnia and other aquatic invertebrates	: LC50 (Ceriodaphnia dubia (water flea)): 0.0276 - 0.2663 mg/l Ni Exposure time: 48 h Test Type: static test Analytical monitoring: yes Method: Other GLP: No information available. Remarks: By analogy with a product of similar composition
Toxicity to algae	: EC50 (Pseudokirchneriella subcapitata (green algae)): 0.0815 - 0.148 mg/l Ni Ni > 81,5 µg/l - < 148 µg/l End point: Growth rate Exposure time: 72 h Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 201 GLP: No information available. Remarks: By analogy with a product of similar composition NOEC (Pseudokirchneriella subcapitata (green algae)): 0.0166 - 0.0523 mg/l Ni Ni < 16.6 µg/l - < 52.3 µg/l End point: Growth rate Exposure time: 72 h Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 201 GLP: No information available. Remarks: By analogy with a product of similar composition
Toxicity to fish (Chronic toxicity)	: NOEC (Cyprinodon variegatus (sheepshead minnow)): 21.7 mg/l Ni Exposure time: 28 d Test Type: flow-through test Analytical monitoring: yes Method: Other GLP: yes Remarks: By analogy with a product of similar composition NOEC (Pimephales promelas (fathead minnow)): 0.057 mg/l Ni Exposure time: 32 d Test Type: flow-through test

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Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	: Analytical monitoring: yes Method: Other GLP: No information available. Remarks: By analogy with a product of similar composition NOEC (Ceriodaphnia spec.): 0.0083 - 0.0386 mg/l Ni < 8,3 - 38,6 µg/l End point: Reproduction rate Exposure time: 10 d Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 211 GLP: No information available. Remarks: By analogy with a product of similar composition NOEC (Ceriodaphnia spec.): 0.0053 - 0.0153 mg/l Ni End point: Reproduction rate Exposure time: 7 d Test Type: semi-static test Analytical monitoring: yes Method: Other GLP: no Remarks: By analogy with a product of similar composition
Toxicity to microorganisms	: EC50 (activated sludge): 33 mg/l Ni End point: Bacteria toxicity (growth inhibition) Exposure time: 0.5 h Test Type: aquatic Analytical monitoring: no data available Method: ISO 8192 GLP: No information available. Remarks: By analogy with a product of similar composition
Toxicity to soil dwelling organisms	: EC10 (Eisenia fetida (earthworms)): 47.3 - 1,140 mg/kg, Ni > 47,3 - < 1140 Exposure time: 28 d End point: Reproduction Method: Other GLP: No information available. Remarks: By analogy with a product of similar composition Test Type: artificial soil NOEC (Folsomia candida): 36,4 - 1,140 mg/kg, Ni > 36,4 - < 1,140 Exposure time: 28 d End point: Reproduction Method: ISO 11267 GLP: No information available. Remarks: By analogy with a product of similar composition
Plant toxicity	: NOEC (Hordeum vulgare): 32 - 1,127 mg/kg Ni > 32 - < 1,127

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Sediment toxicity	: Exposure time: 4 d End point: Growth Analytical monitoring: yes Method: Other GLP: No information available. Remarks: By analogy with a product of similar composition NOEC (Lycopersicon esculentum): 11 - 625 mg/kg Ni > 11 - < 625 Exposure time: 21 d End point: Growth Analytical monitoring: no data available Method: Other GLP: No information available. Remarks: By analogy with a product of similar composition (Hyalella azteca (Scud)): 139 - 1792 mg/kg dry weight (d.w.) Analytical monitoring: yes Sediment: Natural sediment Exposure duration: 28 d Basis for effect: mortality Method: Other GLP: no Remarks: By analogy with a product of similar composition (Lumbriculus variegatus (Worm)): 554 - 4865 mg/kg dry weight (d.w.) Analytical monitoring: yes Sediment: Natural sediment Exposure duration: 28 d Basis for effect: Growth Method: Other GLP: no Remarks: By analogy with a product of similar composition
Toxicity to terrestrial organisms	: NOEC (Anas platyrhynchos (Mallard duck)): 800 ppm Ni Exposure time: 90 d Method: Other GLP: No information available. Remarks: Information given is based on data on the components and the ecotoxicology of similar products.
Aluminium oxide:	
Toxicity to fish	: NOEC (Salmo trutta (brown trout)): > 0.072 mg/l Exposure time: 96 h Test Type: semi-static test Analytical monitoring: yes Method: OECD Test Guideline 203 GLP: yes
Toxicity to daphnia and other aquatic invertebrates	: NOEC (Daphnia magna (Water flea)): > 0.071 mg/l Exposure time: 48 h Test Type: static test

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	Analytical monitoring: yes Method: OECD Test Guideline 202 GLP: yes
Toxicity to algae	: NOEC (Pseudokirchneriella subcapitata (green algae)): >= 0.052 mg/l End point: Growth rate Exposure time: 72 h Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 201 GLP: yes EC50 (Pseudokirchneriella subcapitata (green algae)): 1.05 mg/l End point: Growth rate Exposure time: 72 h Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 201 GLP: yes Remarks: By analogy with a product of similar composition
Toxicity to fish (Chronic toxicity)	: NOEC (Pimephales promelas (fathead minnow)): 56.48 mg/l Exposure time: 7 d Test Type: semi-static test Analytical monitoring: yes Method: Other GLP: yes Remarks: By analogy with a product of similar composition
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	: NOEC (Daphnia magna (Water flea)): 0.076 mg/l End point: Reproduction rate Exposure time: 21 d Test Type: semi-static test Analytical monitoring: yes Method: OECD Test Guideline 211 GLP: yes Remarks: By analogy with a product of similar composition
Toxicity to microorganisms	: GLP: Remarks: Not applicable
Toxicity to soil dwelling organisms	: Remarks: Not applicable
Plant toxicity	: Remarks: Not applicable
Sediment toxicity	: Remarks: Not applicable
Toxicity to terrestrial organisms	: Remarks: Not applicable

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	Test Type: aquatic Analytical monitoring: yes Method: OECD Test Guideline 209 GLP: yes Remarks: By analogy with a product of similar composition
Toxicity to soil dwelling organisms	: Test Type: artificial soil NOEC (Collembola (soil-dwelling springtail)): ca. 476 mg/kg Exposure time: 63 d End point: mortality Method: Other GLP: No information available. Remarks: By analogy with a product of similar composition
Plant toxicity	: Remarks: Not applicable
Sediment toxicity	: Remarks: Not applicable
Toxicity to terrestrial organisms	: Remarks: Not applicable
Amorphous silicon dioxide:	
Toxicity to fish	: LL0 (Brachydanio rerio (zebrafish)): 10,000 mg/l Exposure time: 96 h Test Type: static test Analytical monitoring: no Method: OECD Test Guideline 203 GLP: yes Remarks: The details of the toxic effect relate to the nominal concentration.
Toxicity to daphnia and other aquatic invertebrates	: EL50 (Daphnia magna (Water flea)): > 1,000 mg/l Exposure time: 48 h Test Type: static test Analytical monitoring: no Method: OECD Test Guideline 202 GLP: yes Remarks: The details of the toxic effect relate to the nominal concentration.
Toxicity to algae	: EL50 (Desmodesmus subspicatus (green algae)): > 10,000 mg/l End point: Growth rate Exposure time: 72 h Test Type: static test Analytical monitoring: no Method: OECD Test Guideline 201 GLP: yes Remarks: By analogy with a product of similar composition The details of the toxic effect relate to the nominal concentration.

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Ecotoxicology Assessment	
Acute aquatic toxicity	: This product has no known ecotoxicological effects.
Chronic aquatic toxicity	: This product has no known ecotoxicological effects.
Magnesium oxide:	
Toxicity to fish	: LC50 (Oncorhynchus mykiss (rainbow trout)): 536 mg/l Exposure time: 96 h Test Type: static test Analytical monitoring: no data available Method: Other GLP: no Remarks: By analogy with a product of similar composition LC50 (Pimephales promelas (fathead minnow)): 212 mg/l Exposure time: 96 h Test Type: static test Analytical monitoring: no data available Method: EPA GLP: no Remarks: By analogy with a product of similar composition
Toxicity to daphnia and other aquatic invertebrates	: LC50 (Daphnia magna (Water flea)): ca. 118 mg/l Exposure time: 48 h Test Type: static test Analytical monitoring: yes Method: EPA GLP: No information available. Remarks: By analogy with a product of similar composition
Toxicity to algae	: EC50 (other algae): > 70 mg/l End point: Growth rate Exposure time: 72 h Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 201 GLP: yes Remarks: By analogy with a product of similar composition The details of the toxic effect relate to the nominal concentration.
Toxicity to fish (Chronic toxicity)	: Remarks: not required
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	: Remarks: not required
Toxicity to microorganisms	: EC50 (activated sludge of a predominantly domestic sewage): > 70 mg/l End point: Bacteria toxicity (respiration inhibition) Exposure time: 3 h

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Toxicity to fish (Chronic toxicity)	: Remarks: not required
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	: Remarks: not required
Toxicity to microorganisms	: GLP: Remarks: Not applicable
Toxicity to soil dwelling organisms	: Remarks: Not applicable
Plant toxicity	: Remarks: Not applicable
Sediment toxicity	: Remarks: Not applicable
Toxicity to terrestrial organisms	: Remarks: Not applicable
Calcium oxide:	
Toxicity to fish	: LC50 (Oncorhynchus mykiss (rainbow trout)): 50.6 mg/l Exposure time: 96 h Test Type: static test Method: OECD Test Guideline 203 Remarks: By analogy with a product of similar composition
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)): 49.1 mg/l Exposure time: 48 h Test Type: static test Method: Other Remarks: By analogy with a product of similar composition
Toxicity to algae	: EC50 (Pseudokirchneriella subcapitata (algae)): 184.57 mg/l End point: Growth rate Exposure time: 72 h Test Type: static test Method: Other Remarks: By analogy with a product of similar composition
Toxicity to fish (Chronic toxicity)	: Remarks: no data available
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	: NOEC (Daphnia magna (Water flea)): 32 mg/l Exposure time: 14 d Test Type: semi-static test Method: Other Remarks: By analogy with a product of similar composition
Toxicity to microorganisms	: NOEC: 4000 Exposure time: 96 d Test Type: Soil

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	Method: Other Remarks: By analogy with a product of similar composition
	EC50 (activated sludge of a predominantly domestic sewage): 300.4 mg/l Exposure time: 3 h Test Type: static test Method: Other Remarks: By analogy with a product of similar composition
Toxicity to soil dwelling organisms	: NOEC (Eisenia fetida (earthworms)): 2000 mg/kg dry weight (d.w.) Exposure time: 28 d End point: Reproduction Method: OECD Test Guideline 222 Remarks: By analogy with a product of similar composition
Plant toxicity	: EC50 (Beta vulgaris): 1,080 mg/kg Exposure time: 21 d Method: OECD Guide-line 208 Remarks: By analogy with a product of similar composition
Ecotoxicology Assessment	
Chronic aquatic toxicity	: This product has no known ecotoxicological effects.
Persistence and degradability	
Product:	
Biodegradability	: Remarks: no data available
Components:	
Nickel monoxide:	
Biodegradability	: Remarks: The methods for determining biodegradability are not applicable to inorganic substances.
Aluminium oxide:	
Biodegradability	: Remarks: Not applicable
Magnesium oxide:	
Biodegradability	: Remarks: The methods for determining biodegradability are not applicable to inorganic substances.
Amorphous silicon dioxide:	
Biodegradability	: Remarks: Not applicable
Calcium oxide:	
Biodegradability	: Remarks: The methods for determining biodegradability are not applicable to inorganic substances.

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environmental compartments	Remarks: Not expected to adsorb on soil.
Amorphous silicon dioxide:	
Distribution among environmental compartments	: Remarks: Not applicable
Calcium oxide:	
Distribution among environmental compartments	: Remarks: Test data for the substance are not available.
Other adverse effects	
Product:	
Additional ecological information	: No data is available on the product itself.
Components:	
Nickel monoxide:	
Environmental fate and pathways	: not available
Results of PBT and vPvB assessment	: Remarks: Not applicable
Additional ecological information	: slightly water endangering The product should not be allowed to enter drains, water courses or the soil.
Aluminium oxide:	
Environmental fate and pathways	: not available
Results of PBT and vPvB assessment	: Remarks: Not applicable
Additional ecological information	: Do not allow to enter ground water, waterways or waste water.
Magnesium oxide:	
Environmental fate and pathways	: not available
Results of PBT and vPvB assessment	: Remarks: Not applicable
Additional ecological information	: The product should not be allowed to enter drains, water

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Bioaccumulative potential	
Product:	
Bioaccumulation	: Remarks: no data available
Components:	
Nickel monoxide:	
Bioaccumulation	: Species: Pimephales promelas (fathead minnow) Bioconcentration factor (BCF): 47 - 106 Exposure time: 30 d Concentration: 0.021 - 0.109 mg/l, Ni Method: Other GLP: No information available. Remarks: By analogy with a product of similar composition
Aluminium oxide:	
Bioaccumulation	: Remarks: Not applicable
Magnesium oxide:	
Bioaccumulation	: Remarks: Not applicable
Amorphous silicon dioxide:	
Bioaccumulation	: Remarks: Not applicable
Calcium oxide:	
Bioaccumulation	: Remarks: Test data for the substance are not available.
Mobility in soil	
Product:	
Distribution among environmental compartments	: Remarks: no data available
Components:	
Nickel monoxide:	
Distribution among environmental compartments	: adsorption Medium: water - soil log Koc: 2.84 - 5.49
Aluminium oxide:	
Distribution among environmental compartments	: Remarks: Not applicable
Magnesium oxide:	
Distribution among	: Remarks: Not applicable

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information	courses or the soil.
Amorphous silicon dioxide:	
Environmental fate and pathways	: not available
Results of PBT and vPvB assessment	: Remarks: Not relevant for inorganic substances
Additional ecological information	: Do not allow to enter ground water, waterways or waste water.
Calcium oxide:	
Results of PBT and vPvB assessment	: The substance is not identified as a PBT or as a vPvB substance.
Additional ecological information	: slightly water endangering

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods	
RCRA - Resource Conservation and Recovery Authorization Act	: This product, if discarded as sold, is not a Federal RCRA hazardous waste. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations.
Waste Code	: NONE
Waste from residues	: Dispose of this product in accordance with applicable local, state and federal regulations. Recover metal components by reprocessing whenever possible. Used catalysts may have different hazards or properties than the original product. This SDS does not apply to used catalysts.
Contaminated packaging	: Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

DOT	not restricted
IATA	not restricted
IMDG	not restricted

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SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know

Act

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Acute Health Hazard
Chronic Health Hazard

SARA 313 : This product contains the chemical or chemicals listed below which are subject to the supplier notification requirements of Section 313 of the Superfund Amendments and Reauthorization Act of 1986 ("SARA") and the requirements of 40 CFR Part 372:

Nickel compounds	Not Assigned	50 - 60 %
Nickel	7440-02-0	39.5 - 47.4 %

Clean Water Act

Contains the following Priority Pollutant(s) at concentrations greater than 0.1%: Nickel

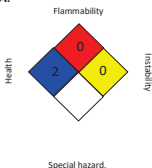
The components of this product are reported in the following inventories:

TSCA : On TSCA Inventory

SECTION 16. OTHER INFORMATION

Further information

NFPA:



Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)

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NIOSH REL : USA. NIOSH Recommended Exposure Limits
OSHA P0 : USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
OSHA Z-1 : USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
OSHA Z-3 : USA. Occupational Exposure Limits (OSHA) - Table Z-3 Mineral Dusts
ACGIH / TWA : 8-hour, time-weighted average
NIOSH REL / TWA : Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
OSHA P0 / TWA : 8-hour time weighted average
OSHA Z-1 / TWA : 8-hour time weighted average
OSHA Z-3 / TWA : 8-hour time weighted average
AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

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US / EN

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SECTION 1. IDENTIFICATION

Identification of the company:	Clariant Produkte (Deutschland) GmbH Lenbachplatz 6 München, 80333 Telephone No.: +49 (0)89/5110-0
Information of the substance/preparation:	Product Stewardship +1-704-331-7710 Emergency tel. number: +1 800-424-9300 CHEMTREC
Trade name:	ReforMax® 330 LDP 19x12
Material number:	251328
Primary product use:	Catalyst
Chemical family:	Nickel oxide on carrier

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Skin irritation	: Category 2
Serious eye damage	: Category 1
Skin sensitisation	: Category 1
Carcinogenicity (Inhalation)	: Category 1A
Specific target organ toxicity - single exposure	: Category 3 (Respiratory system)
Specific target organ toxicity - repeated exposure	: Category 1

GHS Label element

Hazard pictograms	:
Signal word	: Danger
Hazard statements	: H315 Causes skin irritation. H317 May cause an allergic skin reaction. H318 Causes serious eye damage. H335 May cause respiratory irritation. H350i May cause cancer by inhalation. H372 Causes damage to organs through prolonged or repeated

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Precautionary statements	: exposure. Prevention: P201 Obtain special instructions before use. P202 Do not handle until all safety precautions have been read and understood. P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray. P264 Wash skin thoroughly after handling. P270 Do not eat, drink or smoke when using this product. P271 Use only outdoors or in a well-ventilated area. P272 Contaminated work clothing should not be allowed out of the workplace. P280 Wear eye protection/ face protection. P280 Wear protective gloves. P281 Use personal protective equipment as required. Response: P302 + P352 IF ON SKIN: Wash with plenty of soap and water. P304 + P340 + P312 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell. P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician. P308 + P313 IF exposed or concerned: Get medical advice/ attention. P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention. P362 Take off contaminated clothing and wash before reuse. Storage: P403 + P233 Store in a well-ventilated place. Keep container tightly closed. P405 Store locked up. Disposal: P501 Dispose of contents/ container to an approved waste disposal plant.
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Other hazards

The substance does not meet the criteria for PBT or vPvB substance.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**Hazardous components**

Chemical Name	CAS-No.	Concentration (%)
Aluminium oxide	1344-28-1	57 - 87
Nickel monoxide	1313-99-1	10 - 25
Calcium oxide	1305-78-8	3 - 18

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

SECTION 4. FIRST AID MEASURES

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Special protective equipment for firefighters	: In the event of fire, wear self-contained breathing apparatus.
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SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	: Ensure adequate ventilation. Avoid dust formation. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Wearing appropriate personal protective equipment, contain spill and collect into a suitable container. Minimize airborne particulates. Keep container tightly closed. Material should be swept up or vacuumed, using ventilation to control the level of airborne dust. Avoid using compressed air or any method that creates airborne dust. If cleanup may create airborne dust, personnel should wear eye, skin, and respiratory protection. Refer to Section 8 for more information.
Environmental precautions	: Do not flush into surface water or sanitary sewer system.
Methods and materials for containment and cleaning up	: Take up uncontaminated material and pass on for further processing. Take up contaminated material by mechanical means, load into clean containers, and dispose of in accordance with legal regulations.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion	: In case of inappropriate handling, spent catalyst can be self-heating when in contact with air.
Advice on safe handling	: Avoid contact with skin, eyes and clothing. Do not breathe dust/ fume/ gas/ mist/ vapours/ spray. Minimize dust generation and accumulation.
Conditions for safe storage	: Keep tightly closed in a dry and cool place.
Technical measures/Precautions	: Keep container tightly closed and dry. Keep container tightly closed. Keep container dry.
Materials to avoid	: No materials to be especially mentioned.

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General advice	: Take off all contaminated clothing immediately. Show this safety data sheet to the doctor in attendance.
If inhaled	: INHALATION: If exposed to excessive levels of dust or fumes, remove to fresh air and get medical attention. Get medical attention if cough and other symptoms develop. Remove to fresh air.
In case of skin contact	: Avoid contact with skin. Wash area with mild soap and copious amounts of water. Remove contaminated clothing and shoes. Wash clothing before reuse. If skin irritation occurs: Get medical advice/ attention.
In case of eye contact	: Do not rub affected area. Rinse immediately with plenty of lukewarm water, also under the eyelids, for at least 15 minutes. Obtain medical attention.
If swallowed	: Do NOT induce vomiting. Call your local Poison Control Center (In the U.S. call 1-800-222-1222).
Most important symptoms and effects, both acute and delayed	: The possible symptoms known are those derived from the labelling (see section 2). No additional symptoms are known.
Notes to physician	: Skin sensitization may lead to chronic eczema "nickel itch". Lung damage is cumulative and may include cancer of lung, nasal cavity and larynx. May cause pulmonary eosinophilia (Loeffler's Syndrome).

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	: The product itself does not burn. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	: Do not use a solid water stream as it may scatter and spread fire.
Specific hazards during firefighting	: In case of fire can be formed: Breathable nickel oxide dust None known.
Further information	: Wear full protective clothing and NIOSH/MSHA-approved positive pressure, self-contained breathing apparatus. Evacuate area. Fight fire with normal precautions from a reasonable distance.

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SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Components with workplace control parameters**

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Aluminium oxide	1344-28-1	TWA (total dust)	15 mg/m3	OSHA Z-1
		TWA (respirable fraction)	5 mg/m3	OSHA Z-1
		TWA (Total)	10 mg/m3	OSHA P0
		TWA (Respirable fraction)	5 mg/m3	OSHA P0
		TWA (Respirable fraction)	1 mg/m3	ACGIH
		Further information: Lower Respiratory Tract irritation, Pneumoconiosis, Neurotoxicity, Not classifiable as a human carcinogen, varies		
Calcium oxide	1305-78-8	TWA	2 mg/m3	ACGIH
		Further information: Upper Respiratory Tract irritation		
		TWA	2 mg/m3	NIOSH REL
		TWA	5 mg/m3	OSHA Z-1
		TWA	5 mg/m3	OSHA P0
		Further information: The TWA PEL of 5 mg/m3 is not in effect as a result of reconsideration. The calcium oxide Transitional Limit of mg/m3 remains in effect and employee exposures shall be kept below that level pursuant to the methods of compliance specified in 29 CFR 1910.1000(e).		
Nickel monoxide	1313-99-1	TWA	1 mg/m3 (Nickel)	OSHA Z-1
		TWA	1 mg/m3 (Nickel)	OSHA P0
		TWA	0.015 mg/m3 (Nickel)	NIOSH REL
		Further information: Potential Occupational Carcinogen, See Appendix A		

All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by the Particulates Not Otherwise Regulated (PNOR) limit which is 5 mg/m3 for respirable fraction and 15 mg/m3 for total dust. ACGIH exposure guidelines of less than 3 mg/m3 (respirable) and 10 mg/m3 (inhalable) have been established for particles (insoluble/poorly soluble) not otherwise specified (PNOS).

Engineering measures	: Use ventilation adequate to keep exposures below recommended exposure limits. See the safety datasheet.
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Personal protective equipment

Respiratory protection	: Wear NIOSH approved particulate filtering respirator rated N, R, or P95 or 100 or equivalent in the absence of proper environmental control. Type of respirator depends on level of exposure.
Hand protection	: butyl-rubber PVC Viton (R) Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.
Eye protection	: Follow facility guidelines in the absence of dusts. Tightly fitting safety goggles. If respiratory protection is needed under dusty conditions, a full facepiece respirator is recommended to provide both eye and respiratory protection.
Skin and body protection	: Wear protective clothing, including long sleeves and gloves, to prevent skin contact. Thoroughly wash clothing before reuse.
Hygiene measures	: Keep working clothes separately. Keep away from food, drink and animal feeding stuffs. Wash hands before breaks and immediately after handling the product. Preventive skin protection (protective ointment for the skin)

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: 10-hole Tablet
Particle size :	not tested.
Colour	: grey
Odour	: none
Odour Threshold	: cannot be determined
pH	: not tested.
Melting point	: > 1,500 °C
Boiling point	: Not applicable

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Possibility of hazardous reactions	: Nickel catalysts can form nickel tetracarbonyl Ni(CO) ₄ in the presence of carbon monoxide. Nickel carbonyl is highly flammable and highly toxic and can cause cyanosis and chemical pneumonia which can be fatal. Symptoms may be delayed for several hours or days. Extreme care and specialized handling is required if carbon monoxide is present in the catalyst process. Hazardous reactions are possible at temperatures including, but not limited to, ambient temperatures depending on pressure and carbon monoxide concentrations.
Conditions to avoid	: Avoid dust formation.
Incompatible materials	: Acids and bases
Hazardous decomposition products	: No decomposition if stored and applied as directed. In case of fire hazardous decomposition products may be produced such as: see heading 5

SECTION 11. TOXICOLOGICAL INFORMATION**Information on likely routes of exposure**

Eye contact
Skin contact
Ingestion
Inhalation

Acute toxicity**Product:**

Acute oral toxicity	: Remarks: no data available
Acute inhalation toxicity	: Remarks: no data available
Acute dermal toxicity	: Remarks: no data available

Components:**Aluminium oxide:**

Acute oral toxicity	: LD50 (Rat, male and female): > 10,000 mg/kg Method: OECD Test Guideline 401 GLP: No information available.
---------------------	--

Acute inhalation toxicity	: LC50 (Rat, male and female): > 2.3 mg/l Exposure time: 4 h Method: OECD Test Guideline 403 GLP: yes
---------------------------	--

Acute dermal toxicity	: Remarks: Not applicable
-----------------------	---------------------------

Nickel monoxide:

Acute oral toxicity	: LD50 (Rat, female): > 11,000 mg/kg
---------------------	--------------------------------------

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Flash point	: Not applicable
Evaporation rate	: Not applicable
Upper explosion limit	: not tested.
Lower explosion limit	: not tested.
Combustion number :	not determined
Vapour pressure	: Not applicable
Relative vapour density	: Not applicable
Relative density	: not tested.
Density	: not tested.
Bulk density	: 850 kg/m ³
Solubility(ies) Water solubility	: insoluble
Solubility in other solvents	: not tested.
Partition coefficient: n-octanol/water	: not determined
Auto-ignition temperature	: Not applicable
Decomposition temperature	: no data available
Viscosity	
Viscosity, dynamic	: Not applicable
Viscosity, kinematic	: Not applicable
Flow time	: Not applicable
Explosive properties	: no data available
Oxidizing properties	: not tested.
Sublimation point	: not determined

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: No dangerous reaction known under conditions of normal use.
Chemical stability	: The product is chemically stable.

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Acute inhalation toxicity	: Method: OECD Test Guideline 425 Test substance: nickel oxide, black LC50 (Rat): > 5.15 mg/l Exposure time: 4 h Method: OECD Test Guideline 403 Test substance: nickel oxide, black
---------------------------	---

Calcium oxide:

Acute oral toxicity	: Remarks: Test data for the substance are not available.
---------------------	---

Skin corrosion/irritation**Product:**

Remarks: no data available

Components:**Aluminium oxide:**

Species: Rabbit
Exposure time: 24 h
Method: OECD Test Guideline 404
Result: No skin irritation
GLP: No information available.

Nickel monoxide:

Species: Rabbit
Assessment: No skin irritation
Method: OECD Test Guideline 404
Result: Mild skin irritation

Serious eye damage/eye irritation**Product:**

Remarks: no data available

Components:**Aluminium oxide:**

Species: rabbit eye
Result: No eye irritation
Method: FDA guideline
GLP: No information available.

Nickel monoxide:

Species: Rabbit
Result: Moderate eye irritation
Assessment: No eye irritation
Method: OECD Test Guideline 405

Respiratory or skin sensitisation**Product:**



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Remarks: no data available

Components:**Aluminium oxide:**

Test Type: Draize Test
Exposure routes: Dermal
Species: Guinea pig
Method: Draize Test
Result: non-sensitizing
GLP: no

Test Type: Respiratory system
Exposure routes: inhalation (dust/mist/fume)
Species: Mouse
Method: Other
Result: non-sensitizing
GLP: no

Nickel monoxide:

Species: Guinea pig
Method: OECD Test Guideline 406
Result: non-sensitizing

Germ cell mutagenicity**Components:****Aluminium oxide:**

Genotoxicity in vitro : Test Type: In vitro gene mutation study in mammalian cells
Species: mouse lymphoma cells
Concentration: 6,1 - 780 µg/ml
Metabolic activation: with and without
Method: OECD Test Guideline 476
Result: negative
GLP: yes
Remarks: By analogy with a product of similar composition

Genotoxicity in vivo : Test Type: Chromosome Aberration Test
Species: Rat (female)
Strain: wistar
Cell type: Bone marrow cells
Application Route: oral (gavage)
Exposure time: Single exposure
Dose: 500 - 1000 - 2000 mg/kg
Method: OECD Test Guideline 475
Result: positive
GLP: No information available.

Test Type: Micronucleus test
Species: Rat (female)
Strain: wistar
Cell type: Bone marrow cells
Application Route: oral (gavage)



Substance key: SC0000100279	Revision Date: 06/05/2015
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Method: OECD Test Guideline 414
GLP: No information available.
Remarks: By analogy with a product of similar composition

Reproductive toxicity - Assessment : Classification as "toxic for reproduction" is not justifiable.
No teratogenic effects to be expected.

STOT - single exposure**Components:****Aluminium oxide:**

Assessment: The substance or mixture is not classified as specific target organ toxicant, single exposure.

STOT - repeated exposure**Components:****Aluminium oxide:**

Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Repeated dose toxicity**Components:****Aluminium oxide:**

Species: Rat, male and female
NOAEL: 57 mg/kg
Application Route: Drinking water
Exposure time: 1 a
Number of exposures: continuously
Dose: 57 - 189 - 567 mg/kg
Group: yes
Method: OECD Test Guideline 426
GLP: yes
Remarks: By analogy with a product of similar composition

Species: Rat
Application Route: Inhalation
Exposure time: 6 m
Number of exposures: 6 hr/day; 5 days a week
Dose: 15-30-50-70-100 mg/m3
Method: OECD Test Guideline 413
GLP: No information available.

Application Route: Skin contact
Remarks: The study is not necessary from a scientific perspective.

Nickel monoxide:

Species: Rat
NOAEL: 2.2 mg/kg
Application Route: Oral
Test substance: Nickel sulphate x 6 H2O



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Exposure time: Single exposure
Dose: 500 - 1000 - 2000 mg/kg
Method: OECD Test Guideline 474
Result: positive
GLP: No information available.

Germ cell mutagenicity - Assessment : Weight of evidence does not support classification as a germ cell mutagen.

Nickel monoxide:

Genotoxicity in vitro : Test Type: In vitro gene mutation study in mammalian cells
Method: OECD Test Guideline 476
Result: negative

Carcinogenicity**Components:****Aluminium oxide:**

Carcinogenicity - Assessment : Carcinogenicity classification not possible from current data.

IARC

Listed

OSHA

Not listed

NTP

Listed

Reproductive toxicity**Components:****Aluminium oxide:**

Effects on fertility : Species: Rat
Sex: male and female
Dose: 57 - 189 - 567 mg/kg
Frequency of Treatment: daily
Sprague-Dawley
Test period: 1 a
Group: yes
NOAEL: ca. 567 mg/kg,
F1: ca. 57 mg/kg,
Method: Other
GLP: yes
Remarks: By analogy with a product of similar composition

Effects on foetal development : Species: Rat
Application Route: oral (gavage)
Exposure time: gestation day 6 to 15
Dose: 126 - 251 - 503 mg/kg
Group: yes
503 mg/kg
> 100 mg/kg
Number of exposures: twice daily



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Species: Rat
LOAEL: 0.5 mg/kg
Application Route: Inhalation

Aspiration toxicity**Components:****Aluminium oxide:**

No aspiration toxicity classification

Experience with human exposure**Product:**

General Information : The possible symptoms known are those derived from the labelling (see section 2).

Further information**Product:**

Remarks: No data is available on the product itself.
Handle in accordance with good industrial hygiene and safety practice.

SECTION 12. ECOLOGICAL INFORMATION**Ecotoxicity****Product:**

Toxicity to fish : Remarks: no data available

Components:**Aluminium oxide:**

Toxicity to fish : NOEC (Salmo trutta (brown trout)): > 0.072 mg/l
Exposure time: 96 h
Test Type: semi-static test
Analytical monitoring: yes
Method: OECD Test Guideline 203
GLP: yes

Toxicity to daphnia and other aquatic invertebrates : NOEC (Daphnia magna (Water flea)): > 0.071 mg/l
Exposure time: 48 h
Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 202
GLP: yes

Toxicity to algae : NOEC (Pseudokirchneriella subcapitata (green algae)): >= 0.052 mg/l
End point: Growth rate
Exposure time: 72 h
Test Type: static test



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Substance key: SC0000100279	Revision Date: 06/05/2015
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	Analytical monitoring: yes Method: OECD Test Guideline 201 GLP: yes EC50 (Pseudokirchneriella subcapitata (green algae)): 1.05 mg/l End point: Growth rate Exposure time: 72 h Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 201 GLP: yes Remarks: By analogy with a product of similar composition
Toxicity to fish (Chronic toxicity)	: NOEC (Pimephales promelas (fathead minnow)): 56.48 mg/l Exposure time: 7 d Test Type: semi-static test Analytical monitoring: yes Method: Other GLP: yes Remarks: By analogy with a product of similar composition
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	: NOEC (Daphnia magna (Water flea)): 0.076 mg/l Exposure time: 21 d End point: Reproduction rate Test Type: semi-static test Analytical monitoring: yes Method: OECD Test Guideline 211 GLP: yes Remarks: By analogy with a product of similar composition
Toxicity to bacteria	: GLP: Remarks: Not applicable
Toxicity to soil dwelling organisms	: Remarks: Not applicable
Plant toxicity	: Remarks: Not applicable
Sediment toxicity	: Remarks: Not applicable
Toxicity to terrestrial organisms	: Remarks: Not applicable
Nickel monoxide: Toxicity to fish	: LC50 (Pimephales promelas (fathead minnow)): 0.23 mg/l 0.23 Exposure time: 96 h LC50 (Brachydanio rerio (zebrafish)): 320 mg/l 320 Exposure time: 96 h



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Components: Aluminium oxide: Distribution among environmental compartments	: Remarks: Not applicable
Nickel monoxide: Distribution among environmental compartments	: Adsorption/Soil log Koc: 2.86
Calcium oxide: Distribution among environmental compartments	: Remarks: Test data for the substance are not available.
Other adverse effects Components: Aluminium oxide: Environmental fate and pathways	: not available
Results of PBT and vPvB assessment	: Remarks: Not applicable
Additional ecological information	: Do not allow to enter ground water, waterways or waste water.
Components: Nickel monoxide: Results of PBT and vPvB assessment	: Remarks: The substance does not meet the criteria for PBT or vPvB substance.
Additional ecological information	: slightly water endangering
Components: Calcium oxide: Results of PBT and vPvB assessment	: Remarks: The substance does not meet the criteria for PBT or vPvB substance.
Additional ecological information	: slightly water endangering

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods RCRA - Resource Conservation and Recovery Authorization Act Waste Code	: Although not a RCRA hazardous waste, check with local and state regulations for proper disposal. : NONE
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Toxicity to daphnia and other aquatic invertebrates	: LC50 (Daphnia dubia (water flea)): 0.013 mg/l 0.013 Exposure time: 48 h LC50 (Daphnia magna (Water flea)): 4,970 mg/l 4970 Exposure time: 48 h
Calcium oxide: Toxicity to fish	: Remarks: Test data for the substance are not available.
Persistence and degradability Product: Biodegradability	: Remarks: no data available
Components: Aluminium oxide: Biodegradability	: Remarks: Not applicable
Nickel monoxide: Biodegradability	: Remarks: The methods for determining biodegradability are not applicable to inorganic substances.
Calcium oxide: Biodegradability	: Remarks: The methods for determining biodegradability are not applicable to inorganic substances.
Bioaccumulative potential Product: Bioaccumulation	: Remarks: no data available
Components: Aluminium oxide: Bioaccumulation	: Remarks: Not applicable
Nickel monoxide: Bioaccumulation	: Species: Water organisms Bioconcentration factor (BCF): 270 Concentration: > 0,0012 mg Ni/l
Calcium oxide: Bioaccumulation	: Remarks: Test data for the substance are not available.
Mobility in soil Product: Distribution among environmental compartments	: Remarks: no data available



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Waste from residues	: Dispose of this product in accordance with applicable local, state and federal regulations. Recover metal components by reprocessing whenever possible.
Contaminated packaging	: Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

DOT	not restricted
IATA	not restricted
IMDG	not restricted

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards	: Acute Health Hazard Chronic Health Hazard		
SARA 302	: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.		
SARA 313	: This product contains the chemical or chemicals listed below which are subject to the supplier notification requirements of Section 313 of the Superfund Amendments and Reauthorization Act of 1986 ("SARA") and the requirements of 40 CFR Part 372:		
	Nickel compounds	Not Assigned	25 %
	Nickel	7440-02-0	19.75 %

Clean Water Act

Contains the following Priority Pollutant(s) at concentrations greater than 0.1%: Nickel

The components of this product are reported in the following inventories:

TSCA	: All components of this product are listed or excluded from listing on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) Inventory.
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SAFETY DATA SHEET

CLARIANT



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Date of printing :12/06/2016

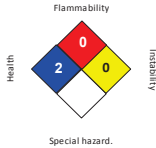
Inventories

AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TSCA (USA)

SECTION 16. OTHER INFORMATION

Further information

NFPA:



Revision Date : 06/05/2015

This information is supplied under the OSHA Hazard Communication Standard, 29 CFR 1910.1200, and is offered in good faith based on data available to us that we believe to be true and accurate. The recommended industrial hygiene and safe handling procedures are believed to be generally applicable to the material. However, each user should review these recommendations in the specific context of the intended use and determine whether they are appropriate for that use. No warranty, express or implied, is made regarding the accuracy of this data, the hazards connected with the use of the material, or the results to be obtained from the use thereof. We assume no responsibility for damage or injury from the use of the product described herein. Data provided here are typical and not intended for use as product specifications.

US / USA

Protect from sunlight.
Store in well-ventilated place.
Store locked up.
Do not expose to temperatures exceeding 50C/122F.

Disposal:
Dispose of contents and/or container in accordance with applicable regulations.

Section 3: Composition/Information on Ingredients

CAS #
74-86-2

Chemical Substance	Chemical Family	Trade Names
ACETYLENE, DISSOLVED	hydrocarbons, aliphatic	ACETYLENE; ETHYNE; WELDING GAS; ACETYLEN; ETHINE; NARCYLEN; VINYLENE; UN 1001; C2H2

Section 4: First Aid Measures

Skin Contact	Eye Contact	Ingestion	Inhalation	Note to Physicians
Gas: Not applicable. Liquid: Wash exposed skin with soap and water.	Gas: Not applicable. Liquid: Flush eyes with plenty of water.	Not applicable.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	For inhalation, consider oxygen.

Section 5: Fire Fighting Measures

Suitable Extinguishing Media	Products of Combustion	Protection of Firefighters
Carbon dioxide, regular dry chemical. Large fires: Use regular foam or flood with fine water spray.	Oxides of carbon	<ul style="list-style-type: none">Respiratory protection may be needed for frequent or heavy exposure.Any self-contained breathing apparatus with a full facepiece.

Section 6: Accidental Release Measures

Personal Precautions	Environmental Precautions	Methods for Containment
Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering.	Avoid heat, flames, sparks and other sources of ignition.	Stop leak if possible without personal risk. Reduce vapors with water spray. Remove sources of ignition.
Methods for Cleanup	Other Information	
Evacuate, stop leak if possible. Remove sources of ignition.	None	

Section 7: Handling and Storage

Handling	Storage
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Safety Data Sheet

Acetylene

Red Ball Oxygen Co., Inc.
P.O. Box 7316
Shreveport, LA 71137-7316
Phone: 318-425-3211
Fax: 318-425-6302
http://www.redballoxygen.com

Section 1: Product and Company Identification

Red Ball Oxygen Co., Inc.
P.O. Box 7316
Shreveport, LA 71137-7316
Phone: 318-425-3211
Fax: 318-425-6302
http://www.redballoxygen.com

Product Code: Acetylene

Section 2: Hazards Identification



Danger

Hazard Classification:
Aspiration Hazard (Category 1)
Flammable (Category 1)
Flammable Aerosol (Category 1)
Gases Under Pressure

Hazard Statements:
Contains gas under pressure; may explode if heated
Extremely flammable aerosol
Extremely flammable gas
May be fatal if swallowed and enters airways

Precautionary Statements

Prevention:
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Pressurized container. Do not pierce or burn, even after use.
Do not spray on an open flame or other ignition source.

Response:
Do NOT induce vomiting.
Eliminate all ignition sources if safe to do so.
If swallowed: Rinse mouth. Do NOT induce vomiting.
Immediately call a poison center or doctor.
Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

Storage:
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Handling	Storage
Avoid heat, flames, sparks and other sources of ignition. Grounding and bonding required. Secure to prevent tipping. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Keep separated from incompatible substances.	Store and handle in accordance with all current regulations and standards. Protect from physical damage. Store outside or in a detached building. Keep separated from incompatible substances. Store in a cool, dry place. Store in a well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Exposure Guidelines
ACETYLENE, DISSOLVED: ACGIH (simple asphyxiant) 2500 ppm (2662 mg/m3) NIOSH recommended ceiling

Engineering Controls
Handle only in fully enclosed systems.

Eye Protection	Skin Protection	Respiratory Protection
Eye protection not required, but recommended.	Protective clothing is not required.	Respiratory protection may be needed for frequent or heavy exposure.

General Hygiene considerations

- Avoid breathing vapor or mist
- Avoid contact with eyes and skin
- Wash thoroughly after handling and before eating or drinking

Section 9: Physical and Chemical Properties

Physical State	Appearance	Color	Change in Appearance	Physical Form	Odor	Taste
Gas	Colorless	Colorless	N/A	Liquefied gas	Sweet odor	N/A

Flash Point	Flammability	Partition Coefficient	Autoignition Temperature	Upper Explosive Limits	Lower Explosive Limits
Flammable gas. Can be ignited at all normal temperatures. A flash point of 0 F (-18 C) (CC) has been reported.		2691.53 (log = 3.44) (estimated from water solubility)	581 F (305 C)	81%; 100% if there is a substantial energy ignition source, and under certain conditions of pressure, container size and shape.	0.025

Boiling Point	Freezing Point	Vapor Pressure	Vapor Density	Specific Gravity	Water Solubility	pH	Odor Threshold	Evaporation Rate	Viscosity
-103 F (-75 C) @ 170 kPa abs (24.7 psi abs) or 69 kPa gage (10 psi gage)	Not available	760 mmHg @ -84 C	0.9 (Air=1)	Not applicable	0.94% @ 25 C	Not applicable	240 mg/m3 (226 ppm) (detection) (4); 657 mg/m3 (620 ppm) (not specified) (8) 1300-2750 mg/m3 (1222-2585 ppm) (not specified)	Not applicable	0.010 cP @ 20 C

Molecular Weight	Molecular Formula	Density	Weight per Gallon	Volatility by Volume	Volatility	Solvent Solubility
26.04	H-C-C-H	1.1747 g/L @ 0 C	Not available	Not available	Not applicable	Soluble: Acetone, benzene, chloroform, ether

Section 10: Stability and Reactivity

Stability	Conditions to Avoid	Incompatible Materials
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Stability	Conditions to Avoid	Incompatible Materials
May decompose violently on heating. May explode when heated.	May decompose violently on heating. May explode when heated.	Metals, halogens, oxidizing materials, metal carbide, reducing agents, halo carbons BRASS, CALCIUM HYPOCHLORITE, COPPER, MERCURY AND SILVER SALTS, HALOGENS, HEAVY METALS, HYDRIDES, LIQUID NITROGEN, NITRIC ACID , OXYGEN, OZONE, PERCHLORIC ACID, POTASSIUM

Hazardous Decomposition Products	Possibility of Hazardous Reactions
Hydrogen	Polymerizes with evolution of heat. Avoid contact with curing agents, accelerators, and/or initiators.

Section 11: Toxicology Information

Acute Effects			
Oral LD50	Dermal LD50	Inhalation	
Not established	Not established	Nausea, vomiting, chest pain, wheezing, headache, drowsiness, dizziness, loss of coordination, bluish skin color, suffocation, lung congestion, coma	

Eye Irritation	Skin Irritation	Sensitization
No information on significant adverse effects	Rash	Central nervous system depression, difficulty breathing, asphyxiant

Chronic Effects			
Carcinogenicity	Mutagenicity	Reproductive Effects	Developmental Effects
Not established	Not established	Not established	No data

Section 12: Ecological Information

Fate and Transport			
Eco toxicity	Persistence / Degradability	Bioaccumulation / Accumulation	Mobility in Environment
Fish toxicity: Not available Invertebrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Relatively non-persistent in the environment. Highly volatile from water.	Accumulates very little in the bodies of living organisms.	Not expected to leach through the soil or the sediment.

Section 13: Disposal Considerations

Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001, D003.

Section 14: Transportation Information

U.S. DOT 49 CFR 172.101							
Proper Shipping Name	ID Number	Hazard Class or Division	Packing Group	Labeling Requirements	Passenger Aircraft or Railcar Quantity Limitations	Cargo Aircraft Only Quantity Limitations	Additional Shipping Description
Acetylene, dissolved	UN1001	2.1	Not applicable	2.1	Forbidden	15 kg	N/A

Canadian Transportation of Dangerous Goods			
Shipping Name	UN Number	Class	Packing Group / Risk Group
Acetylene, dissolved	UN1001	2.1	Not applicable

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Section 15: Regulatory Information

U.S. Regulations		
CERCLA Sections	SARA 355.30	SARA 355.40
Not regulated.	Not regulated.	Not regulated.

SARA 370.21				
Acute	Chronic	Fire	Reactive	Sudden Release
Yes	No	Yes	Yes	Yes

SARA 372.65
Not regulated.

OSHA Process Safety
Not regulated.

State Regulations
CA Proposition 65
Not regulated.

Canadian Regulations
WHMIS Classification
A, B1

National Inventory Status		
US Inventory (TSCA)	TSCA 12b Export Notification	Canada Inventory (DSL/NDSL)
Listed on inventory.	Not listed.	Not determined.

Section 16: Other Information

NFPA Rating
HEALTH=1 FIRE=4 REACTIVITY=3
0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard



Material Safety Data Sheet

1. PRODUCT AND COMPANY IDENTIFICATION

AMBERLYST™ 40 WET Resin

Revision date: 01/21/2010

Supplier
ROHM AND HAAS CHEMICALS LLC
A Subsidiary of The Dow Chemical Company
100 INDEPENDENCE MALL WEST
PHILADELPHIA, PA 19106-2399 United States

For non-emergency information contact: 215-592-3000

Emergency telephone number 1 800 424 9300
Local Emergency telephone number 989-636-4400

2. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Concentration
Strong acid cation exchange polymer, hydrogen ion form	39389-20-3	47.0 - 56.0%
Water	7732-18-5	44.0 - 53.0%

3. HAZARDS IDENTIFICATION

Emergency Overview Appearance

Form: Beads
Colour: black opaque
Odour: Odorless

Hazard Summary
DANGER!
MATERIAL CAN CAUSE THE FOLLOWING:
CORROSION TO EYES
IRRITATING TO RESPIRATORY SYSTEM AND SKIN.

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Revision date 01/21/2010

AMBERLYST™ 40 WET Resin

Potential Health Effects Primary Routes of Entry:

Inhalation
Skin contact
Eye contact

Eyes: Material can cause the following:
corrosion to eyes
reddening
tearing
May cause permanent eye injury.

Skin: Prolonged or repeated skin contact can cause the following:
slight irritation

Inhalation: Inhalation of dust can cause the following:
irritation of nose, throat, and lungs

4. FIRST AID MEASURES

Inhalation: Move to fresh air.
Skin contact: Wash off with soap and water. If skin irritation persists, call a physician.
Eye contact: Immediately flush the eye with plenty of water for at least 15 minutes, holding the eye open. Get prompt medical attention.

5. FIRE-FIGHTING MEASURES

Flash point not applicable
Ignition temperature ca.500.0 °C (932.00 °F)
Lower explosion limit not applicable
Upper explosion limit not applicable

Suitable extinguishing media: Use the following extinguishing media when fighting fires involving this material:
Water spray
Carbon dioxide (CO2)
Foam
Dry chemical

Specific hazards during fire fighting: Toxic fumes are generated when material is exposed to fire or fire conditions. Cool closed containers exposed to fire with water spray.
Special protective equipment for fire-fighters: In the event of fire, wear self-contained breathing apparatus.
Further information: Remain upwind.
Avoid breathing smoke.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Appropriate protective equipment must be worn when handling a spill of this material. See SECTION 8, Exposure Controls/Personal Protection, for recommendations.
If exposed to material during clean-up operations, see SECTION 4, First Aid Measures, for actions to follow.
Methods for cleaning up
Keep spectators away.
Floor may be slippery; use care to avoid falling.

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Transfer spilled material to suitable containers for recovery or disposal.

7. HANDLING AND STORAGE

Handling

Avoid repeated freeze-thaw cycles; beads may fracture. If frozen, thaw at room temperature. Avoid contact with skin, eyes and clothing. Corrosive to eyes. See SECTION 8, Exposure Controls/Personal Protection, prior to handling.

Storage

Further information:

CAUTION: Do not pack column with dry ion exchange resins. Dry beads expand when wetted; this expansion can cause glass column to shatter.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limit(s)

Exposure limits are listed below, if they exist.

Eye protection: Chemical resistant goggles must be worn. Eye protection worn must be compatible with respiratory protection system employed.

Hand protection: Cotton or canvas gloves.

Respiratory protection: No personal respiratory protective equipment normally required.

Protective measures: Facilities storing or utilizing this material should be equipped with an eyewash facility.

Engineering measures: None required under normal operating conditions.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	Beads
Colour	black opaque
Odour	Odorless
pH	3.0 - 5.0 Aqueous slurry
Boiling point/boiling range	100 °C (212.00 °F) Water
Melting point/range	0 °C (32 °F) Water
Flash point	not applicable
Ignition temperature	ca.500 °C (932.00 °F)
Lower explosion limit	not applicable
Upper explosion limit	not applicable
Vapour pressure	17.0 mmHg at 20 °C (68.00 °F) Water
Relative vapour density	<1.0Water
Water solubility	practically insoluble
Relative density	1.25
Evaporation rate	<1.00 Water
Percent volatility	44 - 53 %

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Hazardous reactions Stable under normal conditions.

Materials to avoid Avoid contact with the following: Strong Oxidizers

Hazardous decomposition products Thermal decomposition may yield the following: monomer vapors,

polymerisation Product will not undergo polymerization.

11. TOXICOLOGICAL INFORMATION

No data are available for this material. The information shown is based on profiles of compositionally similar materials.

Component: **Strong acid cation exchange polymer, hydrogen ion form**

Acute oral toxicity LD50 rat >2,000 mg/kg

Component: **Strong acid cation exchange polymer, hydrogen ion form**

Acute inhalation toxicity LC50 rat 4 h 11 mg/l

Component: **Strong acid cation exchange polymer, hydrogen ion form**

Skin irritation rabbit OECD Test Guideline 404 4 h non-irritating

Component: **Strong acid cation exchange polymer, hydrogen ion form**

Eye irritation rabbit OECD Test Guideline 405 24 h Corrosive

Component: **Strong acid cation exchange polymer, hydrogen ion form**

Mutagenicity Reverse mutation test using bacteria: Non-mutagenic, with and without metabolic activation

12. ECOLOGICAL INFORMATION

There is no data available for this product.

13. DISPOSAL CONSIDERATIONS

Disposal

Waste Classification: When a decision is made to discard this material as supplied, it does not meet RCRA's characteristic definition of ignitability, corrosivity, or reactivity, and is not listed in 40 CFR 261.33. The toxicity characteristic (TC), however, has not been evaluated by the Toxicity Characteristic Leaching Procedure (TCLP).

Unused material may be incinerated or landfilled in facilities meeting local, state, and federal regulations. (See 40 CFR 268)

Contaminated packaging: Empty containers should be taken to local recyclers for disposal. Refer to applicable federal, state, and local regulations.

14. TRANSPORT INFORMATION

DOT

Not regulated for transport

IMO/IMDG

Not regulated (Not dangerous for transport)

Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations

15. REGULATORY INFORMATION

Workplace Classification

OSHA: This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

WHMIS: This product is a 'controlled product' under the Canadian Workplace Hazardous Materials Information System (WHMIS).

SARA TITLE III: Section 311/312 Categorizations (40CFR370): Acute Health Hazard

SARA TITLE III: Section 313 Information (40CFR372)

This product does not contain a chemical which is listed in Section 313 at or above de minimis concentrations.

CERCLA Information (40CFR302.4)

Releases of this material to air, land, or water are not reportable to the National Response Center under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or to state and local emergency planning committees under the Superfund Amendments and Reauthorization Act (SARA) Title III, Section 304.

US. Toxic Substances Control Act (TSCA): All components of this product are in compliance with the inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

16. OTHER INFORMATION

Hazard Rating

	Health	Fire	Reactivity
HMIS	3	1	0

Legend

ACGIH	American Conference of Governmental Industrial Hygienists
BAC	Butyl acetate
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
STEL	Short Term Exposure Limit (STEL):
TLV	Threshold Limit Value
TWA	Time Weighted Average (TWA):
I	Bar denotes a revision from prior MSDS.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Version: 2.0

Print Date: 04/24/2013
Layout: 001/01384978

1. Identification

Product identifier	AQUACHLOR 12.5% NSF SODIUM HYPOCHLORITE	
Other means of identification	None.	
Recommended use	ALL PROPER AND LEGAL PURPOSES	
Recommended restrictions	None known.	
Manufacturer/Importer/Supplier/Distributor information		
Manufacturer		
Company name	Brenntag Southwest, Inc.	
Address	610 Fisher Road Longview, TX 75604	
Telephone	903-759-7151	
E-mail	Not available.	
Emergency phone number	800-424-9300	CHEMTREC

2. Hazard(s) identification

Physical hazards	Not classified.	
Health hazards	Skin corrosion/irritation	Category 1
	Serious eye damage/eye irritation	Category 1
Environmental hazards	Not classified	
OSHA defined hazards	Not classified.	
Label elements		



Signal word	Danger
Hazard statement	Causes severe skin burns and eye damage. Causes serious eye damage.
Precautionary statement	
Prevention	Do not breathe mist or vapor. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection.
Response	If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. Wash contaminated clothing before reuse.
Storage	Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	12.5% of the mixture consists of component(s) of unknown acute dermal toxicity. 99.3% of the mixture consists of component(s) of unknown acute inhalation toxicity.

3. Composition/information on ingredients

Chemical name	Common name and synonyms	CAS number	%
HYPOCHLOROUS ACID, SODIUM SALT (1:1)		7681-52-9	12.5
SODIUM HYDROXIDE (NA(OH))		1310-73-2	0.7
Other components below reportable levels			
*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.			
Material name: AQUACHLOR 12.5% NSF SODIUM HYPOCHLORITE			
200001 Version # 17 Revision date: 10-24-2015 Issue date: 07-02-2015			

8. Exposure controls/personal protection

Occupational exposure limits		
US, OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)		
Components	Type	Value
SODIUM HYDROXIDE (NA(OH)) (CAS 1310-73-2)	PEL	2 mg/m ³
US, ACGIH Threshold Limit Values		
Components	Type	Value
SODIUM HYDROXIDE (NA(OH)) (CAS 1310-73-2)	Ceiling	2 mg/m ³
US, NIOSH Pocket Guide to Chemical Hazards		
Components	Type	Value
SODIUM HYDROXIDE (NA(OH)) (CAS 1310-73-2)	Ceiling	2 mg/m ³
US, Workplace Environmental Exposure Level (WEEL) Guides		
Components	Type	Value
HYPOCHLOROUS ACID, SODIUM SALT (1:1) (CAS 7681-52-9)	STEL	2 mg/m ³

Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

The following are recommendations for Personal Protective Equipment (PPE). The employer/user of this product must perform a Hazard Assessment of the workplace according to OSHA regulations (29 CFR 1910.132) to determine the appropriate PPE for use while performing any task involving potential exposure to this product.	
Eye/face protection	Wear safety glasses with side shields (or goggles) and a face shield.
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.
Other	Wear appropriate chemical resistant clothing.
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.
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9. Physical and chemical properties

Appearance	
Physical state	Liquid.
Form	Liquid.
Color	Not available.
Odor	CHLORINE
Odor threshold	Not available.
pH	11.5 - 13.5
Melting point/freezing point	10 °F (-12.22 °C)
Initial boiling point and boiling range	230.55 °F (110.3 °C) estimated
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.

4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting, if vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Most important symptoms/effects, acute and delayed	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim under observation. Symptoms may be delayed.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Foam. Powder. Carbon dioxide (CO ₂)
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Use water spray to reduce vapors or divert vapor cloud drift. Prevent entry into waterways, sewer, basements or confined areas.
	Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.
	Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.
	Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling	Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store locked up. Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS). Store away from incompatible materials (see Section 10 of the SDS).

Upper/lower flammability or explosive limits

Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	10.14 lbs/gal
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Percent volatile	86.8 % estimated
Specific gravity	1.22

10. Stability and reactivity

Reactivity	Reacts violently with strong acids. This product may react with oxidizing agents.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Contact with incompatible materials. Do not mix with other chemicals.
Incompatible materials	Acids, Oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure	
Inhalation	May cause irritation to the respiratory system. Prolonged inhalation may be harmful.
Skin contact	Causes severe skin burns.
Eye contact	Causes serious eye damage.
Ingestion	Causes digestive tract burns.
Symptoms related to the physical, chemical and toxicological characteristics	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.
Information on toxicological effects	
Acute toxicity	Not known.
Skin corrosion/irritation	Causes severe skin burns and eye damage.
Serious eye damage/eye irritation	Causes serious eye damage.
Respiratory or skin sensitization	
Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity Not classifiable as to carcinogenicity to humans.

IARC Monographs, Overall Evaluation of Carcinogenicity

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

Not regulated.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not an aspiration hazard.

Chronic effects Prolonged inhalation may be harmful

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Components	Species	Test Results
HYPOCHLOROUS ACID, SODIUM SALT (1:1) (CAS 7681-52-9)		
Aquatic		
Fish	LC50	Chinook salmon (<i>Oncorhynchus tshawytscha</i>) 0.036 - 0.065 mg/l, 96 hours
SODIUM HYDROXIDE (NA(OH)) (CAS 1310-73-2)		
Aquatic		
Crustacea	EC50	Water flea (<i>Ceriodaphnia dubia</i>) 34.59 - 47.13 mg/l, 48 hours
Fish	LC50	Western mosquitofish (<i>Gambusia affinis</i>) 125 mg/l, 96 hours

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential No data available.

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

UN number	UN1791
UN proper shipping name	HYPOCHLORITE SOLUTIONS MARINE POLLUTANT (SODIUM HYPOCHLORITE) RQ
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	III
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
ERG number	154

Material name: AQUACHLOR 12.5% NSF SODIUM HYPOCHLORITE
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Transport information on packaging may be different from that listed. Transportation information on packaging may be different from that listed.

IATA

UN number	UN1791
UN proper shipping name	HYPOCHLORITE SOLUTIONS MARINE POLLUTANT (SODIUM HYPOCHLORITE) RQ
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	III
Environmental hazards	No
ERG Code	154
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN3082
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (HYPOCHLOROUS ACID, SODIUM SALT (1:1)), MARINE POLLUTANT
Transport hazard class(es)	
Class	9
Subsidiary risk	-
Packing group	II
Environmental hazards	
Marine pollutant	Yes
EmS	F-A, S-F
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

DOT: IATA



IMDG



Marine pollutant



General information

IMDG Regulated Marine Pollutant

Material name: AQUACHLOR 12.5% NSF SODIUM HYPOCHLORITE
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15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D) Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4) HYPOCHLOROUS ACID, SODIUM SALT (1:1) (CAS 7681-52-9) Listed.

SODIUM HYDROXIDE (NA(OH)) (CAS 1310-73-2) Listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052) Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

Classified hazard categories Skin corrosion or irritation
Serious eye damage or eye irritation

SARA 313 (TRI reporting) Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130) Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 2016 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to www.P65Warnings.ca.gov.

US. California. Candidate Chemicals List. Sater Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

SODIUM HYDROXIDE (NA(OH)) (CAS 1310-73-2)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Toxic Chemical Substances (TCS)	Yes

Material name: AQUACHLOR 12.5% NSF SODIUM HYPOCHLORITE
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Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) inventory	Yes
*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s). A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).		

16. Other information, including date of preparation or last revision

Issue date 07-02-2015

Revision date 10-24-2015

Version # 17

HMIS® ratings Health: 3
Flammability: 0
Physical hazard: 0

NFPA ratings Health: 3
Flammability: 0
Instability: 0

Disclaimer While Brenntag believes the information contained herein to be accurate, Brenntag makes no representation or warranty, express or implied, regarding, and assumes no liability for, the accuracy or completeness of the information. The Buyer assumes all responsibility for handling, using and/or reselling the Product in accordance with applicable federal, state, and local law. This SDS shall not in any way limit or preclude the operation and effect of any of the provisions of Brenntag's terms and conditions of sale.

Revision information Hazard(s) identification: Response
Hazard(s) identification: Supplemental information
Physical and chemical properties: Color
Toxicological information: Acute toxicity

Material name: AQUACHLOR 12.5% NSF SODIUM HYPOCHLORITE
200001 Version # 17 Revision date: 10-24-2015 Issue date: 07-02-2015 8/8

Printing date 08/07/2019

Reviewed on 08/07/2019

1 Identification

- Product identifier
- Trade name: **Acrylic Bonding Agent J40**
- Article number: 83-69081
- Application of the substance / the mixture
- Details of the supplier of the safety data sheet
- Manufacturer/Supplier:
Dayton® Superior
4226 Kansas Avenue
Kansas City, KS 66106

Tel.: (866) 329-8724

Emergency Telephone Number: Use only in the event of an emergency involving a spill, leak, fire, exposure, or accident involving chemicals. Within the U.S., Canada, or the U.S. Virgin Islands, call ChemTrec at (800) 424-9300, 24 hours a day. Or, outside these areas, call international number, +1 703 741-5970. Collect calls are accepted.

- Information department: Environmental, Health, and Safety department.

2 Hazard(s) identification

- Classification of the substance or mixture
Skin Irrit. 2 H315 Causes skin irritation.
Eye Irrit. 2B H320 Causes eye irritation.
Skin Sens. 1 H317 May cause an allergic skin reaction.

- Label elements The product is classified and labeled according to the Globally Harmonized System (GHS).
- Hazard pictograms



GHS07

- Signal word **Warning**
- Hazard-determining components of labeling:
2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol
1,2-benzisothiazol-3(2H)-one
- Hazard statements
Causes skin and eye irritation.
May cause an allergic skin reaction.
- Precautionary statements
Avoid breathing dust/fume/gas/mist/vapors/spray
Wear protective gloves.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If skin irritation or rash occurs: Get medical advice/attention.
Wash contaminated clothing before reuse.
Dispose of contents/container in accordance with local/regional/national/international regulations.
- Classification system:
- NFPA ratings (scale 0 - 4)



Health = 1
Fire = 0
Reactivity = 0

(Contd. on page 2)

US

Printing date 08/07/2019

Reviewed on 08/07/2019

Trade name: **Acrylic Bonding Agent J40**

(Contd. of page 2)

- Advice for firefighters
- Protective equipment:
Because fire may produce thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full face piece operated in pressure-demand or positive-pressure mode.

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures
Wear protective equipment. Keep unprotected persons away.
- Environmental precautions:
Dilute with plenty of water.
Do not allow product to reach sewage system or any water course.
Inform respective authorities in case of seepage into water course or sewage system.
Do not allow to enter sewers/ surface or ground water.
- Methods and material for containment and cleaning up:
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Ensure adequate ventilation.
- Reference to other sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.
- Protective Action Criteria for Chemicals

PAC-1:	
4719-04-4	2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol
1310-73-2	sodium hydroxide
PAC-2:	
4719-04-4	2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol
1310-73-2	sodium hydroxide
PAC-3:	
4719-04-4	2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol
1310-73-2	sodium hydroxide

7 Handling and storage

- Handling:
- Precautions for safe handling
Wear appropriate personal protective clothing to prevent eye and skin contact. Avoid breathing vapors or mists of this product. Use with adequate ventilation. Do not take internally.
- Information about protection against explosions and fires: No special measures required.
- Conditions for safe storage, including any incompatibilities
- Storage: cool and dry
- Requirements to be met by storerooms and receptacles: No special requirements.
- Information about storage in one common storage facility: Store away from foodstuffs.
- Further information about storage conditions: Keep receptacle tightly sealed.
- Specific end use(s) No further relevant information available.

(Contd. on page 4)

US

Printing date 08/07/2019

Reviewed on 08/07/2019

Trade name: **Acrylic Bonding Agent J40**

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- HMIS-ratings (scale 0 - 4)

HEALTH	1	Health = 1
FIRE	0	Fire = 0
PHYSICAL HAZARD	0	Reactivity = 0

- Other hazards
- Results of PBT and vPvB assessment
- PBT: Not applicable.
- vPvB: Not applicable.

3 Composition/information on ingredients

- Chemical characterization: Substances
- CAS No. Description
7732-18-5 water, distilled, conductivity or of similar purity
- Identification number(s)
- EC number: 231-791-2
- Chemical characterization: Mixtures
- Description: Mixture of the substances listed below with nonhazardous additions.

- Dangerous components:

4719-04-4	2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol	20.1-<0.4%
-----------	---	------------

- Additional information: For the wording of the listed hazard phrases refer to section 16.

4 First-aid measures

- Description of first aid measures
- General information:
Immediately remove any clothing soiled by the product.
In the event of persistent symptoms receive medical treatment.
- After inhalation:
Supply fresh air and to be sure call for a doctor.
In case of unconsciousness place patient stably in side position for transportation.
Immediately move exposed person to fresh air. If breathing difficulty persists or develops get prompt medical attention.
- After skin contact:
Immediately wash with water and soap and rinse thoroughly.
If skin irritation continues, consult a doctor.
- After eye contact: Rinse opened eye for several minutes under running water. Then consult a doctor.
- After swallowing: Seek medical treatment.
- Information for doctor:
- Most important symptoms and effects, both acute and delayed No further relevant information available.
- Indication of any immediate medical attention and special treatment needed No further relevant information available.

5 Fire-fighting measures

- Extinguishing media
- Suitable extinguishing agents: Use fire fighting measures that suit the environment.
- Special hazards arising from the substance or mixture No further relevant information available.

(Contd. on page 3)

US


Printing date 08/07/2019

Reviewed on 08/07/2019

Trade name: **Acrylic Bonding Agent J40**

(Contd. of page 3)

8 Exposure controls/personal protection

- Additional information about design of technical systems: No further data; see item 7.
- Control parameters
- Components with limit values that require monitoring at the workplace:
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
- Additional information: The lists that were valid during the creation were used as basis.
- Exposure controls
- Personal protective equipment:
- General protective and hygienic measures:
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
- Breathing equipment: Suitable respiratory protective device recommended.
- Protection of hands:
 Protective gloves
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
- Material of gloves
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
- Penetration time of glove material
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
- Eye protection: Wear appropriate eye protection to prevent eye contact.

9 Physical and chemical properties

- Information on basic physical and chemical properties

- General Information

Appearance:	
Form:	Liquid
Color:	White
Odor:	Odorless
Odor threshold:	Not determined.
pH-value:	Not determined.

- Change in condition

Melting point/Melting range:	0 °C (32 °F)
Boiling point/Boiling range:	100 °C (212 °F)

- Flash point:

Flash point:	Not applicable.
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- Flammability (solid, gaseous):

Flammability (solid, gaseous):	Not applicable.
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- Decomposition temperature:

Decomposition temperature:	Not determined.
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- Auto igniting:

Auto igniting:	Product is not selfigniting.
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Trade name: Acrylic Bonding Agent J40

(Contd. of page 4)

- **Danger of explosion:** Product does not present an explosion hazard.
- **Explosion limits:**
 - Lower: Not determined.
 - Upper: Not determined.
- **Vapor pressure at 20 °C (68 °F):** 23 hPa (17.3 mm Hg)
- **Density at 20 °C (68 °F):** 1.03573 g/cm³ (8.64317 lbs/gal)
- **Relative density** Not determined.
- **Vapor density** Not determined.
- **Evaporation rate** Not determined.
- **Solubility in / Miscibility with Water:** Not miscible or difficult to mix.
- **Partition coefficient (n-octanol/water):** Not determined.
- **Viscosity:**
 - Dynamic: Not determined.
 - Kinematic: Not determined.
- **Solvent content:**
 - Water: 48.5 %
 - Solids content: 25.0 %
- **Other information** No further relevant information available.
- **Volatile Organic Compounds:** Contains less than 50 g/L.

10 Stability and reactivity

- **Reactivity** No decomposition if stored and applied as directed.
- **Chemical stability** No decomposition if stored and applied as directed
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** Keep away from heat and sources of ignition.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.

11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**
- **Primary irritant effect:**
- **on the skin:** May cause skin irritation.
- **on the eye:**
Strong irritant with the danger of severe eye injury.
Irritating effect.
- **Sensitization:** Sensitization possible through skin contact.
- **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Irritant

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Trade name: Acrylic Bonding Agent J40

(Contd. of page 5)

- **Carcinogenic categories**
- **IARC (International Agency for Research on Cancer)**
None of the ingredients is listed.
- **NTP (National Toxicology Program)**
None of the ingredients is listed.
- **OSHA-Ca (Occupational Safety & Health Administration)**
None of the ingredients is listed.

12 Ecological information

- **Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **Persistence and degradability** No further relevant information available.
- **Behavior in environmental systems:**
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **General notes:**
Generally not hazardous for water
Water hazard class 1 (Self-assessment): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
Danger to drinking water if even extremely small quantities leak into the ground.
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects** No further relevant information available.

13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:**
Must not be disposed of as normal garbage. Do not allow product to reach sewage system.
It is the generator's responsibility to determine if the waste meets applicable definitions of hazardous waste. State and local regulations may differ from federal disposal regulations. Dispose of waste material according to local, state, federal, and provincial environmental regulations.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to Federal, State, and Local regulations.

14 Transport information

- **UN-Number**
- **DOT, ADR, ADN, IMDG, IATA** Not Regulated
- **UN proper shipping name**
- **DOT, ADR, ADN, IMDG, IATA** Not Regulated

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Trade name: Acrylic Bonding Agent J40

(Contd. of page 6)

- **Transport hazard class(es)**
- **DOT, ADR, ADN, IMDG, IATA**
- **Class** Not Regulated
- **Packing group**
- **DOT, ADR, IMDG, IATA** Not Regulated
- **Environmental hazards:**
- **Marine pollutant:** No
- **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not applicable.
- **Transport/Additional information:**
- **ADR**
- **U.S. Domestic Ground Shipments:** Same as listed for Standard Shipments above.
- **U.S. Domestic Ground Non-Bulk (119 gal or less per container) Shipments:** Same as listed for Standard Shipments above.
- **Emergency Response Guide (ERG) Number:** Not determine
- **UN "Model Regulation":** Not Regulated

15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Sara**
- **Section 355 (extremely hazardous substances):**
None of the ingredient is listed.
- **Section 313 (Specific toxic chemical listings):**
This product may contain 1 or more toxic chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR part 372. If so, the chemicals are listed below.
None of the ingredients is listed.
- **TSCA (Toxic Substances Control Act):**
4719-04-4 2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol
1310-73-2 sodium hydroxide
2634-33-5 1,2-benzisothiazol-3(2H)-one
7732-18-5 water, distilled, conductivity or of similar purity
- **Proposition 65**
- **Chemicals known to the State of California (Prop. 65) to cause cancer:**
None of the ingredients is listed.
- **Chemicals known to cause reproductive toxicity for females:**
None of the ingredients is listed.
- **Chemicals known to cause reproductive toxicity for males:**
None of the ingredients is listed.
- **Chemicals known to cause developmental toxicity:**
None of the ingredients is listed.

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Trade name: Acrylic Bonding Agent J40

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- **Carcinogenity categories**
- **EPA (Environmental Protection Agency)**
None of the ingredients is listed.
- **TLV (Threshold Limit Value established by ACGIH)**
None of the ingredients is listed.
- **MAK (German Maximum Workplace Concentration)**
None of the ingredients is listed.
- **NIOSH-Ca (National Institute for Occupational Safety and Health)**
None of the ingredients is listed.
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**



- **Signal word** Warning
- **Hazard-determining components of labeling:**
2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol
1,2-benzisothiazol-3(2H)-one
- **Hazard statements**
Causes skin and eye irritation.
May cause an allergic skin reaction.
- **Precautionary statements**
Avoid breathing dust/fume/gas/mist/vapors/spray
Wear protective gloves.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If skin irritation or rash occurs: Get medical advice/attention.
Wash contaminated clothing before reuse.
Dispose of contents/container in accordance with local/regional/national/international regulations.
- **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Department issuing SDS:** Environmental, Health & Safety Department
- **Contact:** Environmental, Health & Safety Manager
- **Date of preparation / last revision** 08/07/2019 / 185
- **Abbreviations and acronyms:**
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMS: Hazardous Materials Identification System (USA)

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Trade name: Acrylic Bonding Agent J40

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PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety and Health
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Skin Irrit. 2: Skin corrosion/irritation - Category 2
Eye Irrit. 2B: Serious eye damage/eye irritation - Category 2B
Skin Sens. 1: Skin sensitisation - Category 1

OS



Safety Data Sheet (SDS)

OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Page 1/19

Issue date 11/04/2019

Reviewed on 11/04/2019

1 Identification

Product Identifier

Trade Name: Carbon Steel Electrodes and Rods for Gas Shielded Arc Welding

Product Number:

Specification: A5.18

Classification: E70C-6M, ER70S-2, ER70S-2 (Copper Free), ER70S-3, ER70S-4, ER70S-6, ER70S-6 (Copper Free)

Carbon steel electrodes and rods for gas shielded arc welding

Relevant identified uses of the substance or mixture and uses advised against:
For professional use only. Use according to manufacturer's specification.

Product Description: Carbon steel electrodes and rods for gas shielded arc welding.

Application of the substance / the mixture: Industry specific application.

Details of the Supplier of the Safety Data Sheet:

Manufacturer/Supplier:

SOWESCO I, LLC

9384 Wallisville Road

Houston, TX 77013

Telephone: 800-856-9353

Emergency telephone number: 713-688-9353

2 Hazard(s) Identification

Classification of the substance or mixture:



Health hazard

Carc. 1A H350 May cause cancer.

STOT RE 1 H372 Causes damage to organs through prolonged or repeated exposure.



Corrosion

Eye Dam. 1 H318 Causes serious eye damage.



Skin Irrit. 2 H315 Causes skin irritation.

Skin Sens. 1 H317 May cause an allergic skin reaction.

STOT SE 3 H335 May cause respiratory irritation.

Label elements:

Hazard pictograms:



Signal word: Danger

Hazard-determining components of labeling:

Iron

Lithium

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Safety Data Sheet (SDS)

OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

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Trade Name: Carbon Steel Electrodes and Rods for Gas Shielded Arc Welding

Silica
Nickel
Titanium

Hazard statements:

H315 Causes skin irritation.

H318 Causes serious eye damage.

H317 May cause an allergic skin reaction.

H350 May cause cancer.

H335 May cause respiratory irritation.

H372 Causes damage to organs through prolonged or repeated exposure.

Precautionary statements:

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P260 Do not breathe dust/fume/gas/mist/vapors/spray.

P264 Wash thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P271 Use only outdoors or in a well-ventilated area.

P272 Contaminated work clothing must not be allowed out of the workplace.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P302+P352 If on skin: Wash with plenty of water.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P312 IF exposed or concerned: Get medical advice/attention.

P321 Call a poison center/doctor if you feel unwell.

P321 Specific treatment (see supplementary first aid instructions on this Safety Data Sheet).

P362+P364 Take off contaminated clothing and wash it before reuse.

P333+P313 If skin irritation or rash occurs: Get medical advice/attention.

P363 Wash contaminated clothing before reuse.

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Unknown acute toxicity:

This value refers to knowledge of known, established toxicological or ecotoxicological values.

17 % of the mixture consists of component(s) of unknown toxicity.

Hazard description:

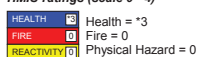
Lithium may explode when in contact with water. Exposure to moist air may result in fire. Lithium can react with water to produce flammable hydrogen gas, which may create a fire and explosion hazard. Spontaneous ignition can occur if Lithium is heated to its melting point. Lithium dusts may ignite spontaneously in moist air. Lithium can react with moisture to produce corrosive compounds. NEVER purge open drums with nitrogen before resealing. Store and transport under argon or mineral oil.

Classification system: NFPA/HMIS Definitions: 0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme

NFPA ratings (scale 0 - 4)



HMIS-ratings (scale 0 - 4)



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Safety Data Sheet (SDS)

OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Issue date 11/04/2019

Reviewed on 11/04/2019

Trade Name: Carbon Steel Electrodes and Rods for Gas Shielded Arc Welding

Hazard(s) not otherwise classified (HNOC): None known

3 Composition/Information on Ingredients

Non-hazardous components:

1317-61-9 Iron Oxide 0-12%

Chemical characterization: Mixtures

Description: Mixture of substances listed below with non-hazardous additions.

Dangerous Components:

CAS: 7439-89-6 RTECS: NO 4565500	Iron Flam. Sol. 2, H228; Skin Irrit. 2, H315; STOT SE 3, H335; Eye Irrit. 2B, H320; Combustible Dust	85-99%
CAS: 7440-39-3 RTECS: CO 8370000	Barium Water-react. 2, H261	0-10%
CAS: 13463-67-7	Titanium Dioxide Carc. 2, H351	0-10%
CAS: 1317-95-9	Silica Carc. 1A, H350; STOT SE 3, H335	0-3%
CAS: 7439-93-2 RTECS: OJ 5540000	Lithium Water-react. 1, H260; Skin Corr. 1B, H314	0-9%
CAS: 7429-90-5 RTECS: BD 0330000	Aluminium Flam. Sol. 2, H228	0-5%
CAS: 7439-95-4 RTECS: OM 2100000	Magnesium Pyr. Sol. 1, H250; Water-react. 1, H260	0-3%
CAS: 7440-02-0	Nickel Carc. 2, H351; STOT RE 1, H372; Skin Sens. 1, H317	0-3%
CAS: 7440-21-3	Silicon Flam. Sol. 2, H228; Acute Tox. 4, H302; Eye Irrit. 2B, H320; Combustible Dust	0-1.5%
CAS: 1309-48-4	Magnesium Oxide Acute Tox. 4, H302	0-1%
CAS: 1344-28-1 RTECS: BD 1200000	Aluminium Oxide STOT SE 3, H335	0-1%
CAS: 7439-98-7 RTECS: QA 4680000	Molybdenum	0-1%
CAS: 7440-50-8 RTECS: GL 5325000	Copper Flam. Sol. 1, H228; STOT SE 3, H335; Aquatic Acute 3, H402; Aquatic Chronic 4, H413	0-1%
CAS: 7440-67-7 RTECS: ZH 7070000	Zirconium Pyr. Sol. 1, H250; Water-react. 1, H260	0-1%
CAS: 7631-86-9	Silicon Dioxide Skin Irrit. 2, H315; STOT SE 3, H335; Eye Irrit. 2B, H320	0-2%
CAS: 7440-32-6 RTECS: XR 1700000	Titanium Skin Irrit. 2, H315; Skin Sens. 1, H317; Eye Irrit. 2B, H320	≤2.5%

Additional information:

The exact percentages of the ingredients of this mixture are considered to be proprietary and are withheld in accordance with the provisions of paragraph (i) of §1910.1200 of 29 CFR 1910.1200 Trade Secrets.

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Safety Data Sheet (SDS)

OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Issue date 11/04/2019

Reviewed on 11/04/2019

Trade Name: Carbon Steel Electrodes and Rods for Gas Shielded Arc Welding

Note: Certain chemical constituents listed in Section 3 may vary depending upon the Classification of the Carbon Steel Electrodes and Rods for Gas Shielded Arc Welding products.

4 First-Aid Measures

- **Description of first aid measures**
- **General information:**
Symptoms of poisoning may occur after exposure to dust, fumes or particulates; seek medical attention if feeling unwell.
- **After inhalation:**
Supply fresh air; consult doctor in case of complaints.
In case of unconsciousness place patient stably in the side position for transportation.
- **After skin contact:**
Immediately wash with water and soap and rinse thoroughly.
If skin irritation occurs, consult a doctor.
- **After eye contact:**
Do NOT rub eyes. Immediately rinse opened eye(s) for at least 15 minutes under running water, lifting upper and lower lids occasionally. If symptoms persist, consult a physician.
- **After swallowing:**
Rinse out mouth and then drink plenty of water.
Do not induce vomiting without medical advice.
- **Information for doctor**
- **Most important symptoms and effects, both acute and delayed:** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed:**
No further relevant information available.

5 Fire-Fighting Measures

- **Extinguishing media**
- **Suitable extinguishing agents:**
CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
Use fire fighting measures that suit the environment.
- **For safety reasons unsuitable extinguishing agents:** No further relevant information.
- **Special hazards arising from the substance or mixture:**
Amorphous or crystalline silicon both react exothermically when heated with alkali-metal carbonates attaining incandescence and evolving carbon monoxide.
Material in powder form, capable of creating a dust explosion. Mixture of silicon, aluminum, and lead oxide explodes when heated.
Amorphous or crystalline silicon both react exothermically when heated with alkali-metal carbonates attaining incandescence and evolving carbon monoxide. Mixtures of silicon, aluminum, and lead explode when heated.
If incinerated, product will release the following toxic fumes: Oxides of silicon, aluminum, magnesium, manganese, iron, copper, molybdenum, carbon, titanium, nickel, niobium, vanadium, barium, lithium, and zirconium, and fluorides and ozone.
- **Advice for firefighters**
- **Special protective equipment for firefighters:**
As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent) and full protective gear to prevent contact with skin and eyes.
- **Additional information:**
At temperatures above 200°C Zirconium reacts exothermically with the following: fluorine, chloride, bromide, iodine, halocarbons, carbon tetrachloride, carbon, tetra fluoride and Freon's.
These items are not reactive, flammable, or explosive and essentially not hazardous at ambient temperatures. Welding arcs and sparks can ignite combustibles and flammable products. If involved in a fire, these products may generate irritating aluminum fumes and a variety of metal oxides. Emergency responders must wear personal protection equipment suitable for the situation. Use the extinguishing media recommended for the burning materials and fire situation. See ANSI Z49.1 "Safety in Welding and Cutting" and "Safe Practices"

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Safety Data Sheet (SDS)

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Issue date 11/04/2019

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Trade Name: Carbon Steel Electrodes and Rods for Gas Shielded Arc Welding

1309-89-6	Magnesium Oxide	120 mg/m ³
1344-28-1	Aluminium Oxide	170 mg/m ³
7439-98-7	Molybdenum	330 mg/m ³
7440-44-0	Carbon Fiber	330 mg/m ³
7440-50-8	Copper	33 mg/m ³
7440-67-7	Zirconium	83 mg/m ³
7631-86-9	Silicon Dioxide	740 mg/m ³
7440-32-6	Titanium	330 mg/m ³
7440-03-1	Niobium	330 mg/m ³
7440-62-2	Vanadium	5.8 mg/m ³

PAC-3:		
7439-89-6	Iron	150 mg/m ³
7440-39-3	Barium	1,100 mg/m ³
13463-67-7	Titanium Dioxide	2,000 mg/m ³
1317-61-9	Iron Oxide	1,400 mg/m ³
7439-93-2	Lithium	220 mg/m ³
7439-95-4	Magnesium	1,200 mg/m ³
7440-02-0	Nickel	99 mg/m ³
7440-21-3	Silicon	630 mg/m ³
1309-48-4	Magnesium Oxide	730 mg/m ³
1344-28-1	Aluminium Oxide	990 mg/m ³
7439-98-7	Molybdenum	2,000 mg/m ³
7440-44-0	Carbon Fiber	2,000 mg/m ³
7440-50-8	Copper	200 mg/m ³
7440-67-7	Zirconium	500 mg/m ³
7631-86-9	Silicon Dioxide	4,500 mg/m ³
7440-32-6	Titanium	2,000 mg/m ³
7440-03-1	Niobium	2,000 mg/m ³
7440-62-2	Vanadium	35 mg/m ³

7 Handling and Storage

- **Handling**
- **Precautions for safe handling:**
Avoid creating and breathing dust/fume/gas/mist/vapors/spray.
Ensure good ventilation/exhaustion at the workplace.
Wear assigned protective equipment.
- **Information about protection against explosions and fires:** Keep protective respiratory device available.
- **Conditions for safe storage, including any incompatibilities**
Store away from strong acids, strong bases, strong oxidizing agents and strong reducing agents.
- **Storage**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:**
The storage area for Lithium must be isolated from other areas so that water cannot enter by spray or drainage from automatic sprinkler systems or any other water source.
- **Further information about storage conditions:** Keep receptacle tightly sealed.

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Safety Data Sheet (SDS)

OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Issue date 11/04/2019

Reviewed on 11/04/2019

Trade Name: Carbon Steel Electrodes and Rods for Gas Shielded Arc Welding

Code: SP, published by the American Welding Society.

6 Accidental Release Measures

- **Personal precautions, protective equipment and emergency procedures:**
Ensure adequate ventilation.
Avoid contact with skin, eyes and clothing.
Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:** Do not allow to enter sewers/surface or ground water.
- **Methods and material for containment and cleaning up:**
Pick up mechanically.
Dispose contaminated material as waste according to section 13.
Ensure adequate ventilation.
Dispose of the collected material according to regulations.
- **Reference to other sections:**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.
- **Protective Action Criteria for Chemicals**

PAC-1:		
7439-89-6	Iron	3.2 mg/m ³
7440-39-3	Barium	1.5 mg/m ³
13463-67-7	Titanium Dioxide	30 mg/m ³
1317-61-9	Iron Oxide	21 mg/m ³
7439-93-2	Lithium	3.3 mg/m ³
7439-95-4	Magnesium	18 mg/m ³
7440-02-0	Nickel	4.5 mg/m ³
7440-21-3	Silicon	45 mg/m ³
1309-48-4	Magnesium Oxide	30 mg/m ³
1344-28-1	Aluminium Oxide	15 mg/m ³
7439-98-7	Molybdenum	30 mg/m ³
7440-44-0	Carbon Fiber	6 mg/m ³
7440-50-8	Copper	3 mg/m ³
7440-67-7	Zirconium	10 mg/m ³
7631-86-9	Silicon Dioxide	18 mg/m ³
7440-32-6	Titanium	30 mg/m ³
7440-03-1	Niobium	30 mg/m ³
7440-62-2	Vanadium	3 mg/m ³

PAC-2:		
7439-89-6	Iron	35 mg/m ³
7440-39-3	Barium	180 mg/m ³
13463-67-7	Titanium Dioxide	330 mg/m ³
1317-61-9	Iron Oxide	230 mg/m ³
7439-93-2	Lithium	36 mg/m ³
7439-95-4	Magnesium	200 mg/m ³
7440-02-0	Nickel	50 mg/m ³
7440-21-3	Silicon	100 mg/m ³

(Cont'd. on page 6)

Safety Data Sheet (SDS)

OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Issue date 11/04/2019

Reviewed on 11/04/2019

Trade Name: Carbon Steel Electrodes and Rods for Gas Shielded Arc Welding

- **Specific end use(s):** No further relevant information available.

8 Exposure Controls/Personal Protection

- **Additional information about design of technical systems:** No further data; see section 7.

- **Control parameters:**
All ventilation should be designed in accordance with OSHA standard (29 CFR 1910.94). Use local exhaust at filling zones and where leakage and dust formation is probable. Use mechanical (general) ventilation for storage areas. Use appropriate ventilation as required to keep Exposure Limits in Air below TLV & PEL limits.
- **Components with occupational exposure limits:**
The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit.
At this time, the other constituents have no known exposure limits.

7440-39-3 Barium		
PEL	Long-term value: 0.5 mg/m ³ as Ba	
REL	Long-term value: 0.5 mg/m ³ as Ba	
TLV	Long-term value: 0.5 mg/m ³ as Ba	
13463-67-7 Titanium Dioxide		
PEL	Long-term value: 15* mg/m ³ *total dust	
REL	See Pocket Guide App. A	
TLV	Long-term value: 10 mg/m ³	
1317-95-9 Silica		
PEL	Long-term value: 0.05* mg/m ³ *resp. dust; 30mg/m ³ /%SiO ₂ +2	
REL	Long-term value: 0.05* mg/m ³ *respirable dust; See Pocket Guide App. A	
TLV	TLV withdrawn	
7429-90-5 Aluminium		
PEL	Long-term value: 15*; 5** mg/m ³ *Total dust; ** Respirable fraction	
REL	Long-term value: 10* 5** mg/m ³ as Al*Total dust**Respirable/pyro powd./welding f.	
TLV	Long-term value: 1* mg/m ³ as Al; *as respirable fraction	
7440-02-0 Nickel		
PEL	Long-term value: 1 mg/m ³	
REL	Long-term value: 0.015 mg/m ³ as Ni; See Pocket Guide App. A	
TLV	Long-term value: 1.5* mg/m ³ elemental, *inhalable fraction	
7440-21-3 Silicon		
PEL	Long-term value: 15* 5** mg/m ³ *total dust **respirable fraction	

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Safety Data Sheet (SDS)

OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Issue date 11/04/2019

Revised on 11/04/2019

Trade Name: Carbon Steel Electrodes and Rods for Gas Shielded Arc Welding

REL	Long-term value: 10* 5** mg/m³ *total dust **respirable fraction
TLV	TLV withdrawn
1309-48-4 Magnesium Oxide	
PEL	Long-term value: 15* mg/m³ fume, *total particulate
TLV	Long-term value: 10* mg/m³ *as inhalable fraction
1344-28-1 Aluminium Oxide	
PEL	Long-term value: 15*, 5** mg/m³ *Total dust, ** Respirable fraction
REL	Long-term value: 10* 5** mg/m³ as Al*total dust**Respirable/pyro powd./welding f.
TLV	Long-term value: 1* mg/m³ as Al; *as respirable fraction
7439-98-7 Molybdenum	
PEL	Long-term value: 15* mg/m³ *Total dust, as Mo
TLV	Long-term value: 10* 3** mg/m³ as Mo; *inhalable fraction ** respirable fraction
7440-50-8 Copper	
PEL	Long-term value: 1* 0.1** mg/m³ as Cu *dusts and mists **fume
REL	Long-term value: 1* 0.1** mg/m³ as Cu *dusts and mists **fume
TLV	Long-term value: 1* 0.2** mg/m³ *dusts and mists; **fume; as Cu
7440-67-7 Zirconium	
PEL	Long-term value: 5 mg/m³ as Zr
REL	Short-term value: 10 mg/m³ Long-term value: 5 mg/m³ as Zr
TLV	Short-term value: 10 mg/m³ Long-term value: 5 mg/m³ as Zr
7631-86-9 Silicon Dioxide	
ACGH	Short-term value: 3 mg/m³ Long-term value: 10 mg/m³
IDLH	Short-term value: 3000 mg/m³ Long-term value: 4 mg/m³ IDLH: Immediately dangerous to life or health
TWA	Short-term value: 6 mg/m³ Long-term value: 4 mg/m³

· **Additional information:** The lists that were valid during the creation of this SDS were used as basis.

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Issue date 11/04/2019

Revised on 11/04/2019

Trade Name: Carbon Steel Electrodes and Rods for Gas Shielded Arc Welding

- **Exposure controls:**
- **Personal protective equipment**
- **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing and wash before reuse.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
Store protective clothing separately.
- **Breathing equipment:**



Suitable respiratory protective device recommended.

Use NIOSH approved or equivalent fume respirator or air supplied respirator when welding, brazing, cutting, grinding, or soldering in a confined space or general work area where local exhaust and/or ventilation does not keep exposure below the limits outlined in Section 8. Monitor the air quality inside the welder's helmet, and/or worker's breathing zone to determine if a respirator is required and the type needed.

- **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Select glove material based on penetration times, rates of diffusion and degradation.

- **Material of gloves:**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material cannot be calculated in advance and has therefore to be checked prior to the application.

- **Penetration time of glove material:**

The exact break-through time has to be determined and observed by the manufacturer of the protective gloves.

- **Eye protection:**



Goggles with face-shield

Wear a helmet or face shield with a filter lens around shade number 14. Adjust if needed by selecting the next lighter or darker shade number. See ANSI/ASC Z49.1 Section 4.2 or publication F2.2. Shield other workers by providing screens and flash goggles.

- **Body protection:**

Wear approved head, hand, and body protection, which help to prevent injury from radiation, sparks, and electrical shock. This would include wearing welder's gloves and a protective face shield and may include arm protectors, apron, hats, shoulder protection, as well as dark, non-synthetic, substantial clothing. See ANSI Z49.1. Welders should be trained not to allow electrically live parts to contact the skin or wet clothing and gloves. The welders should insulate themselves from the work and ground and should not touch live electrical parts. Welders should not wear short sleeve shirts or short pants.

- **Limitation and supervision of exposure into the environment:** None

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Safety Data Sheet (SDS)

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Issue date 11/04/2019

Revised on 11/04/2019

Trade Name: Carbon Steel Electrodes and Rods for Gas Shielded Arc Welding

9 Physical and Chemical Properties

- **Information on basic physical and chemical properties**

- **General Information**

- **Appearance:**

- **Form:** Metal Cored Wire/Rod or Solid Wire/Rod
- **Color:** Copper or silver/gray metallic color
- **Odor:** Odorless until used
- **Odor threshold:** Not determined.
- **pH-value:** Not applicable.

- **Change in condition**

- **Melting point/Melting range:** Not determined.
- **Boiling point/Boiling range:** Not determined.

- **Flash point:** None

- **Flammability (solid, gaseous):** Not determined.

- **Ignition temperature:** Not applicable

- **Decomposition temperature:** Not determined.

- **Auto igniting:** Product is not self-igniting.

- **Danger of explosion:** Product does not present an explosion hazard.

- **Explosion limits:**

- **Lower:** Not determined.
- **Upper:** Not determined.

- **Vapor pressure:** Not applicable.

- **Density:**

- **Relative density:** Not determined.
- **Vapor density:** Not applicable.
- **Evaporation rate:** Not applicable.

- **Solubility in / Miscibility with:**

- **Water:** Insoluble.

- **Partition coefficient (n-octanol/water):** Not determined.

- **Viscosity:**

- **Dynamic:** Not applicable.
- **Kinematic:** Not applicable.

- **Solvent content:**

- **VOC content:** 0.00 %

- **Solids content:** 100.0 %

- **Other information:** No further relevant information available.

10 Stability and Reactivity

- **Reactivity:** Stable under normal conditions.
- **Chemical stability:** Stable under normal conditions.
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions:** Contact with acids or strong bases may cause generation of gas.
- **Conditions to avoid:** No further relevant information available.

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Safety Data Sheet (SDS)

OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Issue date 11/04/2019

Revised on 11/04/2019

Trade Name: Carbon Steel Electrodes and Rods for Gas Shielded Arc Welding

- **Incompatible materials:** Strong acids, strong bases, strong oxidizing agents and strong reducing agents.

- **Hazardous decomposition products:**

Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the processes and procedures followed, and the welding consumables used. Other conditions that also influence the composition and quantity of fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating, or galvanizing), the number of welders in operation and the volume of the work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, and the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing procedures). When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 8. Fume and gas decomposition, and not the ingredients in the electrode, are important. The concentration of a given fume or gas component may decrease or increase by many times the original concentration. Also, new compounds not in the electrodes may form. The known gases and fumes that may form during welding or cutting and their exposure limits are noted in the list in Section 11 below. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section 8, plus those from the base metal and coating, etc. as noted above. Chlorinated solvents may be decomposed into toxic gases such as phosgene.

It is understood, however, that the elements and/or oxides to be mentioned are virtually always present as complex oxides and not as metals (See "Characterization of Arc Welding Fume", from the American Welding Society). The elements or oxides listed Section 8 correspond to the ACGIH categories found in "Threshold Limit Values for Chemical Substances and Physical Agents" listed in Section 8. Some products will also contain: Oxides of silicon, aluminum, magnesium, manganese, iron, copper, molybdenum, carbon, titanium, nickel, niobium, vanadium, barium, lithium, and zirconium, and fluorides and ozone. Some elements or compounds may exceed their PELs/TLVs before the total fumes exceed 5 mg/m³.

11 Toxicological Information

- **Information on toxicological effects:**

Effects of Over-Exposure: Electric arc welding may create one or more of the following health hazards:

- ARC RAYS can injure eyes and burn skin. Incidences of skin cancer have been reported.
- ELECTRIC SHOCK can kill.
- FUMES AND GASES GENERATED FROM WELDING can be dangerous to your health.
- PRIMARY ROUTES OF ENTRY are the respiratory system, eyes, skin, and/or indigestion.
- NOISE can damage hearing.

Short-term (acute) over-exposure effects:

- WELDING FUMES may result in discomfort, such as dizziness, nausea, or dryness or irritation of the nose, throat, or eyes.
- ALUMINUM OXIDE may cause irritation of the respiratory system.
- FLUORIDES, FLUORIDE COMPOUNDS may cause skin and eye burns, pulmonary edema, and bronchitis.
- IRON, IRON OXIDE have no known effects. Treat as a nuisance dust or fume.
- MAGNESIUM, MAGNESIUM OXIDE overexposure may cause metal fume fever, characterized by metallic taste, tightness of chest, and fever. Symptoms may last 24-48 hours following overexposure.
- MANGANESE, MANGANESE COMPOUNDS may cause metal fume fever, characterized by irritation of the throat, vomiting, nausea, fever, body aches, and chills. Recovery is generally complete within 48 hours of overexposure.
- MOLYBDENUM may cause irritation of the eyes, nose, and throat.
- NICKEL, NICKEL COMPOUNDS may cause metallic taste, nausea, tightness in chest, fever, and allergic reactions.
- SILICA (amorphous) dust and fumes may cause irritation of the respiratory system, skin, and eyes.
- TITANIUM DIOXIDE may cause irritation of the respiratory system.
- COPPER may cause capillary damage, headache, cold sweat, weak pulse, and kidney and liver damage, central nervous system excitation followed by depression, jaundice, convulsions, paralysis, and coma. Death may occur from shock or renal failure.

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Safety Data Sheet (SDS)

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Issue date 11/04/2019

Revision on 11/04/2019

Trade Name: Carbon Steel Electrodes and Rods for Gas Shielded Arc Welding

· Chemicals known to cause cancer:	
13463-67-7	Titanium Dioxide
7440-02-0	Nickel
· Chemicals known to cause reproductive toxicity for females:	
None of the ingredients are listed.	
· Chemicals known to cause reproductive toxicity for males:	
None of the ingredients are listed.	
· Chemicals known to cause developmental toxicity:	
None of the ingredients are listed.	
· New Jersey Right-to-Know List:	
7440-39-3	Barium
13463-67-7	Titanium Dioxide
1317-95-9	Silica
7439-93-2	Lithium
7429-90-5	Aluminium
7439-95-4	Magnesium
7440-02-0	Nickel
7440-21-3	Silicon
1309-48-4	Magnesium Oxide
1344-28-1	Aluminium Oxide
7439-98-7	Molybdenum
7440-50-8	Copper
7440-67-7	Zirconium
7440-32-6	Titanium
7440-62-2	Vanadium
· New Jersey Special Hazardous Substance List:	
7440-39-3	Barium
1317-95-9	Silica
7439-93-2	Lithium
7429-90-5	Aluminium
7440-02-0	Nickel
7440-21-3	Silicon
7440-67-7	Zirconium
7440-32-6	Titanium
· Pennsylvania Right-to-Know List:	
7440-39-3	Barium
13463-67-7	Titanium Dioxide
1317-95-9	Silica
7439-93-2	Lithium
7429-90-5	Aluminium
7439-95-4	Magnesium
7440-02-0	Nickel

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Trade Name: Carbon Steel Electrodes and Rods for Gas Shielded Arc Welding

Lithium	
Silica	
Nickel	
Titanium	
Hazard statements:	
H315	Causes skin irritation.
H318	Causes serious eye damage.
H317	May cause an allergic skin reaction.
H350	May cause cancer.
H335	May cause respiratory irritation.
H372	Causes damage to organs through prolonged or repeated exposure.
Precautionary statements:	
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe dust/fume/gas/mist/vapors/spray.
P264	Wash thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P272	Contaminated work clothing must not be allowed out of the workplace.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352	If on skin: Wash with plenty of water.
P304+P340	If INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313	If exposed or concerned: Get medical advice/attention.
P312	Call a poison center/doctor if you feel unwell.
P321	Specific treatment (see supplementary first aid instructions on this Safety Data Sheet).
P362+P364	Take off contaminated clothing and wash it before reuse.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P363	Wash contaminated clothing before reuse.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.
National regulations:	
None of the ingredients are listed.	
Chemical safety assessment: A Chemical Safety Assessment has not been carried out.	

16 Other information

SOWESCO urges each end user and recipient of this SDS to study it carefully. If necessary, consult an industrial hygienist or other expert to understand this information and safeguard the environment and protect workers from potential hazards associated with the handling or use of this product. This information is believed to be accurate as of the revision date shown above. However, no warranty, expressed or implied, is given. Because the conditions or methods of use are beyond SOWESCO's control, we assume no liability resulting from the use of this product. Regulatory requirements are subject to change and may differ between various locations. Compliance with all applicable Federal, State, Provincial, and Local laws and regulations remain the responsibility of the user.

· **Date of last revision/ revision number:** 11/04/2019 / 2

· **Abbreviations and acronyms:**

ADR: The European Agreement concerning the International Carriage of Dangerous Goods by Road
ADN: The European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
IMDG: International Maritime Code for the Carriage of Dangerous Goods
DOT: US Department of Transportation

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Trade Name: Carbon Steel Electrodes and Rods for Gas Shielded Arc Welding

7440-21-3	Silicon
1309-48-4	Magnesium Oxide
1344-28-1	Aluminium Oxide
7439-98-7	Molybdenum
7440-50-8	Copper
7440-67-7	Zirconium
7631-86-9	Silicon Dioxide
7440-62-2	Vanadium
· Pennsylvania Special Hazardous Substance List:	
7440-39-3	Barium
7429-90-5	Aluminium
7440-02-0	Nickel
1344-28-1	Aluminium Oxide
7440-50-8	Copper
7440-62-2	Vanadium
· Carcinogenic categories:	
· EPA (Environmental Protection Agency):	
7440-39-3	Barium
7440-50-8	Copper
· TLV (Threshold Limit Value established by ACGIH):	
7440-39-3	Barium
13463-67-7	Titanium Dioxide
1317-95-9	Silica
7429-90-5	Aluminium
7440-02-0	Nickel
1309-48-4	Magnesium Oxide
1344-28-1	Aluminium Oxide
7439-98-7	Molybdenum
7440-67-7	Zirconium
· NIOSH-Ca (National Institute for Occupational Safety and Health):	
13463-67-7	Titanium Dioxide
1317-95-9	Silica
7440-02-0	Nickel

· **GHS label elements**

The product is classified and labeled according to the Globally Harmonized System (GHS).

· **Hazard pictograms:**



· **Signal word:** Danger

· **Hazard-determining components of labeling:**

Iron

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Trade Name: Carbon Steel Electrodes and Rods for Gas Shielded Arc Welding

IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
VOC: Volatile Organic Compounds (USA, EU)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety and Health
OSHA: Occupational Safety & Health Administration
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Flam. Sol. 1: Flammable solids – Category 1
Flam. Sol. 2: Flammable solids – Category 2
Pyr. Sol. 1: Pyrophoric solids – Category 1
Water-react. 1: Substances and mixtures which in contact with water emit flammable gases – Category 1
Water-react. 2: Substances and mixtures which in contact with water emit flammable gases – Category 2
Acute Tox. 4: Acute toxicity – Category 4
Skin Corr. 1B: Skin corrosion/irritation – Category 1B
Skin Irrit. 2: Skin corrosion/irritation – Category 2
Eye Dam. 1: Serious eye damage/eye irritation – Category 1
Eye Irrit. 2B: Serious eye damage/eye irritation – Category 2B
Skin Sens. 1: Skin sensitisation – Category 1
Carc. 1A: Carcinogenicity – Category 1A
Carc. 2: Carcinogenicity – Category 2
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1
Aquatic Acute 3: Hazardous to the aquatic environment - acute aquatic hazard – Category 3
Aquatic Chronic 4: Hazardous to the aquatic environment - long-term aquatic hazard – Category 4

· **Data compared to the previous version altered.**

SDS created by MSDS Authoring Services www.msdsauthoring.com +1-877-204-9106

SAFETY DATA SHEET

CAULK 100XT COMPONENT A

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: CAULK 100XT COMPONENT A

PRODUCT CODE: #CLK100XTA
PRODUCT USE: Resin component of 2 part chemical resistant caulk.
MANUFACTURER
DUDICK, INC.
1818 MILLER PARKWAY
STREETSBORO, OH, 44241
330-562-1970
24 HR. EMERGENCY TELEPHONE NUMBER
CHEM-TEL (US Transportation): (800)255-3924
CHEM-TEL (International) : +01-813-248-0585
Transportation)

2. HAZARDS IDENTIFICATION

CLASSIFICATION:
Flammable Liquids - Category 2

GHS LABEL ELEMENTS:



SIGNAL WORD: Danger

HAZARD STATEMENTS:
H225 Highly Flammable liquid and vapor

PRECAUTIONARY STATEMENTS :

P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ventilating/lighting/mixing/ equipment.
P370+P378 In case of fire: Use foam, dry chemical, or carbon dioxide for extinction.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P501 Dispose of contents/container in accordance with local, regional, and federal regulations.
P210 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
P233 Keep container tightly closed.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

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7. HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING: Bond and ground containers when transferring liquid. Keep container tightly closed when not in use.

CONDITIONS FOR SAFE STORAGE, INCLUDING INCOMPATIBILITIES: Store in a cool, dry, well ventilated, flammable liquid storage area.

8. EXPOSURE CONTROLS\PERSONAL PROTECTION

EXPOSURE LIMITS

Components	CAS	Limits
Acetone	67-64-1	
4-Methyl-2-pentanone	108-10-1	OSHA PEL 100 ppm ACGIH TLV 50 ppm

ENGINEERING CONTROLS: Ventilation:

Use local exhaust ventilation, or other engineering controls to maintain airborne levels requirements or guidelines.

General ventilation may not be sufficient.

PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY PROTECTION: Respiratory protection required if airborne concentration exceeds TLV. At concentrations up to 1000 PPM, a NIOSH approved cartridge respirator with organic vapor cartridge is recommended. Above this level, a self-contained breathing apparatus is recommended.

EYES PROTECTION: Splash-proof chemical goggles.

SKIN PROTECTION: Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Hand protection: Use chemical resistant gloves. Consult glove manufacturer for recommendations.

WORK HYGIENIC PRACTICES: Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating. Wash contaminated clothing before reuse.

OTHER USE PRECAUTIONS: The type and degree of personal protective equipment will depend on the specific work operation. Eye wash stations and emergency showers should be available. Inspect and replace personal protective equipment at regular intervals; use professional care in their selection, use and care.

COMMENTS: None.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Liquid

COLOR: Pale amber

FLASH POINT AND METHOD: -14 CC

AUTO-IGNITION TEMPERATURE: Not Determined.

BOILING POINT/RANGE: 56C

MELTING POINT: Not Determined.

VAPOUR PRESSURE: Not determined.

VAPOUR DENSITY: Heavier than air.

SOLUBILITY: Not determined.

ODOR/THRESHOLD: Organic solvent

LOWER / UPPER FLAMMABLE LIMITS: No data available for this product.

DENSITY: 1.5108

EVAPORATION RATE: Slower than ether.

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3. COMPOSITION/INFORMATION ON HAZARDOUS INGREDIENTS

Chemical Name	Weight %	CAS Number
Acetone	0% to 100%	67-64-1
4-Methyl-2-pentanone	0% to 100%	108-10-1

Percentage of components is a trade secret.

4. FIRST AID MEASURES

EYES: Hold open eyelids and flush with copious amounts of water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If irritation persists, get medical advice/attention.

SKIN: Wash with soap and water. Contact Physician if irritation persists.

INGESTION: Do not induce vomiting without medical advice.

Consult physician.

INHALATION: If not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc.).

If breathing is difficult, oxygen should be administered by qualified personnel.

Consult a physician after significant exposure. Move person to fresh air. If unconscious place in recovery position and seek medical advice.

NOTES TO PHYSICIAN: No data available for this product.

5. FIRE FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA: Alcohol resistant foam; Carbon Dioxide (CO₂); dry chemical; dry sand; use water to keep containers cool.

UNSUITABLE EXTINGUISHING MEDIA: Do not use high pressure water jet as this may spread the area of the fire.

SPECIFIC HAZARDS IN CASE OF FIRE: Note: Corrosive Hydrogen fluoride may be liberated in fire situations. Use appropriate procedures and protective equipment when handling and disposing of corrosive residue.

Burning may produce noxious and toxic fumes. Incomplete combustion may form carbon monoxide.

SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTION FOR FIRE FIGHTERS: Wear self-contained breathing apparatus (SCBA) in positive pressure mode and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: Wear self-contained breathing apparatus and full protective clothing. Shut off ignition sources. No flames, smoking or flames in the area.

ENVIRONMENTAL PRECAUTIONS: Stop leak if you can do so without risk. Use water spray to reduce vapors. Take up with sand or other non-combustible absorbent material and place into container for later disposal. Use non-sparking tools. Flush area with water. Prevent from entering into soil, ditches, sewers, waterways, and/or groundwater.

METHOD AND MATERIALS FOR CONTAINMENT AND CLEANING UP: Soak up with sand, earth, diatomaceous earth or other suitable inert absorbent material; collect into suitable waste disposal containers. Wash spillage site with large amounts of water. Dispose of in accordance with applicable local and federal environmental control laws and regulations.

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PARTITION COEFFICIENT: Not determined.

pH: Not Applicable.

DECOMPOSITION TEMPERATURE: Not determined.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: This product is stable under normal storage conditions.

POSSIBILITY OF HAZARDOUS REACTIONS: Will not occur under normal conditions.

CONDITIONS TO AVOID: Avoid heat, flame, sparks, and other sources of ignition.

MATERIALS TO AVOID: Aldehydes, esters, alkyl oxides, ammonia, halogens and acid anhydrides.

HAZARDOUS DECOMPOSITION PRODUCTS: None under normal conditions.

Incomplete combustion may generate carbon monoxide, carbon dioxide.

11. TOXICOLOGICAL INFORMATION

SIGNS AND SYMPTOMS OF OVEREXPOSURE:

ACUTE EFFECTS:

EYE CONTACT: No data available for this product.

SKIN CONTACT: No data available for this product.

INHALATION: No data available for this product.

INGESTION: No data available for this product.

TARGET ORGAN: No data available for this product.

CHRONIC EFFECTS: Not determined

4-Methyl-2-pentanone is listed as a Group B possible carcinogen by IARC.

TOXICITY VALUES: Not determined

12. ECOLOGICAL INFORMATION

PERSISTENCE AND DEGRADABILITY:

Not determined.

BIO-ACCUMULATIVE POTENTIAL:

No data available for this product.

MOBILITY IN SOIL:

Not determined.

OTHER ADVERSE EFFECTS:

Not known.

ECOTOXICOLOGICAL OTHER INFORMATION:

May be harmful to aquatic life

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Dispose of according to local, state, and federal regulations through a licensed disposal facility.

14. TRANSPORT INFORMATION

UN NUMBER: UN1133

UN PROPER SHIPPING NAME: Adhesives

TRANSPORT HAZARD CLASS:

3

TRANSPORT HAZARD SUBCLASS:

Not applicable.

PACKING GROUP: II

MARINE POLLUTANT Y/N:

No

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SPECIAL PRE-CAUTIONS: No data available for this product.

15. REGULATORY INFORMATION

U.S. REGULATIONS:

All components of this product are listed on or exempt from the TSCA Inventory.

U.S. SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

311/312 HAZARD CATEGORIES:

FIRE: Yes
PRESSURE GENERATING: No
REACTIVITY: No
ACUTE: Yes
CHRONIC: No

313 REPORTABLE INGREDIENTS:

313 REPORTABLE INGREDIENTS

Chemical Name	Weight %	CAS
4-Methyl-2-pentanone	10% to 15%	108-10-1

302/304 EMERGENCY PLANNING

EMERGENCY PLAN: No reportable components

STATE REGULATIONS:

The following chemicals are California Proposition 65 reportable:

Chemical Name	CAS
4-Methyl-2-pentanone	108-10-1

Massachusetts Right To Know Components

Chemical Name	CAS
Acetone	67-64-1
4-Methyl-2-pentanone	108-10-1

Pennsylvania Right To Know Components

Chemical Name	CAS
Acetone	67-64-1
4-Methyl-2-pentanone	108-10-1

New Jersey Right To Know Components

Chemical Name	CAS
Acetone	67-64-1
4-Methyl-2-pentanone	108-10-1

OTHER GOVT. REGULATIONS: No data available for this product.

16. OTHER INFORMATION

DATE CREATED 06-04-15

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responsibility of the user to ensure that he/she has all of the current data and MSDS relevant to the material thereon and to comply with all Federal, State and Local Regulations.

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DATE PRINTED	6/4/2015
SDS REF. No :	#CLK100XTB

SAFETY DATA SHEET

CAULK 100XT COMPONENT B

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: CAULK 100XT COMPONENT B

PRODUCT CODE: #CLK100XTB

PRODUCT USE: Hardener for 2 component chemical resistant caulk.

MANUFACTURER

DUDICK, INC.
 1818 MILLER PARKWAY
 STREETSBORO, OH, 44241
 330-562-1970

24 HR. EMERGENCY TELEPHONE NUMBER
CHEM-TEL (US Transportation): (800)255-3924
CHEM-TEL (International Transportation): +01-813-248-0585

2. HAZARDS IDENTIFICATION

CLASSIFICATION:

Flammable Liquids - Category 2
 Specific target organ toxicity - single exposure - Category 1
 Acute toxicity - Dermal - Category 3
 Acute Toxicity - Inhalation - Category 3
 Acute Toxicity - Oral - Category 3

GHS LABEL ELEMENTS:



SIGNAL WORD: Danger

HAZARD STATEMENTS:

H225 Highly Flammable liquid and vapor
 H301+H311+H331 Toxic if swallowed, in contact with skin, or if inhaled.
 H370 Causes damage to organs.

PRECAUTIONARY STATEMENTS :

P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
 P260 Do not breathe dust/fume/gas/mist/vapors/spray.
 P240 Ground/bond container and receiving equipment.
 P241 Use explosion-proof electrical/ventilating/lighting/mixing/ equipment.
 P370+P378 In case of fire: Use foam, dry chemical, or carbon dioxide for extinction.
 P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
 P403+P233 Store in a well-ventilated place. Keep container tightly closed.
 P363 Wash contaminated clothing before reuse.
 P501 Dispose of contents/container in accordance with local, regional, and federal regulations.

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P210 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
 P233 Keep container tightly closed.
 P242 Use only non-sparking tools.
 P243 Take precautionary measures against static discharge.
 P270 Do not eat, drink or smoke when using this product.
 P280 Wear protective gloves/protective clothing/eye protection/face protection.
 P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

3. COMPOSITION/INFORMATION ON HAZARDOUS INGREDIENTS

Chemical Name	Weight %	CAS Number
N,N'-bis(1,3-dimethylbutylidene)ethylenediamine	0% to 100%	25707-70-4
Ethyl alcohol	0% to 100%	64-17-5
Methyl alcohol	0% to 100%	67-56-1

Percentage of components is a trade secret.

4. FIRST AID MEASURES

EYES: Hold open eyelids and flush with copious amounts of water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If irritation persists, get medical advice/attention.

SKIN: Wash with soap and water. Contact Physician if irritation persists.

INGESTION: Do not induce vomiting without medical advice. Consult physician.

INHALATION: If not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc.). If breathing is difficult, oxygen should be administered by qualified personnel. Consult a physician after significant exposure. Move person to fresh air. If unconscious place in recovery position and seek medical advice.

NOTES TO PHYSICIAN: No data available for this product.

5. FIRE FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA: Alcohol resistant foam; Carbon Dioxide (CO2); dry chemical; dry sand; use water to keep containers cool.

UNSUABLE EXTINGUISHING MEDIA: Do not use high pressure water jet as this may spread the area of the fire.

SPECIFIC HAZARDS IN CASE OF FIRE: Burning may produce noxious and toxic fumes. Incomplete combustion may form carbon monoxide.

SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTION FOR FIRE FIGHTERS: Wear self-contained breathing apparatus (SCBA) in positive pressure mode and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: Wear self-contained breathing apparatus and full protective clothing. Shut off ignition sources. No flares, smoking or flames in the area.
ENVIRONMENTAL PRECAUTIONS: Stop leak if you can do so without risk. Use water spray to reduce vapors. Take up with sand or other non-combustible absorbent material and place into

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container for later disposal. Use non-sparking tools. Flush area with water. Prevent from entering into soil, ditches, sewers, waterways, and/or groundwater.

METHOD AND MATERIALS FOR CONTAINMENT AND CLEANING UP: Soak up with sand, earth, diatomaceous earth or other suitable inert absorbent material; collect into suitable waste disposal containers. Wash spillage site with large amounts of water. Dispose of in accordance with applicable local and federal environmental control laws and regulations.

7. HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING: Bond and ground containers when transferring liquid. Keep container tightly closed when not in use.

CONDITIONS FOR SAFE STORAGE, INCLUDING INCOMPATIBILITIES: Store in a cool, dry, well ventilated, flammable liquid storage area.

8. EXPOSURE CONTROLS\PERSONAL PROTECTION

EXPOSURE LIMITS

Components	CAS	Limits
N,N'-bis(1,3-dimethylbutylidene)ethylenediamine	25707-70-4	OSHA PEL 100 ppm ACGIH TLV 75 ppm
Ethyl alcohol	64-17-5	OSHA PEL 1000 ppm ACGIH TLV 1000 ppm
Methyl alcohol	67-56-1	OSHA PEL 200 ppm ACGIH TLV 200 ppm

ENGINEERING CONTROLS: Ventilation:

Use local exhaust ventilation, or other engineering controls to maintain airborne levels requirements or guidelines.

General ventilation may not be sufficient.

PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY PROTECTION: Respiratory protection required if airborne concentration exceeds TLV. At concentrations up to 1000 PPM, a NIOSH approved cartridge respirator with organic vapor cartridge is recommended. Above this level, a self-contained breathing apparatus is recommended.

EYES PROTECTION: Splash-proof chemical goggles.

SKIN PROTECTION: Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Hand protection: Use chemical resistant gloves. Consult glove manufacturer for recommendations.

WORK HYGIENIC PRACTICES: Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating. Wash contaminated clothing before reuse.

OTHER USE PRECAUTIONS: The type and degree of personal protective equipment will depend on the specific work operation. Eye wash stations and emergency showers should be available. Inspect and replace personal protective equipment at regular intervals; use professional care in their selection, use and care.

COMMENTS: None.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Liquid

COLOR: Pale amber

FLASH POINT AND METHOD: 14C CC

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AUTO-IGNITION TEMPERATURE: Not Determined.

BOILING POINT/RANGE: 76C

MELTING POINT: Not Determined.

VAPOUR PRESSURE: Not determined.

VAPOUR DENSITY: Heavier than air.

SOLUBILITY: Not determined.

ODOR/THRESHOLD: Organic solvent

LOWER / UPPER FLAMMABLE LIMITS: No data available for this product.

DENSITY: 0.8202

EVAPORATION RATE: Slower than ether.

PARTITION COEFFICIENT: Not determined.

pH: Not Applicable.

DECOMPOSITION TEMPERATURE: Not determined.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: This product is stable under normal storage conditions.

POSSIBILITY OF HAZARDOUS REACTIONS: Will not occur under normal conditions.

CONDITIONS TO AVOID: Avoid heat, flame, sparks, and other sources of ignition.

MATERIALS TO AVOID: Aldehydes, esters, alkyl oxides, ammonia, halogens and acid anhydrides.

HAZARDOUS DECOMPOSITION PRODUCTS: None under normal conditions.

Incomplete combustion may generate carbon monoxide, carbon dioxide.

11. TOXICOLOGICAL INFORMATION

SIGNS AND SYMPTOMS OF OVEREXPOSURE:

ACUTE EFFECTS:

EYE CONTACT: No data available for this product.

SKIN CONTACT: No data available for this product.

INHALATION: No data available for this product.

INGESTION: No data available for this product.

TARGET ORGAN: No data available for this product.

CHRONIC EFFECTS: Not determined

TOXICITY VALUES: Not determined

12. ECOLOGICAL INFORMATION

PERSISTENCE AND DEGRADABILITY:

Not determined.

BIO-ACCUMULATIVE POTENTIAL:

No data available for this product.

MOBILITY IN SOIL:

Not determined.

OTHER ADVERSE EFFECTS:

Not known.

ECOTOXICOLOGICAL OTHER INFORMATION:

May be harmful to aquatic life

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Dispose of according to local, state, and federal regulations through a licensed disposal facility.

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DATE PRINTED	6/4/2015
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14. TRANSPORT INFORMATION

UN NUMBER: UN1133

UN PROPER SHIPPING NAME: Adhesives

TRANSPORT HAZARD CLASS:

3

TRANSPORT HAZARD SUBCLASS:

Not applicable.

PACKING GROUP: II

MARINE POLLUTANT Y/N:

No

SPECIAL PRE-CAUTIONS: No data available for this product.

15. REGULATORY INFORMATION

U.S. REGULATIONS:

All components of this product are listed on or exempt from the TSCA Inventory.

U.S. SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

311/312 HAZARD CATEGORIES:

FIRE: Yes

PRESSURE GENERATING: No

REACTIVITY: No

ACUTE: Yes

CHRONIC: No

313 REPORTABLE INGREDIENTS:

313 REPORTABLE INGREDIENTS

302/304 EMERGENCY PLANNING

EMERGENCY PLAN: No reportable components

STATE REGULATIONS:

The following chemicals are California Proposition 65 reportable:

Chemical Name	CAS
Methyl alcohol	67-56-1

Massachusetts Right To Know Components

Chemical Name	CAS
Ethyl alcohol	64-17-5
Methyl alcohol	67-56-1

Pennsylvania Right To Know Components

Chemical Name	CAS
Ethyl alcohol	64-17-5
Methyl alcohol	67-56-1

New Jersey Right To Know Components

Chemical Name	CAS
Ethyl alcohol	64-17-5
Methyl alcohol	67-56-1

OTHER GOVT. REGULATIONS: No data available for this product.

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16. OTHER INFORMATION

DATE CREATED 06-04-15

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Safety Data Sheet

CO2/Argon Shielding Mix

Red Ball Oxygen Co., Inc.
P.O. Box 7316
Shreveport, LA 71137-7316
Phone: 318-425-3211
Fax: 318-425-6302
http://www.redballoxygen.com

Section 1: Product and Company Identification

Red Ball Oxygen Co., Inc.
P.O. Box 7316
Shreveport, LA 71137-7316
Phone: 318-425-3211
Fax: 318-425-6302
http://www.redballoxygen.com

Product Code: CO2/Argon Shielding Mix

Synonyms:
Recommended Use:
Usage Restrictions:

Section 2: Hazards Identification



Danger

Hazard Classification:
Aspiration Hazard (Category 1)
Eye Effects (Category 2.B)
Gases Under Pressure

Hazard Statements:

Causes eye irritation
Contains gas under pressure; may explode if heated
May be fatal if swallowed and enters airways

Precautionary Statements

Prevention:
Wash thoroughly after handling.

Response:

Do NOT induce vomiting.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If swallowed: Rinse mouth. Do NOT induce vomiting.
Immediately call a poison center or doctor.

Storage:

Protect from sunlight.
Store in well-ventilated place.

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Store locked up.

Disposal:

Dispose of contents and/or container in accordance with applicable regulations.

Section 3: Composition/Information on Ingredients

	CAS #	Concentration
Carbon Dioxide	124-38-9	0.5-99%
Argon	7440-37-1	1-99%

	Chemical Substance	Chemical Family	Trade Names
Carbon Dioxide	CARBON DIOXIDE, GAS	oxides of carbon	CARBONIC ACID GAS; CARBONIC ANHYDRIDE; CARBON DIOXIDE; CARBON OXIDE; UN 1013; CO2
Argon	ARGON, COMPRESSED	non-metallic	ARGON; UN 1006; AR

Section 4: First Aid Measures

	Skin Contact	Eye Contact	Ingestion	Inhalation	Note to Physicians
Carbon Dioxide	If frostbite or freezing occur, immediately flush eyes with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.	Contact with liquid: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.	Do not induce vomiting.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	For inhalation, consider oxygen.
Argon	Not applicable route of exposure	Flush eyes with plenty of water.	Not applicable route of exposure	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	For inhalation, consider oxygen.

Section 5: Fire Fighting Measures

	Suitable Extinguishing Media	Products of Combustion	Protection of Firefighters
Carbon Dioxide	Non-flammable	Non-flammable	<ul style="list-style-type: none">Any appropriate escape-type, self-contained breathing apparatus.Non-flammable
Argon	Non-flammable gas	Not applicable	<ul style="list-style-type: none">N/AN/A

Section 6: Accidental Release Measures

	Personal Precautions	Environmental Precautions	Methods for Containment
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	Personal Precautions	Environmental Precautions	Methods for Containment
Carbon Dioxide	Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering. Do not touch spilled material.	Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). Keep out of water supplies and sewers.	Stop leak if possible without personal risk.
Argon	Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.	None known.	Stop leak if possible without personal risk.

	Methods for Cleanup	Other Information
Carbon Dioxide	Stop leak, evacuate, remove source of ignition.	None
Argon	Leaks may be detected by a soapy-water solution.	

Section 7: Handling and Storage

	Handling	Storage
Carbon Dioxide	Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Keep separated from incompatible substances.	Store and handle in accordance with all current regulations and standards
Argon	Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Keep separated from incompatible substances.	Avoid using in confined spaces.

Section 8: Exposure Controls/Personal Protection

	Exposure Guidelines
Carbon Dioxide	CARBON DIOXIDE, GAS: CARBON DIOXIDE: 5000 ppm (9000 mg/m3) OSHA TWA 10000 ppm (18000 mg/m3) OSHA TWA (vacated by 58 FR 35338, June 30, 1993) 30000 ppm (54000 mg/m3) OSHA STEL (vacated by 58 FR 35338, June 30, 1993) 5000 ppm ACGIH TWA 30000 ppm ACGIH STEL 5000 ppm (9000 mg/m3) NIOSH recommended TWA 10 hour(s) 30000 ppm (54000 mg/m3) NIOSH recommended STEL
Argon	ARGON, COMPRESSED: ARGON: ACGIH (simple asphyxiant)

Engineering Controls

Handle only in fully enclosed systems.

	Eye Protection	Skin Protection	Respiratory Protection
Carbon Dioxide	For the gas: Eye protection not required, but recommended. For the liquid: Wear splash resistant safety goggles. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.	For the gas: Protective clothing is not required. For the liquid: Wear appropriate protective, cold insulating clothing.	Any appropriate escape-type, self-contained breathing apparatus.
Argon	Eye protection not required, but recommended.	Protective clothing is not required.	N/A

General Hygiene considerations

- Avoid breathing vapor or mist
- Avoid contact with eyes and skin
- Wash thoroughly after handling and before eating or drinking

Section 9: Physical and Chemical Properties

	Physical State	Appearance	Color	Change in Appearance	Physical Form	Odor	Taste
Carbon Dioxide	Gas	Colorless	Colorless	N/A	Gas	Odorless	Acid taste
Argon	Gas	Colorless	Colorless	N/A	Gas	Odorless	Tasteless

	Flash Point	Flammability	Partition Coefficient	Autoignition Temperature	Upper Explosive Limits	Lower Explosive Limits
Carbon Dioxide	Not flammable	Not available	N/A	Nonflammable	Nonflammable	Nonflammable
Argon	Not flammable			Nonflammable	Nonflammable	Nonflammable

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Fate and Transport

	Eco toxicity	Persistence / Degradability	Bioaccumulation / Accumulation	Mobility in Environment
Carbon Dioxide	Fish toxicity: 150000 ug/L 48 day(s) (Mortality) Brown trout	Relatively non-persistent in the environment. Moderately volatile from	Accumulates very little in the bodies of living organisms.	Leaches through the soil

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	(Salmo trutta) Invertebrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	water.		
Argon	Fish toxicity: Not available Invertebrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Not available	Not available	Not available

Section 13: Disposal Considerations

Carbon Dioxide	Dispose in accordance with all applicable regulations.
Argon	Dispose in accordance with all applicable regulations.

Section 14: Transportation Information

U.S. DOT 49 CFR 172.101

	Proper Shipping Name	ID Number	Hazard Class or Division	Packing Group	Labeling Requirements	Passenger Aircraft or Railcar Quantity Limitations	Cargo Aircraft Only Quantity Limitations	Additional Shipping Description
Carbon Dioxide	Carbon dioxide	UN1013	2.2	Not applicable	2.2	75 kg or L	150kg	None
Argon	Argon, compressed	UN1006	2.2	Not applicable	2.2	75 kg or L	150 kg	N/A

Canadian Transportation of Dangerous Goods

	Shipping Name	UN Number	Class	Packing Group / Risk Group
Carbon Dioxide	Carbon dioxide	UN1013	2.2	Not applicable
Argon	Argon, compressed	UN1006	2.2	Not applicable

Section 15: Regulatory Information

U.S. Regulations

	CERCLA Sections	SARA 355.30	SARA 355.40
Carbon Dioxide	Not regulated.	Not regulated.	Not regulated.
Argon	Not regulated.	Not regulated.	Not regulated.

SARA 370.21

	Acute	Chronic	Fire	Reactive	Sudden Release
Carbon Dioxide	Yes	No	No	No	Yes
Argon	Yes	No	No	No	Yes

SARA 372.65

Carbon Dioxide	Not regulated.
Argon	Not regulated.

OSHA Process Safety

Carbon Dioxide	Not regulated.
Argon	Not regulated.

State Regulations

	CA Proposition 65
Carbon Dioxide	Not regulated.
Argon	Not regulated.

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Canadian Regulations

	WHMIS Classification
Carbon Dioxide	A
Argon	A

National Inventory Status

	US Inventory (TSCA)	TSCA 12b Export Notification	Canada Inventory (DSL/NDSL)
Carbon Dioxide	Listed on inventory.	Not listed.	Listed on inventory.
Argon	Listed on inventory.	Not listed.	Listed on inventory.

Section 16: Other Information

	NFPA Rating
--	-------------

Carbon Dioxide	HEALTH=2 FIRE=0 REACTIVITY=0
Argon	HEALTH=0 FIRE=0 REACTIVITY=0

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

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Version: 2.1
Revision Date: 01/17/2017



Version: 2.1
Revision Date: 01/17/2017

SAFETY DATA SHEET

1. Identification

Material name: CONCRETE SURFACE RETARDER S
Material: 080 55

Recommended use and restriction on use
Recommended use: Coatings
Restrictions on use: Not known.

Manufacturer/Importer/Supplier/Distributor Information
EUCLID CHEMICAL COMPANY
19218 REDWOOD ROAD
CLEVELAND OH 44110
US

Contact person: EH&S Department
Telephone: 216-531-9222
Emergency telephone number: 1-800-424-9300 (US); 1-613-996-6666 (Canada)

2. Hazard(s) Identification

Hazard Classification

Health Hazards

Skin Corrosion/Irritation Category 1A
Serious Eye Damage/Eye Irritation Category 1

Unknown toxicity - Health

Acute toxicity, oral 99.6 %
Acute toxicity, dermal 99.99 %
Acute toxicity, inhalation, vapor 100 %
Acute toxicity, inhalation, dust 100 %
or mist

Label Elements

Hazard Symbol:



Signal Word: Danger

Hazard Statement: Causes severe skin burns and eye damage.

800000050723

1/12

Precautionary Statements

Prevention: Do not breathe dust or mists. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection.

Response: IF INHALED: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If swallowed: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER/doctor. Specific treatment (see this label). Wash contaminated clothing before reuse.

Storage: Store locked up.

Disposal: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Hazard(s) not otherwise classified (HNOC):

None.

3. Composition/information on ingredients

Mixtures

Chemical Identity	CAS number	Content in percent (%) [*]
Sodium hydroxide	1310-73-2	0.1 - <1%

^{*} All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

Ingestion: Call a physician or poison control center immediately. Rinse mouth. Never give liquid to an unconscious person. Do not induce vomiting without advice from poison control center.

Inhalation: Call a physician or poison control center immediately. If breathing stops, provide artificial respiration. Move to fresh air. If breathing is difficult, give oxygen.

Skin Contact: Call a physician or poison control center immediately. Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Destroy or thoroughly clean contaminated shoes.

Eye contact: Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Call a physician or poison control center immediately.

Most important symptoms/effects, acute and delayed

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Symptoms: Prolonged or repeated contact with skin may cause redness, itching, irritation and eczema/chapping. Extreme irritation of eyes and mucous membranes, including burning and tearing.

Indication of immediate medical attention and special treatment needed

Treatment: Symptoms may be delayed.

5. Fire-fighting measures

General Fire Hazards: No unusual fire or explosion hazards noted.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Use fire-extinguishing media appropriate for surrounding materials.

Unsuitable extinguishing media: Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical: During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters

Special fire fighting procedures: No data available.

Special protective equipment for fire-fighters: Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: See Section 8 of the SDS for Personal Protective Equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep unauthorized personnel away.

Methods and material for containment and cleaning up: Dam and absorb spillages with sand, earth or other non-combustible material. Collect spillage in containers, seal securely and deliver for disposal according to local regulations.

Notification Procedures: In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

Environmental Precautions: Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so.

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9. Physical and chemical properties

Appearance

Physical state: liquid
Form: liquid
Color: Blue

Odor: Mild
Odor threshold: No data available.

pH: 12.25

Melting point/freezing point: No data available.

Initial boiling point and boiling range: No data available.

Flash Point: No data available.

Evaporation rate: Slower than Ether

Flammability (solid, gas): No

Upper/lower limit on flammability or explosive limits

Flammability limit - upper (%): No data available.

Flammability limit - lower (%): No data available.

Explosive limit - upper (%): No data available.

Explosive limit - lower (%): No data available.

Vapor pressure: No data available.

Vapor density: Vapors are heavier than air and may travel along the floor and in the bottom of containers.

Relative density: 1.068

Solubility(ies)

Solubility in water: Soluble

Solubility (other): No data available.

Partition coefficient (n-octanol/water): No data available.

Auto-ignition temperature: No data available.

Decomposition temperature: No data available.

Viscosity: No data available.

10. Stability and reactivity

Reactivity: No data available.

Chemical Stability: Material is stable under normal conditions.

Possibility of hazardous reactions: No data available.

Conditions to avoid: Avoid heat or contamination.

Incompatible Materials: Strong acids. Strong bases.

Hazardous Decomposition Products: Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapors.

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7. Handling and storage

Precautions for safe handling: Do not get in eyes. Wash hands thoroughly after handling. Do not get in eyes, on skin, on clothing. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities: Store locked up.

8. Exposure controls/personal protection

Control Parameters

Occupational Exposure Limits

Chemical Identity	type	Exposure Limit Values	Source
Sodium hydroxide	Ceiling	2 mg/m3	US: ACGIH Threshold Limit Values (2011)
	PEL	2 mg/m3	US: OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)

None of the components have assigned exposure limits.

Appropriate Engineering Controls Observe good industrial hygiene practices. Observe occupational exposure limits and minimize the risk of inhalation of vapors and mist. Mechanical ventilation or local exhaust ventilation may be required.

Individual protection measures, such as personal protective equipment

General information: Provide easy access to water supply and eye wash facilities. Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Eye/face protection: Wear a full-face respirator, if needed. Wear safety glasses with side shields (or goggles) and a face shield.

Skin Protection
Hand Protection: Use suitable protective gloves if risk of skin contact.

Other: Wear chemical-resistant gloves, footwear, and protective clothing appropriate for the risk of exposure. Contact health and safety professional or manufacturer for specific information.

Respiratory Protection: In case of inadequate ventilation use suitable respirator. Seek advice from local supervisor.

Hygiene measures: Do not get in eyes. Observe good industrial hygiene practices. Wash contaminated clothing before reuse. Do not get this material in contact with skin. Wash hands before breaks and immediately after handling the product.

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11. Toxicological information

Information on likely routes of exposure

Inhalation: In high concentrations, vapors, fumes or mists may irritate nose, throat and mucus membranes.

Skin Contact: Causes severe skin burns.

Eye contact: Causes serious eye damage.

Ingestion: May be ingested by accident. Ingestion may cause irritation and malaise.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation: No data available.

Skin Contact: No data available.

Eye contact: No data available.

Ingestion: No data available.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral
Product: Not classified for acute toxicity based on available data.

Specified substance(s):
Sodium hydroxide LD 50 (Rabbit): 325 mg/kg

Dermal
Product: Not classified for acute toxicity based on available data.

Inhalation
Product:

Repeated dose toxicity
Product: No data available.

Skin Corrosion/Irritation
Product: No data available.

Specified substance(s):

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Sodium hydroxide in vivo (Rabbit): Irritating Experimental result, Weight of Evidence study

Serious Eye Damage/Eye Irritation

Product: No data available.

Specified substance(s):

Sodium hydroxide Rabbit, 1 d: 10% Sodium Hydroxide- Category 1; 0.5% Sodium Hydroxide- Slightly irritating to eyes

Respiratory or Skin Sensitization

Product: No data available.

Carcinogenicity

Product: No data available.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

No carcinogenic components identified

US. National Toxicology Program (NTP) Report on Carcinogens:

No carcinogenic components identified

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):

No carcinogenic components identified

Germ Cell Mutagenicity

In vitro

Product: No data available.

In vivo

Product: No data available.

Reproductive toxicity

Product: No data available.

Specific Target Organ Toxicity - Single Exposure

Product: No data available.

Specific Target Organ Toxicity - Repeated Exposure

Product: No data available.

Aspiration Hazard

Product: No data available.

Other effects:

No data available.

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12. Ecological information

Ecotoxicity:

Acute hazards to the aquatic environment:

Fish

Product: No data available.

Aquatic Invertebrates

Product: No data available.

Chronic hazards to the aquatic environment:

Fish

Product: No data available.

Aquatic Invertebrates

Product: No data available.

Toxicity to Aquatic Plants

Product: No data available.

Persistence and Degradability

Biodegradation

Product: No data available.

BOD/COD Ratio

Product: No data available.

Bioaccumulative potential

Bioconcentration Factor (BCF)

Product: No data available.

Partition Coefficient n-octanol / water (log Kow)

Product: No data available.

Mobility in soil:

Other adverse effects:

No data available.

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13. Disposal considerations

Disposal instructions:

Dispose of waste at an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Contaminated Packaging:

No data available.

14. Transport information

TDG:

Not Regulated

CFR / DOT:

Not Regulated

IMDG:

Not Regulated

15. Regulatory information

US Federal Regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
None present or none present in regulated quantities.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):

Chemical Identity

Sodium hydroxide

Reportable quantity

1000 lbs.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Immediate (Acute) Health Hazards

SARA 302 Extremely Hazardous Substance

None present or none present in regulated quantities.

SARA 304 Emergency Release Notification

Chemical Identity

Sodium hydroxide

Phthalocyanine green

Reportable quantity

1000 lbs.

SARA 311/312 Hazardous Chemical

Chemical Identity

Sodium hydroxide

Threshold Planning Quantity

10000 lbs

SARA 313 (TRI Reporting)

None present or none present in regulated quantities.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

None present or none present in regulated quantities.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

None present or none present in regulated quantities.

US State Regulations

US. California Proposition 65

No ingredient regulated by CA Prop 65 present.

US. New Jersey Worker and Community Right-to-Know Act

No ingredient regulated by NJ Right-to-Know Law present.

US. Massachusetts RTK - Substance List

No ingredient regulated by MA Right-to-Know Law present.

US. Pennsylvania RTK - Hazardous Substances

No ingredient regulated by PA Right-to-Know Law present.

US. Rhode Island RTK

No ingredient regulated by RI Right-to-Know Law present.

International regulations

Montreal protocol

not applicable

Stockholm convention

not applicable

Rotterdam convention

not applicable

Kyoto protocol

not applicable

VOC:

Regulatory VOC (less water and exempt solvent) : 0 g/l

VOC Method 310 : 0.00 %

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Victory Blue Diesel Exhaust Fluid

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8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:

Avoid all unnecessary exposure. Gloves. Protective goggles.

Hand protection:

Wear protective gloves

Eye protection:

Chemical goggles or safety glasses

Respiratory protection:

Wear appropriate mask



Other information:

Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Color	: Colorless
Odor	: characteristic ammonia odor
Odor threshold	: No data available
pH	: 9 - 10
Relative evaporation rate (butylacetate=1)	: < 1
Freezing point	: -11 °C (12 °F)
Boiling point	: > 100 °C (212 °F)
Flash point	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: Not Applicable
Relative vapor density at 20 °C	: 0.6 H ₂ O, >1
Specific Gravity	: 1.09
Solubility	: Soluble in water. Water: 100 %
Log Pow	: No data available
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Explosive limits	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

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urea (57-13-6)	
BCF fish 1	1.00 (BCF; 72 h; Brachydanio rerio)
BCF other aquatic organisms 1	11,700.00 (BCF)
Log Pow	< -1.73 (Experimental value; EU Method A.8: Partition Coefficient)
Bioaccumulative potential	Bioaccumulation: not applicable.

12.4. Mobility in soil

urea (57-13-6)	
Mobility in soil	Not applicable
Log Koc	Koc:0.037-0.064; Experimental value

12.5. Other adverse effects

Effect on ozone layer	: No additional information available
Effect on global warming	: No known effects from this product. No additional information available

Other information	: Avoid release to the environment.
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SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product/Packaging disposal recommendations : As a non-hazardous liquid waste, it should be solidified with stabilizing agents such as sand, fly ash, or clay absorbent, so that no free liquid remains before disposal to an industrial waste landfill.

Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Not regulated

Transportation of Dangerous Goods

Refer to current TDG Canada for further Canadian regulations

ADR

Not regulated

Transport by sea

Not regulated

Air transport

Not regulated

SECTION 15: Regulatory information

15.1. US Federal regulations

Victory Blue Diesel Exhaust Fluid	
EPA TSCA Regulatory Flag	Toxic Substances Control Act (TSCA): The intentional ingredients of this product are listed
CERCLA RQ	None. This material is not classified as hazardous under U.S. EPA regulations.
SARA Section 302 Threshold Planning Quantity (TPQ)	No extremely hazardous substances are in this product.
SARA Section 311/312 Hazard Classes	Urea. No hazards resulting from the material as supplied.

urea (57-13-6)	
EPA TSCA Regulatory Flag	Toxic Substances Control Act (TSCA): The intentional ingredients of this product are listed
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard

water (7732-18-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	

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10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Not established.

10.4. Conditions to avoid

No additional information available

10.5. Incompatible materials

Strong acids. Strong bases. oxidizing agents (peroxides, chromates, dichromates).

10.6. Hazardous decomposition products

Carbon monoxide. Carbon dioxide. Fume.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity	: Not classified
urea (57-13-6)	
LD50 oral rat	8,471.00 mg/kg (Rat; OECD 401: Acute Oral Toxicity; Literature study; 14300 mg/kg bodyweight; Rat; Experimental value)
LD50 dermal rat	> 3,200.00 mg/kg (Rat; Literature study)
LD50 dermal rabbit	> 21,000.00 mg/kg (Rabbit; Literature study)
ATE US (oral)	8,471.00 mg/kg bodyweight

Skin corrosion/irritation	: Not classified pH: 9 - 10
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Serious eye damage/irritation	: Not classified pH: 9 - 10
Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified

Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: Not classified

Specific target organ toxicity (repeated exposure)	: Not classified
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Aspiration hazard	: Not classified
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Potential adverse human health effects and symptoms	: Based on available data, the classification criteria are not met.
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SECTION 12: Ecological information

12.1. Toxicity

urea (57-13-6)	
LC50 fish 1	> 6,810.00 mg/l (LC50; 96 h; Leuciscus idus; Static system)
EC50 Daphnia 1	> 10,000.00 mg/l (EC50; 48 h; Daphnia magna)
Threshold limit algae 1	> 10000 mg/l (EC0; 168 h; Scenedesmus quadricauda; Static system; Fresh water)

12.2. Persistence and degradability

urea (57-13-6)	
Persistence and degradability	Inherently biodegradable. Hydrolysis in water. Highly mobile in soil.
ThOD	0.27 g O ₂ /g substance

12.3. Bioaccumulative potential

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according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

15.2. International regulations

CANADA

Victory Blue Diesel Exhaust Fluid	
WHMIS Classification	This SDS has been prepared according to the criteria of the Hazardous Products Regulations (HPR) (WHMIS 2015) and the SDS contains all of the information required by the HPR. Applicable GHS information is listed in section 2.2 of this SDS.

EU-Regulations

No additional information available

National regulations

Victory Blue Diesel Exhaust Fluid	
DSL (Canada): The intentional ingredients of this product are listed	
urea (57-13-6)	
DSL (Canada): The intentional ingredients of this product are listed	
ENiCS (Europe): The intentional ingredients of this product are listed	

15.3. US State regulations

California Proposition 65 - This product does not contain any substance(s) known to the state of California to cause cancer, developmental toxicity and/or reproductive toxicity

SECTION 16: Other information

Revision date	: 04/21/2017
NFPA health hazard	: 1 - Materials that, under emergency conditions, can cause significant irritation.
NFPA fire hazard	: 0 - Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.
NFPA reactivity	: 0 - Material that in themselves are normally stable, even under fire conditions.



Hazard Rating	
Health	: 1 Slight Hazard - Irritation or minor reversible injury possible
Flammability	: 0 Minimal Hazard - Materials that will not burn
Physical	: 0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.
Personal protection	B - Safety glasses, Gloves

SDS GHS US (GHS HazCom 2012) OWI

Old World Industries, LLC makes no warranty, representation or guarantee as to the accuracy, sufficiency or completeness of the material set forth herein. It is the user's responsibility to determine the safety, toxicity and suitability of his own use, handling and disposal of this product. Since actual use by others is beyond our control, no warranty, expressed or implied, is made by Old World Industries, LLC as to the effects of such use, the results to be obtained or the safety and toxicity of this product, nor does Old World Industries, LLC assume liability arising out of the use by others of this product referred to herein. The data in this SDS relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

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SAFETY DATA SHEET

SDS ID NO.: 0291MAR019
Revision Date: 05/14/2015

1. IDENTIFICATION

Product Name: Marathon Petroleum No. 2 Ultra Low Sulfur Diesel Dyed 15 ppm Sulfur Max

Synonym: Ultra Low Sulfur Diesel No. 2 Dyed 15 ppm Sulfur Max; Ultra Low Sulfur Diesel No. 2 Dyed 15 ppm Sulfur Max with Polar Plus; No. 2 Diesel, Tax Exempt-Motor Vehicle Use, Dyed, No. 2 Diesel, Tax Exempt-Motor Vehicle Use, Dyed, with Polar Plus; ULSD No. 2 Diesel Dyed 15 ppm Sulfur Max; ULSD No. 2 Diesel Dyed 15 ppm Sulfur Max, with Polar Plus; No. 2 MV 15 Diesel Dyed; No. 2 MV 15 Diesel Dyed, with Polar Plus; No. 2 NRLM 15 Diesel Dyed; No. 2 NRLM Diesel Dyed Complex Hydrocarbon Substance

Chemical Family: Fuel

Recommended Use: Fuel

Use Restrictions: All others

Supplier Name and Address:
MARATHON PETROLEUM COMPANY LP
539 South Main Street
Findlay, OH 45840

SDS Information: 1-419-421-3070

Emergency Telephone: 1-877-627-5463

2. HAZARD IDENTIFICATION

Classification

OSHA Regulatory Status

This chemical is considered hazardous according to the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 3
Acute toxicity - Inhalation (Dusts/Mists)	Category 4
Skin corrosion/irritation	Category 2
Carcinogenicity	Category 2
Specific target organ toxicity (single exposure)	Category 3
Specific target organ toxicity (repeated exposure)	Category 2
Aspiration toxicity	Category 1
Acute aquatic toxicity	Category 2
Chronic aquatic toxicity	Category 2

Hazards Not Otherwise Classified (HNOC)

Static accumulating flammable liquid

Label elements

SDS ID NO.: 0291MAR019

Product name: Marathon Petroleum No. 2 Ultra Low Sulfur Diesel Dyed 15 ppm Sulfur Max

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0291MAR019 Marathon Petroleum No. 2 Ultra Low Sulfur Diesel Dyed 15 ppm Sulfur Max

Revision Date: 05/14/2015

3. COMPOSITION/INFORMATION ON INGREDIENTS

No. 2 Ultra Low Sulfur Diesel is a complex mixture of paraffins, cycloparaffins, olefins and aromatic hydrocarbon chain lengths predominantly in the range of nine to sixteen carbons. May contain small amounts of red dye and additives (<0.15%) which are not considered hazardous at the concentrations used.

Composition Information:

Name	CAS Number	Weight %
No. 2 Diesel Fuel	86476-34-8	50-100
Kerosene, Petroleum	8008-20-4	0-50
Fuels, Diesel, C9-18-Alkane Branched and Linear	1159170-26-9	0-5
Alkanes, C10-C20 branched and linear	826771-01-1	0-5
Naphthalene	91-20-3	0.01-0.5

4. FIRST AID MEASURES

First Aid Measures

General advice

In case of accident or if you feel unwell, seek medical advice immediately (show directions for use or safety data sheet if possible).

Inhalation:

Remove to fresh air. If not breathing, institute rescue breathing. If breathing is difficult, ensure airway is clear, give oxygen and continue to monitor. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR). Keep affected person warm and at rest. GET IMMEDIATE MEDICAL ATTENTION.

Skin Contact:

Immediately wash exposed skin with plenty of soap and water while removing contaminated clothing and shoes. May be absorbed through the skin in harmful amounts. Get medical attention if irritation persists. Any injection injury from high pressure equipment should be evaluated immediately by a physician as potentially serious (See NOTES TO PHYSICIAN).

Place contaminated clothing in closed container until cleaned or discarded. If clothing is to be laundered, inform the person performing the operation of contaminant's hazardous properties. Destroy contaminated, non-chemical resistant footwear.

Eye Contact:

Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Gently remove contacts while flushing. GET IMMEDIATE MEDICAL ATTENTION.

Ingestion:

Do not induce vomiting because of danger of aspirating liquid into lungs, causing serious damage and chemical pneumonitis. If spontaneous vomiting occurs, keep head below hips, or if patient is lying down, turn body and head to side to prevent aspiration and monitor for breathing difficulty. Never give anything by mouth to an unconscious person. Keep affected person warm and at rest. GET IMMEDIATE MEDICAL ATTENTION.

Most important signs and symptoms, both short-term and delayed with overexposure

Adverse Effects:

Acute: Headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue.
Delayed: Dry skin and possible irritation with repeated or prolonged exposure.

Indication of any immediate medical attention and special treatment needed

SDS ID NO.: 0291MAR019

Product name: Marathon Petroleum No. 2 Ultra Low Sulfur Diesel Dyed 15 ppm Sulfur Max

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Revision Date: 05/14/2015

EMERGENCY OVERVIEW

Danger

FLAMMABLE LIQUID AND VAPOR

May accumulate electrostatic charge and ignite or explode
May be fatal if swallowed and enters airways
Harmful if inhaled
Causes skin irritation
Suspected of causing cancer
May cause drowsiness or dizziness
May cause damage to organs (thymus, liver, bone marrow) through prolonged or repeated exposure
Toxic to aquatic life with long lasting effects



Appearance Red Liquid

Physical State Liquid

Odor Hydrocarbon

Precautionary Statements - Prevention

Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Keep away from heat/sparks/open flames/hot surfaces. — No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use only non-sparking tools
Use explosion-proof electrical/ventilating/lighting/equipment
Take precautionary measures against static discharge
Do not breathe mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear protective gloves/protective clothing/eye protection/face protection
Wash hands and any possibly exposed skin thoroughly after handling
Avoid release to the environment

Precautionary Statements - Response

If exposed or concerned: Get medical attention
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
If skin irritation occurs: Get medical attention
Wash contaminated clothing before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor if you feel unwell
IF SWALLOWED: Immediately call a POISON CENTER or doctor
Do NOT induce vomiting
In case of fire: Use water spray, fog or regular foam for extinction
Collect spillage

Precautionary Statements - Storage

Store in a well-ventilated place. Keep container tightly closed
Keep cool
Store locked up

Precautionary Statements - Disposal

Dispose of contents/container at an approved waste disposal plant

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NOTES TO PHYSICIAN:

SKIN: Leaks or accidents involving high-pressure equipment may inject a stream of material through the skin and initially produce an injury that may not appear serious. Only a small puncture wound may appear on the skin surface but, without proper treatment and depending on the nature, original pressure, volume, and location of the injected material, can compromise blood supply to an affected body part. Prompt surgical debridement of the wound may be necessary to prevent irreversible loss of function and/or the affected body part. High pressure injection injuries may be SERIOUS SURGICAL EMERGENCIES.

INGESTION: This material represents a significant aspiration and chemical pneumonitis hazard. Induction of emesis is not recommended.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

For small fires, Class B fire extinguishing media such as CO₂, dry chemical, foam (AFFF/ATC) or water spray can be used. For large fires, water spray, fog or foam (AFFF/ATC) can be used. Firefighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.

Unsuitable extinguishing media

Do not use straight water streams to avoid spreading fire.

Specific hazards arising from the chemical

This product has been determined to be a flammable liquid per the OSHA Hazard Communication Standard and should be handled accordingly. May accumulate electrostatic charge and ignite or explode. Vapors may travel along the ground or be moved by ventilation and ignited by many sources such as pilot lights, sparks, electric motors, static discharge, or other ignition sources at locations distant from material handling. Flashback can occur along vapor trail. For additional fire related information, see NFPA 30 or the North American Emergency Response Guide 128.

Hazardous combustion products

Smoke, carbon monoxide, and other products of incomplete combustion.

Explosion data

Sensitivity to Mechanical Impact No.
Sensitivity to Static Discharge Yes.

Special protective equipment and precautions for firefighters

Firefighters should wear full protective clothing and positive-pressure self-contained breathing apparatus (SCBA) with a full face-piece, as appropriate. Avoid using straight water streams. Water spray and foam (AFFF/ATC) must be applied carefully to avoid frothing and from as far a distance as possible. Avoid excessive water spray application. Keep surrounding area cool with water spray from a distance and prevent further ignition of combustible material. Keep run-off water out of sewers and water sources.

NFPA:

Health 1

Flammability 2

Instability 0

Special Hazards -

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions:

Keep public away. Isolate and evacuate area. Shut off source if safe to do so. Eliminate all ignition sources. All contaminated surfaces will be slippery.

Protective Equipment:

Use personal protection measures as recommended in Section 8.

Emergency Procedures:

Advise authorities and National Response Center (800-424-8802) if the product has entered a water course or sewer. Notify local health and pollution control agencies, if appropriate.

Environmental precautions:

Avoid release to the environment. Avoid subsoil penetration.

Methods and materials for containment:

Contain liquid with sand or soil.

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Product name: Marathon Petroleum No. 2 Ultra Low Sulfur Diesel Dyed 15 ppm Sulfur Max

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Methods and materials for cleaning up: Use suitable absorbent materials such as vermiculite, sand, or clay to clean up residual liquids. Recover and return free product to proper containers. When recovering free liquids ensure all equipment is grounded and bonded. Use only non-sparking tools.

7. HANDLING AND STORAGE

Safe Handling Precautions:

NEVER SIPHON THIS PRODUCT BY MOUTH. Use appropriate grounding and bonding practices. Static accumulating flammable liquid. Bonding and grounding may be insufficient to eliminate the hazard from static electricity. Do not expose to heat, open flames, strong oxidizers or other sources of ignition. No smoking. Avoid repeated and prolonged skin contact. Use personal protection measures as recommended in Section 8. Use only non-sparking tools. Do not cut, drill, grind or weld on empty containers since explosive residues may remain. Refer to applicable EPA, OSHA, NFPA and consistent state and local requirements.

Hydrocarbons are basically non-conductors of electricity and can become electrostatically charged during mixing, filtering, pumping at high flow rates or loading and transfer operations. If this charge reaches a sufficiently high level, sparks can form that may ignite the vapors of flammable liquids. Sudden release of hot organic chemical vapors or mists from process equipment operating under elevated temperature and pressure, or sudden ingress of air into vacuum equipment may result in ignition of vapors or mists without the presence of obvious ignition sources. Nozzle spouts must be kept in contact with the containers or tank during the entire filling operation.

Portable containers should never be filled while in or on a motor vehicle or marine craft. Containers should be placed on the ground. Static electric discharge can ignite fuel vapors when filling non-grounded containers or vehicles on trailers. The nozzle spout must be kept in contact with the container before and during the entire filling operation. Use only approved containers.

A buildup of static electricity can occur upon re-entry into a vehicle during fueling especially in cold or dry climate conditions. The charge is generated by the action of dissimilar fabrics (i.e., clothing and upholstery) rubbing across each other as a person enters/exits the vehicle. A flash fire can result from this discharge if sufficient flammable vapors are present. Therefore, do not get back in your vehicle while refueling.

Cellular phones and other electronic devices may have the potential to emit electrical charges (sparks). Sparks in potentially explosive atmospheres (including fueling areas such as gas stations) could cause an explosion if sufficient flammable vapors are present. Therefore, turn off cellular phones and other electronic devices when working in potentially explosive atmospheres or keep devices inside your vehicle during refueling.

High-pressure injection of any material through the skin is a serious medical emergency even though the small entrance wound at the injection site may not initially appear serious. These injection injuries can occur from high-pressure equipment such as paint spray or grease or guns, fuel injectors, or pinhole leaks in hoses or hydraulic lines and should all be considered serious. High pressure injection injuries may be SERIOUS SURGICAL EMERGENCIES (See First Aid Section 4).

Storage Conditions:

Store in properly closed containers that are appropriately labeled and in a cool, well-ventilated area. Keep away from heat and sources of ignition. Do not puncture or incinerate container.

Incompatible materials

Strong oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Name	ACGIH TLV	OSHA PELs	OSHA - Vacated PELs	NIOSH IDLH
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Upper Flammability Limit:	5.0
Lower Flammability Limit:	0.7
Vapor Pressure	1-10 mm Hg @ 20°C
Vapor Density	4-5
Specific Gravity / Relative Density	C.A. 0.8
Water Solubility	No available data.
Solubility in other solvents	Negligible
Partition Coefficient	No available data.
Decomposition temperature:	No available data.
pH:	Not applicable
Autoignition Temperature	254 °C / 489 °F
Kinematic Viscosity	1.3-2.1 @ 50°C
Dynamic Viscosity	No available data.
Explosive Properties	No available data.
Softening Point	No available data.
VOC Content (%)	10%
Density	6.76 lbs/gal
Bulk Density	Not applicable.

10. STABILITY AND REACTIVITY

Reactivity.	The product is non-reactive under normal conditions.
Chemical stability.	The material is stable at 70°F, 760 mmHg pressure.
Possibility of hazardous reactions.	None under normal processing.
Hazardous polymerization	Will not occur.
Conditions to avoid.	Excessive heat, sources of ignition, open flame.
Incompatible materials.	Strong oxidizing agents.
Hazardous decomposition products.	None known under normal conditions of use.

11. TOXICOLOGICAL INFORMATION

Potential short-term adverse effects from overexposures.

Inhalation	Harmful if inhaled. Inhalation of high vapor concentrations may cause irritation of the respiratory system. May cause drowsiness or dizziness.
Eye contact	Causes mild eye irritation.
Skin contact	Irritating to skin. Effects may become more serious with repeated or prolonged contact. May be absorbed through the skin in harmful amounts.
Ingestion	May be fatal if swallowed or vomited and enters airways. May cause irritation of the mouth, throat and gastrointestinal tract.

Acute Toxicological data.

Name	Oral LD50	Dermal LD50	Inhalation LC50
No. 2 Diesel Fuel 68476-34-6	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 1 - < 5 mg/L (Rat) 4 h
Kerosene, Petroleum 8008-20-6	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 5.28 mg/L (Rat) 4 h

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No. 2 Diesel Fuel 68476-34-6	100 mg/m³ TWA Skin - potential significant contribution to overall exposure by the cutaneous route	-	-	-
Kerosene, Petroleum 8008-20-6	200 mg/m³ TWA Skin - potential significant contribution to overall exposure by the cutaneous route	-	-	-
Fuels, Diesel, C9-18-Alkane Branched and Linear 1159170-26-9	-	-	-	-
Alkanes, C10-C20 branched and linear 928771-01-1	-	-	-	-
Naphthalene 91-20-3	10 ppm TWA Skin - potential significant contribution to overall exposure by the cutaneous route	TWA: 10 ppm TWA: 50 mg/m³	10 ppm TWA 50 mg/m³ TWA 15 ppm STEL 75 mg/m³ STEL	250 ppm

Notes:

The manufacturer has voluntarily elected to provide exposure limits contained in OSHA's 1969 air contaminants standard in its SDSs, even though certain of those exposure limits were vacated in 1992.

Engineering measures:

Local or general exhaust required in an enclosed area or with inadequate ventilation. Use mechanical ventilation equipment that is explosion-proof.

Personal protective equipment

Eye protection:

Use goggles or face-shield if the potential for splashing exists.

Skin and body protection:

Wear neoprene, nitrile or PVA gloves to prevent skin contact. Glove suitability is based on workplace conditions and usage. Contact the glove manufacturer for specific advice on glove selection and breakthrough times.

Respiratory protection:

Use an approved organic vapor chemical cartridge or supplied air respirators when material produces vapors that exceed permissible exposure limits or exposable vapors are generated. Observe respirator assigned protection factors (APFs) criteria cited in federal OSHA 29 CFR 1910.134. Self-contained breathing apparatus should be used for fire fighting.

Hygiene measures:

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Liquid
Appearance	Red Liquid
Color	Red
Odor	Hydrocarbon
Odor Threshold	No available data.
Property	Values (Method)
Melting Point / Freezing Point	No available data.
Initial Boiling Point / Boiling Range	182-288 °C / 360-550 °F
Flash Point	49-88 °C / 120-190 °F
Evaporation Rate	No available data.
Flammability (solid, gas)	Not applicable.
Flammability Limit in Air (%)	

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Fuels, Diesel, C9-18-Alkane Branched and Linear 1159170-26-9	-	-	> 1 - < 5 mg/L (Rat) 4 h
Alkanes, C10-C20 branched and linear 928771-01-1	-	-	> 1 - < 5 mg/L (Rat) 4 h
Naphthalene 91-20-3	400 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 340 mg/m³ (Rat) 1 h

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Altered mental state, drowsiness, peripheral motor neuropathy, irreversible brain damage (so-called Petrol Sniffer's Encephalopathy), delirium, seizures, and sudden death have been reported from repeated overexposure to some hydrocarbon solvents, naphthas, and gasoline.

MIDDLE DISTILLATES, PETROLEUM: Long-term repeated (lifetime) skin exposure to similar materials has been reported to result in an increase in skin tumors in laboratory rodents. The relevance of these findings to humans is not clear at this time.

MIDDLE DISTILLATES WITH CRACKED STOCKS: Light cracked distillates have been shown to be carcinogenic in animal tests and have tested positive with *in vitro* genotoxicity tests. Repeated dermal exposures to high concentrations in test animals resulted in reduced litter size and litter weight, and increased fetal resorptions at maternally toxic doses. Dermal exposure to high concentrations resulted in severe skin irritation with weight loss and some mortality. Inhalation exposure to high concentrations resulted in respiratory tract irritation, lung changes/infiltration/accumulation, and reduction in lung function.

ISOPARAFFINS: Studies in laboratory animals have shown that long-term exposure to similar materials (isoparaaffins) can cause kidney damage and kidney cancer in male laboratory rats. However, in-depth research indicates that these findings are unique to the male rat, and that these effects are not relevant to humans.

NAPHTHALES: Severe jaundice, neurotoxicity (kernicterus) and fatalities have been reported in young children and infants as a result of hemolytic anemia from overexposure to naphthalene. Persons with glucose 6-phosphate dehydrogenase (G6PD) deficiency are more prone to the hemolytic effects of naphthalene. Adverse effects on the kidney have been reported in persons overexposed to naphthalene but these effects are believed to be a consequence of hemolytic anemia, and not a direct effect. Hemolytic anemia has been observed in laboratory animals exposed to naphthalene. Laboratory rodents exposed to naphthalene vapor for 2 years (lifetime studies) developed non-neoplastic and neoplastic tumors and inflammatory lesions of the nasal and respiratory tract. Cataracts and other adverse effects on the eye have been observed in laboratory animals exposed to high levels of naphthalene. Findings from a large number of bacterial and mammalian cell mutation assays have been negative. A few studies have shown chromosomal effects (elevated levels of Sister Chromatid Exchange or chromosomal aberrations) *in vitro*. Naphthalene has been classified as Possibly Carcinogenic to Humans (2B) by IARC, based on findings from studies in laboratory animals.

DIESEL EXHAUST: Chronic inhalation studies of whole diesel engine exhaust in mice and rats produced a significant increase in lung tumors. Combustion of kerosene and/or diesel fuels produces gases and particulates which include carbon monoxide, carbon dioxide, oxides of nitrogen and/or sulfur and hydrocarbons. Significant exposure to carbon monoxide vapors decreases the oxygen carrying capacity of the blood and may cause tissue hypoxia via formation of carboxyhemoglobin.

Adverse effects related to the physical, chemical and toxicological characteristics

Signs & Symptoms

Nausea, vomiting, signs of nervous system depression: headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue.

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Sensitization Not expected to be a skin sensitizer.
Not expected to be a respiratory sensitizer.

Mutagenic effects None known.

Carcinogenicity Cancer designations are listed in the table below.

Name	ACGIH (Class)	IARC (Class)	NTP	OSHA
No. 2 Diesel Fuel 68475-34-6	Confirmed animal carcinogen (A3)	Not Classifiable (3)	Not Listed	Not Listed
Kerosene, Petroleum 8009-20-6	Confirmed animal carcinogen (A3)	Not Classifiable (3)	Not Listed	Not Listed
Fuels, Diesel, C9-18-Alkane Branched and Linear 1159170-26-9	Not Listed	Not Listed	Not Listed	Not Listed
Alkanes, C10-C20 branched and linear 928771-01-1	Not Listed	Not Listed	Not Listed	Not Listed
Naphthalene 91-20-3	Confirmed animal carcinogen (A3)	Possible human carcinogen (2B)	Reasonably anticipated to be a human carcinogen	Not Listed

Reproductive toxicity None known.

Specific Target Organ Toxicity (STOT) - single exposure Central nervous system.

Specific Target Organ Toxicity (STOT) - repeated exposure Thymus. Liver. Bone marrow.

Aspiration hazard May be fatal if swallowed or vomited and enters airways.

12. ECOLOGICAL INFORMATION

Ecotoxicity This product should be considered toxic to aquatic organisms, with the potential to cause long lasting adverse effects in the aquatic environment.

Name	Algae/aquatic plants	Fish	Toxicity to Microorganisms	Crustacea
No. 2 Diesel Fuel 68475-34-6	-	96-hr LC50 = 35 mg/l Fathead minnow (flow-through)	-	48-hr EL50 = 6.4 mg/l Daphnia magna
Kerosene, Petroleum 8009-20-6	72-hr EL50 = 5.0-11 mg/l Algae	96-hr LL50 = 18-25 mg/l Fish	-	48-hr EL50 = 1.4-21 mg/l Invertebrates
Fuels, Diesel, C9-18-Alkane Branched and Linear 1159170-26-9	-	-	-	-
Alkanes, C10-C20 branched and linear 928771-01-1	-	-	-	-
Naphthalene 91-20-3	-	96-hr LC50 = 0.91-2.82 mg/l Rainbow trout (static) 96-hr LC50 = 1.99 mg/l Fathead minnow (static)	-	48-hr LC50 = 1.6 mg/l Daphnia magna

Persistence and degradability Expected to be inherently biodegradable.

Bioaccumulation Has the potential to bioaccumulate.

Mobility in soil May partition into air, soil and water.

Other adverse effects No information available.

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Fuels, Diesel, C9-18-Alkane Branched and Linear	NA
Alkanes, C10-C20 branched and linear	NA
Naphthalene	100 lb final RQ 45.4 kg final RQ

SARA: The following EPA hazard categories apply to this product:

Acute Health Hazard
Fire Hazard
Chronic Health Hazard

SARA Section 313: This product may contain component(s), which if in exceedance of the de minimus threshold, may be subject to the reporting requirements of SARA Title III Section 313 Toxic Release Reporting (Form R).

Name	CERCLA/SARA 313 Emission reporting:
No. 2 Diesel Fuel	None
Kerosene, Petroleum	None
Fuels, Diesel, C9-18-Alkane Branched and Linear	None
Alkanes, C10-C20 branched and linear	None
Naphthalene	0.1 % de minimis concentration

State and Community Right-To-Know Regulations:

The following component(s) of this material are identified on the regulatory lists below:

No. 2 Diesel Fuel	
Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Not Listed.
New Jersey Right-To-Know:	SN 2444
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To-Know:	Not Listed.
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed.
Michigan Critical Materials Register List:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Not Listed.
New Jersey - Environmental Hazardous Substances List:	SN 2444 TPO: 10000 lb (Under N.J.A.C. 7:1G, environmental hazardous substances in mixtures such as gasoline or new and used petroleum oil may be reported under these categories)
Illinois - Toxic Air Contaminants	Not Listed.
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed.
Kerosene, Petroleum	
Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Not Listed.
New Jersey Right-To-Know:	SN 1091
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To-Know:	Present
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed.
Michigan Critical Materials Register List:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Not Listed.

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13. DISPOSAL CONSIDERATIONS

Description of Waste Residues

This material may be a flammable liquid waste.

Safe Handling of Wastes

Handle in accordance with applicable local, state, and federal regulations. Use personal protection measures as required. Use appropriate grounding and bonding practices. Use only non-sparking tools. Do not expose to heat, open flames, strong oxidizers or other sources of ignition. No smoking.

Disposal of Wastes / Methods of Disposal

The user is responsible for determining if any discarded material is a hazardous waste (40 CFR 262.11). Dispose of in accordance with federal, state and local regulations.

Methods of Contaminated Packaging Disposal

Empty containers should be completely drained and then discarded or recycled, if possible. Do not cut, drill, grind or weld on empty containers since explosive residues may be present. Dispose of in accordance with federal, state and local regulations.

14. TRANSPORT INFORMATION

DOT (49 CFR 172.101):

UN Proper shipping name: Fuel Oil, No. 2
UN Identification No: NA 1993
Transport Hazard Class(es): 3
Packing group: III

TDG (Canada):

UN Proper shipping name: Fuel Oil, No. 2
UN Identification No: NA 1993
Transport Hazard Class(es): 3
Packing group: III

15. REGULATORY INFORMATION

US Federal Regulatory Information:

US TSCA Chemical Inventory Section 8(b): This product and/or its components are listed on the TSCA Chemical Inventory.

EPA Superfund Amendment & Reauthorization Act (SARA):

SARA Section 302: This product does not contain any component(s) included on EPA's Extremely Hazardous Substance (EHS) List.

Name	CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPOs
No. 2 Diesel Fuel	NA
Kerosene, Petroleum	NA
Fuels, Diesel, C9-18-Alkane Branched and Linear	NA
Alkanes, C10-C20 branched and linear	NA
Naphthalene	NA

SARA Section 304: This product may contain component(s) identified either as an EHS or a CERCLA Hazardous substance which in case of a spill or release may be subject to SARA reporting requirements:

Name	CERCLA/SARA - Hazardous Substances and their Reportable Quantities
No. 2 Diesel Fuel	NA
Kerosene, Petroleum	NA

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New Jersey - Environmental Hazardous Substances List:	SN 1091 TPO: 10000 lb (Under N.J.A.C. 7:1G, environmental hazardous substances in mixtures such as gasoline or new and used petroleum oil may be reported under these categories)
Illinois - Toxic Air Contaminants	Not Listed.
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed.
Fuels, Diesel, C9-18-Alkane Branched and Linear	
Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Not Listed.
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To-Know:	Not Listed.
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed.
Michigan Critical Materials Register List:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Not Listed.
New Jersey - Environmental Hazardous Substances List:	Not Listed.
Illinois - Toxic Air Contaminants	Not Listed.
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed.
Alkanes, C10-C20 branched and linear	
Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Not Listed.
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To-Know:	Not Listed.
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed.
Michigan Critical Materials Register List:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Not Listed.
New Jersey - Environmental Hazardous Substances List:	Not Listed.
Illinois - Toxic Air Contaminants	Not Listed.
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed.
Naphthalene	
Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Not Listed.
New Jersey Right-To-Know:	SN 1322 SN 3758
Pennsylvania Right-To-Know:	Environmental hazard Present (particulate)
Massachusetts Right-To-Know:	Present
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Carcinogen
New Jersey - Environmental Hazardous Substances List:	SN 1322 TPO: 500 lb (Reportable at the de minimis quantity of >0.1%)

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Illinois - Toxic Air Contaminants
New York - Reporting of Releases Part 597 -
List of Hazardous Substances:

Present
100 lb RQ (air); 1 lb RQ (land/water)

Canada DSL/NDL Inventory: This product contains the following component(s) that are listed on the Non-Domestic Substance List (NDL): CAS# 1159170-26-9

Canadian Regulatory Information: *This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the (M)SDS contains all the information required by the Controlled Products Regulations.*

Name	Canada - WHMIS: Classifications of Substances:	Canada - WHMIS: Ingredient Disclosure:
No. 2 Diesel Fuel	B3,D2A,D2B	0.1%
Kerosine, Petroleum	B3,D2B	1%
Fuels, Diesel, C9-18-Alkane Branched and Linear	B3,D2A,D2B	0.1%
Alkanes, C10-C20 branched and linear	B3,D2A,D2B	0.1%
Naphthalene	B4,D2A	0.1%



NOTE: Not Applicable.

16. OTHER INFORMATION

Prepared By: Toxicology and Product Safety
Revision Date: 05/14/2015

Revision Note:

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is intended as guidance for safe handling, use, processing, storage, transportation, accidental release, clean-up and disposal and is not considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

1. IDENTIFICATION

Product Name Universal Gold[®] 1%/3% Alcohol Resistant Aqueous Film Forming Foam Concentrate (AR-AFFF)

Recommended use of the chemical and restrictions on use

Identified uses Firefighting Foam Concentrate

Restrictions on Use See Section 15

Company Identification National Foam
350 East Union Street
West Chester, PA 19382
(610) 363-1400
Infotrac at (800) 535-5053
May 18, 2021

Customer Information Number

Emergency Telephone Number

Issue Date

Supersedes Date November 20, 2020

Safety Data Sheet prepared in accordance with OSHA's Hazard Communication Standard (29 CFR 1910.1200, the Canadian Hazardous Products Regulations (HPR) and the Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

2. HAZARD IDENTIFICATION

Hazard Classification
Eye Damage/Irritation – Category 2A

Label Elements
Hazard Symbols



Signal Word: Warning

Hazard Statements
Causes serious eye irritation.

Precautionary Statements

Prevention
Wash hands thoroughly after handling.
Wear eye protection and face protection.

Response

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.

Storage

None

Disposal

None

Other Hazards

This product contains fluoroalkyl surfactants which are and include PFAS (per- or poly- fluoroalkyl substances) and is required to be disposed of by high temperature incineration. See Sections 13 and 15 for additional information.

2. HAZARD IDENTIFICATION

Specific Concentration Limits

The values listed below represent the percentages of ingredients of unknown toxicity.

Acute oral toxicity	<5%
Acute dermal toxicity	5 - 15%
Acute inhalation toxicity	15 - 25%
Acute aquatic toxicity	15 - 25%

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a mixture:

Component	CAS Number	Concentration*
Sodium decyl sulfate	142-87-0	1 - 5%
Alkylpolyglycoside	132778-08-6	1 - 5%
Dipropylene Glycol Monomethyl Ether	34590-94-8	1 - 5%

*Exact concentration withheld as trade secret.

This product contains fluoroalkyl surfactants which are and include PFAS (per- or poly- fluoroalkyl substances). See Sections 13 and 15 for additional information.

4. FIRST-AID MEASURES

Description of necessary first-aid measures

Eyes

Immediately flood the eye with plenty of water for at least 15 minutes, holding the eye open. Obtain medical attention if soreness or redness persists.

Skin

Wash skin thoroughly with soap and water. Obtain medical attention if irritation persists.

Ingestion

Dilute by drinking large quantities of water and obtain medical attention.

Inhalation

Move victim to fresh air. Obtain medical attention immediately for any breathing difficulty.

Most important symptoms/effects, acute and delayed

Aside from the information found under Description of necessary first aid measures (above) and indication of immediate medical attention and special treatment needed, no additional symptoms and effects are anticipated.

Indication of immediate medical attention and special treatment needed

Notes to Physicians

Treat symptomatically.

5. FIRE - FIGHTING MEASURES

Suitable Extinguishing Media

This preparation is used as an extinguishing agent and therefore is not a problem when trying to control a fire. Use extinguishing agent appropriate to other materials involved.

5. FIRE - FIGHTING MEASURES

Specific hazards arising from the chemical

None known

Special Protective Actions for Fire-Fighters

Wear full protective clothing and self-contained breathing apparatus as appropriate for specific fire conditions.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Wear appropriate protective clothing. Prevent skin and eye contact.

Environmental Precautions

Environmental exposure controls: Observe local/national regulations on emissions. Ensure all local/national regulations are observed.
Prevent foam concentrate or foam solution from entering ground water, surface water, or storm drains. Discharge and disposal of concentrate or foam solution should be made in accordance with federal, state, and local regulations. See Section 13 for disposal requirements.

Methods and materials for containment and cleaning up

Contain and absorb using appropriate inert material and transfer into suitable containers for recovery or disposal. See Section 13 for disposal requirements.

7. HANDLING AND STORAGE

Precautions for safe handling

Wear appropriate protective clothing. Prevent skin and eye contact.

Conditions for safe storage

Store in original containers between 35°F and 120°F (2°C and 49°C). Storage area should be: - cool - dry - well ventilated - under cover - out of direct sunlight

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure limits are listed below, if they exist.

Dipropylene Glycol Monomethyl Ether

ACGIH TLV: 100 ppm (606 mg/m³) 8hr TWA; 15 min STEL 150 ppm (909 mg/m³); Danger of cutaneous absorption.
OSHA PEL: 100 ppm (600 mg/m³) Danger of cutaneous absorption.

Appropriate engineering controls

Use with adequate ventilation. If this product is used in a pressurized system, there should be local procedures for the selection, training, inspection and maintenance of this equipment. When used in large volumes, use local exhaust ventilation.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION
Individual protection measures
Respiratory Protection

Wear respiratory protection if there is a risk of exposure to high vapor concentrations, aerosols or if applied to hot surfaces. A NIOSH approved full face respirator may be worn. The specific respirator selected must be based on the airborne concentration found in the workplace and must not exceed the working limits of the respirator.

Skin Protection

Gloves

Eye/Face Protection

Chemical goggles or safety glasses with side shields.

Body Protection

Normal work wear.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Physical State	Liquid
	Color	Amber
Odor		Mild, pleasant
Odor Threshold		No data available
pH		8.2
Specific Gravity		1.03
Boiling Range/Point (°C/F)		No data available
Melting Point (°C/F)		No data available
Flash Point (°C/F)		>200°F
Vapor Pressure		No data available
Evaporation Rate (BuA _c =1)		No data available
Solubility in Water		Soluble
Vapor Density (Air = 1)		Not applicable
VOC (%)		No data available
Partition coefficient (n-octanol/water)		No data available
Viscosity		No data available
Auto-ignition Temperature		Not applicable
Decomposition Temperature		No data available
Upper explosive limit		Not applicable
Lower explosive limit		Not applicable
Flammability (solid, gas)		Not applicable

10. STABILITY AND REACTIVITY
Reactivity

No data available.

Chemical Stability

Stable under normal conditions.

Possibility of hazardous reactions

Hazardous polymerization will not occur.

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10. STABILITY AND REACTIVITY
Conditions to Avoid

Contact with incompatible materials

Incompatible Materials

Water reactive materials – burning metals – electronically energized equipment

Hazardous Decomposition Products

Oxides of carbon – hydrogen fluoride – aldehydes – ketones – organic acids

11. TOXICOLOGICAL INFORMATION
Acute Toxicity
Product

Oral LD50 (rat) >5000mg/kg

Alkylpolyglycoside

Oral LD50 (rat) >5000mg/kg

Dipropylene Glycol Monomethyl Ether

Oral LD50 (rat) >5000 mg/kg

Dermal LD50 (rabbit) >9510 mg/kg

Inhalation LC50 (rat) > 3.35 mg/L7h; vapour, no deaths occurred at this concentration

Specific Target Organ Toxicity (STOT) – single exposure

Available data indicates this product is not expected to cause target organ effects after a single exposure.

Specific Target Organ Toxicity (STOT) – repeat exposure

Available data indicates this component not expected to cause target organ effects after repeated exposure.

Serious Eye damage/Irritation

Product: Primary irritant (rabbit) (tested on a similar product)

Sodium decyl sulfate: Severe eye irritant (based on similar material)

Alkylpolyglycoside: Severely irritating (rabbit) (50% solution)

Skin Corrosion/Irritation

Product: Not a primary irritant (rabbit) (tested on a similar product)

Respiratory or Skin Sensitization

Available data indicates this product is not expected to cause skin sensitization.

Carcinogenicity

Not considered carcinogenic by NTP, IARC, and OSHA.

Germ Cell Mutagenicity

Available data indicates this product is not expected to be mutagenic.

Reproductive Toxicity

Available data indicates this product is not expected to cause reproductive toxicity or birth defects.

Aspiration Hazard

Not an aspiration hazard.

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12. ECOLOGICAL INFORMATION
Ecotoxicity

No relevant studies identified.

Mobility in soil

No relevant studies identified.

Persistence/Degradability

No relevant studies identified.

Bioaccumulative Potential

No relevant studies identified.

Other adverse effects

No relevant studies identified.

13. DISPOSAL CONSIDERATIONS
Disposal Methods

This product contains PFAS (per- or poly- fluoroalkyl substances). Local requirements for waste disposal may be more restrictive or otherwise different from national regulations. Therefore, applicable local and state regulatory agencies should be contacted regarding disposal of waste foam concentrate or foam/foam solution.

Concentrate

Prevent foam concentrate from entering ground water, surface water or storm drains. Small quantities of foam concentrate may be collected on absorbents which can then be disposed of. Disposal should be made in accordance with local, state and federal regulations. High temperature incineration is required at a minimum of 1000°C with a minimum residence time of 2 seconds per the United States Environmental Protection Agency's Significant New Use Rule for a component of this product. See 40 CFR721.10700.

Foam/Foam Solution

Prevent foam/foam solution from entering ground water, surface water or storm drains. Small quantities of foam solution may be collected on absorbents which can then be disposed of. Disposal should be made in accordance with local, state and federal regulations. High temperature incineration is required at a minimum of 1000°C with a minimum residence time of 2 seconds per the United States Environmental Protection Agency's Significant New Use Rule for a component of this product. See 40 CFR721.10700.

NOTE: Please consult National Foam for additional information regarding the disposal of foam concentrates and foam solutions or visit <http://nationalfoam.com/use-discharge-and-disposal-of-firefighting-foam-products/>

14. TRANSPORT INFORMATION
Shipping Information

Shipping Description
National Motor Freight Code

Fire Extinguisher Charges or Compounds N.O.I., Class 70
69160 Sub 0

This information is not intended to convey all transportation classifications that may apply to this product. Classifications may vary by container volume and by regional regulations. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules when transporting this material.

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15. REGULATORY INFORMATION
United States TSCA Inventory

This product contains ingredients that have restricted use under the EPA Toxic Substance Control Act and are subject to a Significant New Use Rule (40CFR721.10700 and 40CFR721.10727). This product may only be used as a fire fighting foam. Any other use of this product is strictly prohibited. Disposal of this product must be done by incineration at a minimum of 1000°C with a minimum residence time of 2 seconds.

Canada DSL Inventory

This product contains an ingredient that is not listed on the Domestic Substance List (DSL) or the Non-Domestic Substance List (NDL).

SARA Title III Sect. 311/312 Categorization

Eye irritation

SARA Title III Sect. 313

This product does not contain any chemicals that are listed in Section 313 at or above de minimis concentrations.

California Proposition 65

WARNING: This product can expose you to chemicals including diethanolamine and formaldehyde, which are known to the State of California to cause cancer, and perfluorooctanoic acid and methanol, which are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.p65warnings.ca.gov/

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

None

16. OTHER INFORMATION
NFPA Ratings

NFPA Code for Health - 0

NFPA Code for Flammability - 0

NFPA Code for Reactivity - 0

NFPA Code for Special Hazards - None

Legend

ACGIH: American Conference of Governmental Industrial Hygienists

CAS#: Chemical Abstracts Service Number

EC50: Effect Concentration 50%

IARC: International Agency for Research on Cancer

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

N/A: Denotes no applicable information found or available

OSHA: Occupational Safety and Health Administration

PEL: Permissible Exposure Limit

RQ: Reportable Quantity

STEL: Short Term Exposure Limit

N/A: Denotes no applicable information found or available

OSHA: Occupational Safety and Health Administration

PEL: Permissible Exposure Limit

RQ: Reportable Quantity

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16. OTHER INFORMATION

Legend, continued

STEL: Short Term Exposure Limit
TLV: Threshold Limit Value
TSCA: Toxic Substance Control Act

Revision Date: May 18, 2021
Replaces: November 20, 2020
Changes made: Updates to sections 2, 6 and 13 and 15.

Information Source and References

This SDS is prepared by Hazard Communication Specialists based on information provided by internal company references.

Prepared By: EnviroNet LLC.

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Hand Sanitizer Isopropyl - 75%

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations
Date of issue: 04/19/2020 Revision date: 04/19/2020 Supersedes: 04/01/2020

SECTION 1: Identification

1.1. Identification	
Product form	: Substance
Trade name	: Isopropanol
Chemical name	: Isopropyl Alcohol
CAS No	: 67-63-0
Product code	: HP-040769-FP; HPF-040769 FP USP IPA; HPF-040941-FP
Formula	: C3H8O
Synonyms	: 2-Hydroxypropane / 2-Propyl alcohol / 2-Propanol / Isopropanol / Propan-2-ol / ISOPROPYL ALCOHOL / Propanol, 2-

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Solvent; Antiseptic; Deicing/antifreeze agent; Chemical feedstock, etc.

1.3. Details of the supplier of the safety data sheet

Kleen Concepts
8388 E Hartford Dr, Suite 105
Scottsdale, AZ
1 (480) 515-5576
-

1.4. Emergency telephone number

Emergency number : 24 HR CHEMTREC: 1-800-424-9300

SECTION 2: Hazard(s) Identification

2.1. Classification of the substance or mixture

GHS-US classification		
Flam. Liq. 2	H225 -	Highly flammable liquid and vapour
Eye Irrit. 2A	H319 -	Causes serious eye irritation
STOT SE 3	H336 -	May cause drowsiness or dizziness
Full text of H-phrases: see section 16		

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US)



Signal word (GHS-US)

: Danger

Hazard statements (GHS-US)

: H225 - Highly flammable liquid and vapor
H319 - Causes serious eye irritation
H336 - May cause drowsiness or dizziness

Precautionary statements (GHS-US)

P210 - Keep away from heat, hot surfaces, open flames, sparks. - No smoking
P233 - Keep container tightly closed
P240 - Ground/bond container and receiving equipment
P241 - Use explosion-proof electrical, lighting, ventilating equipment
P242 - Use only non-sparking tools
P243 - Take precautionary measures against static discharge
P261 - Avoid breathing dust, gas, fume, spray, mist, vapors
P264 - Wash hands thoroughly after handling
P271 - Use only outdoors or in a well-ventilated area
P280 - Wear eye protection, protective clothing, protective gloves
P303+P361+P533 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P312 - Call a doctor. a POISON CENTER if you feel unwell
P337+P313 - If eye irritation persists: Get medical advice/attention

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	P370+P378 - In case of fire: Use alcohol resistant foam, carbon dioxide (CO2), dry extinguishing powder, Water spray to extinguish P403+P233 - Store in a well-ventilated place. Keep container tightly closed P403+P235 - Store in a well-ventilated place. Keep cool P405 - Store locked up P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation
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2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on Ingredients

3.1. Substance

Name	Product identifier	%	GHS-US classification
Isopropyl Alcohol	(CAS No) 67-63-0	>= 75.0 concentration	Flam. Liq. 2, H225
Water		<= 25.0	Eye Irrit. 2A, H319 STOT SE 3, H336

Full text of H-phrases: see section 16

3.2. Mixture

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
First-aid measures after inhalation	: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
First-aid measures after skin contact	: Rinse skin with water/shower. Remove/Take off immediately all contaminated clothing.
First-aid measures after eye contact	: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Consult an eye specialist. Get medical advice/attention.
First-aid measures after ingestion	: Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation : May cause drowsiness or dizziness.
Symptoms/injuries after eye contact : Causes serious eye irritation.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Foam. Dry powder. Carbon dioxide. Water spray. Sand.
Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

Fire hazard : Highly flammable liquid and vapor.
Explosion hazard : May form flammable/explosive vapor-air mixture.

5.3. Advice for firefighters

Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.
Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Remove ignition sources. Use special care to avoid static electric charges. No open flames. No smoking.

6.1.1. For non-emergency personnel

Emergency procedures : Evacuate unnecessary personnel.

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6.1.2. For emergency responders	
Protective equipment	: Equip cleanup crew with proper protection. Avoid breathing dust, fume, gas, mist, spray, vapors.
Emergency procedures	: Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed	: Handle empty containers with care because residual vapors are flammable.
Precautions for safe handling	: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapor. No open flames. No smoking. Use only non-sparking tools. Avoid breathing dust, fume, gas, mist, spray, vapors. Use only outdoors or in a well-ventilated area.
Hygiene measures	: Wash hands thoroughly after handling.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	: Proper grounding procedures to avoid static electricity should be followed. Ground/bond container and receiving equipment. Use explosion-proof electrical, lighting, Ventilation equipment.
Storage conditions	: Keep only in the original container in a cool, well ventilated place away from: Ignition sources, Incompatible materials. Keep in fireproof place. Keep container tightly closed.
Incompatible products	: Strong bases. Strong acids.
Incompatible materials	: Sources of ignition. Direct sunlight. Heat sources.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Isopropyl Alcohol (67-63-0)		
ACGIH	ACGIH TWA (ppm)	200 ppm
ACGIH	ACGIH STEL (ppm)	400 ppm
ACGIH	Remark (ACGIH)	Eye & URT irr; CNS impair
OSHA	OSHA PEL (TWA) (mg/m³)	980 mg/m³
OSHA	OSHA PEL (TWA) (ppm)	400 ppm

8.2. Exposure controls

Personal protective equipment	: Avoid all unnecessary exposure.
Hand protection	: Wear protective gloves.
Eye protection	: Chemical goggles or safety glasses.
Respiratory protection	: Where exposure through inhalation may occur from use, respiratory protection equipment is recommended.
Other information	: Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Appearance	: Colorless liquid.
Color	: Colorless
Odor	: alcohol-like
Odor threshold	: 36.61 ppm 90 mg/m³

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pH	: No data available
Melting point	: No data available
Freezing point	: -88 °C ; -126.2 °F
Boiling point	: 82.3 °C ; 180.1 °F
Flash point	: 12 °C ; 53.6 °F closed cup
Relative evaporation rate (butyl acetate=1)	: 2.3
Flammability (solid, gas)	: No data available
Explosion limits	: 2 - 12.7 vol %
Explosive properties	: No data available
Oxidizing properties	: No data available
Vapor pressure	: 45.4 mm Hg at 25°C
Relative density	: 0.79
Relative vapor density at 20 °C	: 2.1
Specific gravity / density	: 0.785 g/cm³ (at 20 °C)
Molecular mass	: 60.1 g/mol
Solubility	: Soluble in water.
Log Pow	: 0.05 (at 25 °C)
Auto-ignition temperature	: 399 °C ; 750.2 °F
Decomposition temperature	: No data available
Viscosity	: 2.04 cP at 25° C
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available

9.2. Other information	
VOC content	: 99.95 %

SECTION 10: Stability and reactivity

10.1. Reactivity	
No additional information available	
10.2. Chemical stability	
Highly flammable liquid and vapor. May form flammable/explosive vapor-air mixture.	
10.3. Possibility of hazardous reactions	
Not established.	
10.4. Conditions to avoid	
Direct sunlight. Extremely high or low temperatures. Open flame.	
10.5. Incompatible materials	
Strong acids. Strong bases.	
10.6. Hazardous decomposition products	
fume. Carbon monoxide. Carbon dioxide. May release flammable gases.	


SECTION 11: Toxicological information

11.1. Information on toxicological effects	
Acute toxicity	: Not classified
Isopropyl Alcohol (67-63-0)	
LD50 oral rat	5050 mg/kg
LD50 dermal rabbit	4059 mg/kg
LC50 inhalation rat (mg/l)	72.6 mg/l/4h (Exposure time: 4 h)
ATE US (oral)	5050.000 mg/kg body weight
ATE US (dermal)	4059.000 mg/kg body weight
ATE US (vapors)	72.600 mg/l/4h
ATE US (dust, mist)	72.600 mg/l/4h
Skin corrosion/irritation	: Not classified
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Hazard labels (DOT)	: 3 - Flammable liquid
	
Packing group (DOT)	: II - Medium Danger
DOT Packaging Non Bulk (49 CFR 173.xxx)	: 202
DOT Packaging Bulk (49 CFR 173.xxx)	: 242
DOT Special Provisions (49 CFR 172.102)	: IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 °C (1.1 bar at 122 °F), or 130 kPa at 55 °C (1.3 bar at 131 °F) are authorized. 14 - 2.65 178.274(d)(2) Normal..... 178.275(d)(3) TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = 97 / 1 + a (tr - tr) Where: tr is the maximum mean bulk temperature during transport, and tr is the temperature in degrees celsius of the liquid during filling.
DOT Packaging Exceptions (49 CFR 173.xxx)	: 4b;150
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	: 5 L
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	: 60 L
DOT Vessel Stowage Location	: B - (i) The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length; and (ii) "On deck only" on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded.
Emergency Response Guide (ERG) Number	: 129
Other information	: No supplementary information available.
TDG	
No additional information available	
Transport by sea	
UN-No. (IMDG)	: 1219
Proper Shipping Name (IMDG)	: ISOPROPANOL (ISOPROPYL ALCOHOL)
Class (IMDG)	: 3 - Flammable liquids
Packing group (IMDG)	: II - substances presenting medium danger
Air transport	
UN-No. (IATA)	: 1219
Proper Shipping Name (IATA)	: Isopropanol
Class (IATA)	: 3 - Flammable Liquids
Packing group (IATA)	: II - Medium Danger

SECTION 15: Regulatory information

15.1. US Federal regulations	
Isopropyl Alcohol (67-63-0)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	1.0 % (only if manufactured by the strong acid process, no supplier notification)
15.2. International regulations	
CANADA	
Isopropyl Alcohol (67-63-0)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class B Division 2 - Flammable Liquid Class D Division 2 Subdivision B - Toxic material causing other toxic effects

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Serious eye damage/irritation	: Causes serious eye irritation.
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Isopropyl Alcohol (67-63-0)	
IARC group	3 - Not classifiable
Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: May cause drowsiness or dizziness.
Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: Not classified
Potential Adverse human health effects and symptoms	: Based on available data, the classification criteria are not met.
Symptoms/injuries after inhalation	: May cause drowsiness or dizziness.
Symptoms/injuries after eye contact	: Causes serious eye irritation.

SECTION 12: Ecological information

12.1. Toxicity	
Isopropyl Alcohol (67-63-0)	
LC50 fish 1	9640 mg/l (Exposure time: 96 h - Species: Pimephales promelas (flow-through))
EC50 Daphnia 1	13299 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 fish 2	11130 mg/l (Exposure time: 96 h - Species: Pimephales promelas (static))
12.2. Persistence and degradability	
Isopropyl Alcohol (67-63-0)	
Persistence and degradability	Not established.
12.3. Bioaccumulative potential	
Isopropyl Alcohol (67-63-0)	
Log Pow	0.05 (at 25 °C)
Bioaccumulative potential	Not established.
12.4. Mobility in soil	
No additional information available	
12.5. Other adverse effects	
Other information	: Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods	
Waste disposal recommendations	: Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.
Additional information	: Handle empty containers with care because residual vapors are flammable.
Ecology - waste materials	: Avoid release to the environment.

SECTION 14: Transport information

Department of Transportation (DOT)	
In accordance with DOT	
Transport document description	: UN1219 Isopropanol, 3, II
UN-No.(DOT)	: UN1219
Proper Shipping Name (DOT)	: Isopropanol
Transport hazard class(es) (DOT)	: 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120
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EU-Regulations	
No additional information available	
National regulations	
Isopropyl Alcohol (67-63-0)	
Listed on the AICS (Australian Inventory of Chemical Substances)	
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)	
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory	
Listed on the Japanese ISHL (Industrial Safety and Health Law)	
Listed on the Korean ECL (Existing Chemicals List)	
Listed on NZIoC (New Zealand Inventory of Chemicals)	
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)	
Listed on the Canadian IDL (Ingredient Disclosure List)	
Listed on INSQ (Mexican national Inventory of Chemical Substances)	
Listed on Turkish inventory of chemical	
15.3. US State regulations	
Isopropyl Alcohol (67-63-0)	
State or local regulations	U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List U.S. - Pennsylvania - RTK (Right to Know) List

SECTION 16: Other information

Revision date	: 04/09/2020
Other information	: None.
Full text of H-phrases:	
Eye Irrit. 2A	Serious eye damage/eye irritation Category 2A
Flam. Liq. 2	Flammable liquids Category 2
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
H225	Highly flammable liquid and vapor
H319	Causes serious eye irritation
H336	May cause drowsiness or dizziness

SDS US (GHS HazCom 2012)

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Hydrochloric Acid,ACS

SECTION 1 : Identification of the substance/mixture and of the supplier

Product name : Hydrochloric Acid,ACS

Manufacturer/Supplier Trade name:

Manufacturer/Supplier Article number: S25358

Recommended uses of the product and uses restrictions on use:

Manufacturer Details:
AquaPhoenix Scientific
9 Barnhart Drive, Hanover, PA 17331

Supplier Details:
Fisher Science Education
15 Jet View Drive, Rochester, NY 14624

Emergency telephone number:
Fisher Science Education Emergency Telephone No.: 800-535-5053

SECTION 2 : Hazards identification

Classification of the substance or mixture:

Corrosive
Serious eye damage, category 1
Corrosive to metals, category 1
Skin corrosion, category 1B

Irritant
Specific target organ toxicity following single exposure, category 3

Corr. Metals 1
Corr. Skin 1B
Eye Damage 1
STOT. SE 3

Signal word: Danger

Hazard statements:
May be corrosive to metals
Causes severe skin burns and eye damage
May cause respiratory irritation

Precautionary statements:
If medical advice is needed, have product container or label at hand
Keep out of reach of children
Read label before use
Use only outdoors or in a well-ventilated area
Wear protective gloves/protective clothing/eye protection/face protection
Keep only in original container
Do not get in eyes, on skin, or on clothing
Wash skin thoroughly after handling
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting

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Hydrochloric Acid,ACS

minutes.Remove contact lenses while rinsing.Continue rinsing eyes during transport to hospital;
After swallowing: Rinse mouth thoroughly. Do not induce vomiting. Have exposed individual drink sips of water. Immediately seek medical attention.

Most important symptoms and effects, both acute and delayed:
Inhalation may cause irritation to nose and upper respiratory tract, ulceration, coughing, chest tightness and shortness of breath. Higher concentrations cause tachypnoea, pulmonary oedema and suffocation. Ingestion may cause corrosion of lips, mouth, oesophagus and stomach, dysphagia and vomiting.Pain, eye ulceration, conjunctival irritation, cataracts and glaucoma may occur following eye exposure.Erythema and skin irritation, as well as chemical burns to skin and mucous membranes may arise following skin exposure.;Potential sequelae following ingestion of hydrochloric acid include perforation, scarring of the oesophagus or stomach and stricture formation causing dysphagia or gastric outlet obstruction. In some cases, RADS may develop. Respiratory symptoms may take up to 36 hours to develop.Symptoms of burning sensation, cough, wheezing, laryngitis, shortness of breath, spasm, inflammation, edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin.

Indication of any immediate medical attention and special treatment needed:
Provide SDS to Physician.Physician should treat symptomatically.

SECTION 5 : Firefighting measures

Extinguishing media
Suitable extinguishing agents: Use water, dry chemical, chemical foam, carbon dioxide, or alcohol-resistant foam.

For safety reasons unsuitable extinguishing agents:

Special hazards arising from the substance or mixture:
Combustion products may include carbon oxides or other toxic vapors.If in contact with metals toxic fumes may be released.

Advice for firefighters:
Protective equipment: Wear protective eyewear, gloves, and clothing. Refer to Section 8, Wear respiratory protection.

Additional information (precautions): Thermal decomposition can produce poisoning chlorine. Hydrochloric acid reacts also with many organic materials with liberation of heat.Avoid inhaling gases, fumes, dust, mist, vapor, and aerosols. Avoid contact with skin, eyes, and clothing.

SECTION 6 : Accidental release measures

Personal precautions, protective equipment and emergency procedures:
Ensure adequate ventilation. Ensure that air-handling systems are operational.

Environmental precautions:
Should not be released into environment. Prevent from reaching drains, sewer, or waterway.

Methods and material for containment and cleaning up:
Always obey local regulations. If necessary use trained response staff or contractor. Evacuate personnel to safe areas. Containerize for disposal. Refer to Section 13. Keep in suitable closed containers for disposal. Soak up with inert absorbent material and dispose of as hazardous waste. Cover spill with soda ash or calcium carbonate. Mix and add water to form slurry.Wear protective eyewear, gloves, and clothing. Refer to Section 8.

Reference to other sections:

SECTION 7 : Handling and storage

Safety Data Sheet
according to 29CFR1910/1200 and GHS Rev. 3
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Hydrochloric Acid,ACS

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing
Immediately call a POISON CENTER or doctor/physician
Specific treatment (see supplemental first aid instructions on this label)
Wash contaminated clothing before reuse
Absorb spillage to prevent material damage
Store in a well ventilated place. Keep container tightly closed
Store locked up
Store in corrosive resistant stainless steel container with a resistant inner liner
Dispose of contents and container to an approved waste disposal plant

Other Non-GHS Classification:

WHMIS

D1A

E

NFPA/HMIS

NFPA SCALE (0-4)

HMIS RATINGS (0-4)

Health	3
Flammability	0
Physical Hazard	1
Personal Protection	X

SECTION 3 : Composition/information on ingredients

Ingredients:		
CAS 7647-01-0	Hydrochloric Acid, ACS	30-50 %
CAS 7732-18-5	Water	50-70 %
Percentages are by weight		

SECTION 4 : First aid measures

Description of first aid measures

After inhalation: Move exposed individual to fresh air. Loosen clothing as necessary and position individual in a comfortable position.Seek medical attention if irritation or coughing persists.

After skin contact: Wash affected area with soap and water. Immediately remove contaminated clothing and shoes.Rinse thoroughly with plenty of water for at least 15 minutes.Immediately seek medical attention.

After eye contact: Protect unexposed eye. Flush thoroughly with plenty of water for at least 15

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Hydrochloric Acid,ACS

Precautions for safe handling:
Prevent formation of aerosols. Never use hot water and never add water to the acid.Do not allow contact between hydrochloric acid, metal, and organics.Follow good hygiene procedures when handling chemical materials. Refer to Section 8. Prevent contact with skin, eyes, and clothing. Follow proper disposal methods. Refer to Section 13. Do not eat, drink, smoke, or use personal products when handling chemical substances. Use only in well ventilated areas.Avoid splashes or spray in enclosed areas.

Conditions for safe storage, including any incompatibilities:
Store in a cool location. Keep away from food and beverages. Protect from freezing and physical damage. Store away from incompatible materials. Provide ventilation for containers. Keep container tightly sealed.Containers for hydrochloric acid must be made from corrosion resistant materials: glass, polyethylene, polypropylene, polyvinyl chloride, carbon steel lined with rubber or ebonite.

SECTION 8 : Exposure controls/personal protection

Control Parameters:
7647-01-0, Hydrochloric Acid, ACGIH: 2 ppm Ceiling
7647-01-0, Hydrochloric Acid, NIOSH: 5 ppm Ceiling; 7 mg/m3 Ceiling

Appropriate Engineering controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor and mists below the applicable workplace exposure limits (Occupational Exposure Limits-OELs) indicated above. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of handling.

Respiratory protection:
Not required under normal conditions of use. Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. When necessary use NIOSH approved breathing equipment.

Protection of skin:
Select glove material impermeable and resistant to the substance. Select glove material based on rates of diffusion and degradation. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Use proper glove removal technique without touching outer surface. Avoid skin contact with used gloves. Wear protective clothing.

Eye protection:
Faceshield (8-inch minimum).Tightly fitting safety goggles.

General hygienic measures:
Perform routine housekeeping. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes, and clothing. Before reworking wash contaminated clothing.

SECTION 9 : Physical and chemical properties

Appearance (physical state,color):	Clear, colorless liquid.	Explosion limit lower:	Non Explosive
		Explosion limit upper:	Non Explosive
Odor:	Pungent odor	Vapor pressure:	5.7mmHg @ 0C
Odor threshold:	0.3 - 14.9 mg/m3	Vapor density:	1.27 (Air=1)
pH-value:	< 1	Relative density:	1.0 - 1.2

Safety Data Sheet			
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Hydrochloric Acid,ACS			
Melting/Freezing point:	- 74 C	Solubilities:	Miscible
Boiling point/Boiling range:	81.5 - 110 C	Partition coefficient (n-octanol/water):	Not Determined
Flash point (closed cup):	Not Applicable	Auto/Self-ignition temperature:	Not Determined
Evaporation rate:	>1.00	Decomposition temperature:	Not Determined
Flammability (solid,gaseous):	non combustible	Viscosity:	a. Kinematic:Not Determined b. Dynamic: Not Determined
Density: Not Determined			
Hydrochloric Acid:MW is36.46			

SECTION 10 : Stability and reactivity

Reactivity:Reacts violently with bases and is corrosive.
Chemical stability:No decomposition if used and stored according to specifications.
Possible hazardous reactions:Attacks many metals in the presence of water forming flammable explosive gas (hydrogen).Reacts violently with oxidants forming toxic gas (chlorine).
Conditions to avoid:Incompatible materials.
Incompatible materials:Bases, Amines, Alkali metals, Metals, permanganates (potassium permanganate), Fluorine, Metal acetylides, Hexalithium disilicide.
Hazardous decomposition products:Hydrogen chloride gas,Carbon oxides.

SECTION 11 : Toxicological information

Acute Toxicity:		
Inhalation:	7647-01-0	LD50 Rat 3124 ppm/hour
Oral:	7647-01-0	LD50 Rat 238 - 277 mg/kg
Dermal:	7647-01-0	LD50 Rabbit >5010 mg/kg
Chronic Toxicity: No additional information.		
Corrosion Irritation:		
Dermal:	7647-01-0	Skin - rabbit Result: Causes burns.
Ocular:	7647-01-0	Eyes - rabbit Result: Corrosive to eyes
Sensitization:		No additional information.
Single Target Organ (STOT):		7647-01-0: The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation,
Numerical Measures:		No additional information.
Carcinogenicity:		No additional information.
Mutagenicity:		No additional information.

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Hydrochloric Acid,ACS	
<p>CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act): 7647-01-0 Hydrochloric Acid 5000 lbs</p> <p>Proposition 65 (California):</p> <p>Chemicals known to cause cancer: None of the ingredients is listed</p> <p>Chemicals known to cause reproductive toxicity for females: None of the ingredients is listed</p> <p>Chemicals known to cause reproductive toxicity for males: None of the ingredients is listed</p> <p>Chemicals known to cause developmental toxicity: None of the ingredients is listed</p> <p>Canada</p> <p>Canadian Domestic Substances List (DSL): All ingredients are listed.</p> <p>Canadian NPRI Ingredient Disclosure list (llimit 0.1%): None of the ingredients is listed</p> <p>Canadian NPRI Ingredient Disclosure list (llimit 1%): 7647-01-0 Hydrochloric Acid</p>	

SECTION 16 : Other information

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.Note: The responsibility to provide a safe workplace remains with the user.The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment.The information contained herein is, to the best of our knowledge and belief, accurate.However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material.It is the responsibility of the user to comply with all applicable laws and regulations applicable to this material.

GHS Full Text Phrases:

Abbreviations and acronyms:
IMDG: International Maritime Code for Dangerous Goods
PNEC: Predicted No-Effect Concentration (REACH)
CFR: Code of Federal Regulations (USA)
SARA: Superfund Amendments and Reauthorization Act (USA)
RCRA: Resource Conservation and Recovery Act (USA)
TSCA: Toxic Substances Control Act (USA)
NPRI: National Pollutant Release Inventory (Canada)
DOT: US Department of Transportation
IATA: International Air Transport Association
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)

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Hydrochloric Acid,ACS	
Reproductive Toxicity:	No additional information.
SECTION 12 : Ecological information	
<p>Ecotoxicity 7647-01-0: Toxicity to fish LC50 - Gambusia affinis (Mosquito fish) - 282 mg/l - 96 h (Hydrochloric acid)</p> <p>Persistence and degradability: Bioaccumulative potential: Mobility in soil: Other adverse effects:</p>	
SECTION 13 : Disposal considerations	

Waste disposal recommendations:
Do not allow product to reach sewage system or open water.It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities (US 40CFR262.11). Contact a licensed professional waste disposal service to dispose of this material. Dispose of empty containers as unused product. Product or containers must not be disposed together with household garbage. Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations. Ensure complete and accurate classification.

SECTION 14 : Transport information

UN-Number
1789
UN proper shipping name
HYDROCHLORIC ACID
Transport hazard class(es)
 **Class:**
8 Corrosive substances
Packing groupII
Environmental hazard:
Transport in bulk:
Special precautions for user:

SECTION 15 : Regulatory information

United States (USA)
SARA Section 311/312 (Specific toxic chemical listings):
Acute
SARA Section 313 (Specific toxic chemical listings):
7647-01-0 Hydrochloric Acid
RCRA (hazardous waste code):
None of the ingredients is listed
TSCA (Toxic Substances Control Act):
All ingredients are listed.

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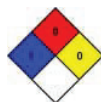
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Hydrochloric Acid,ACS	
<p>HMIS: Hazardous Materials Identification System (USA) WHMIS: Workplace Hazardous Materials Information System (Canada) DNEL: Derived No-Effect Level (REACH)</p> <p>Effective date : 01.08.2015 Last updated : 03.20.2015</p>	

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NFPA health hazard : 1 - Exposure could cause irritation but only minor residual injury even if no treatment is given.

NFPA fire hazard : 0 - Materials that will not burn.

NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



HMIS III Rating

Health : 2 Moderate Hazard - Temporary or minor injury may occur

Flammability : 0 Minimal Hazard

Physical : 0 Minimal Hazard

1/1/2017 EN (English) 9/9

Section 1. Identification

GHS product identifier : Nitrogen

Chemical name : nitrogen

Other means of identification : nitrogen (dot); nitrogen gas; Nitrogen NF, Nitrogen FG

Product type : Gas.

Product use : Synthetic/Analytical chemistry.

Synonym : nitrogen (dot); nitrogen gas; Nitrogen NF, Nitrogen FG

SDS # : 001040

Supplier's details : Airgas USA, LLC and its affiliates
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

24-hour telephone : 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : GASES UNDER PRESSURE - Compressed gas
SIMPLE ASPHYXIANTS

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : Contains gas under pressure; may explode if heated.
May displace oxygen and cause rapid suffocation.

Precautionary statements

General : Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction.

Prevention : Not applicable.

Response : Not applicable.

Storage : Protect from sunlight. Store in a well-ventilated place.

Disposal : Not applicable.

Supplemental label elements : Keep container tightly closed. Use only with adequate ventilation. Do not enter storage areas and confined spaces unless adequately ventilated.

Hazards not otherwise classified : In addition to any other important health or physical hazards, this product may displace oxygen and cause rapid suffocation.

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Nitrogen

Section 4. First aid measures

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : Contains gas under pressure. In a fire or if heated, a pressure increase will occur and the container may burst or explode.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
nitrogen oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Immediately contact emergency personnel. Stop leak if without risk.

Large spill : Immediately contact emergency personnel. Stop leak if without risk. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

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Nitrogen			
Section 3. Composition/information on ingredients			
Substance/mixture	: Substance		
Chemical name	: nitrogen		
Other means of identification	: nitrogen (dot); nitrogen gas; Nitrogen NF, Nitrogen FG		
Product code	: 001040		

CAS number/other identifiers

CAS number : 7727-37-9

Ingredient name	%	CAS number
Nitrogen	100	7727-37-9

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : As this product is a gas, refer to the inhalation section.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Contact with rapidly expanding gas may cause burns or frostbite.

Inhalation : At very high concentrations, can displace the normal air and cause suffocation from lack of oxygen.

Skin contact : Contact with rapidly expanding gas may cause burns or frostbite.

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Ingestion : As this product is a gas, refer to the inhalation section.

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

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Nitrogen
Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Avoid breathing gas. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement. Avoid contact with eyes, skin and clothing. Empty containers retain product residue and can be hazardous.

- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F). Keep container tightly closed and sealed until ready for use. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Nitrogen	ACGIH TLV (United States, 3/2017). Oxygen Depletion [Asphyxiant].

- Appropriate engineering controls** : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

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Nitrogen
Section 10. Stability and reactivity

- Reactivity** : No specific test data related to reactivity available for this product or its ingredients.

- Chemical stability** : The product is stable.

- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.

- Conditions to avoid** : Do not allow gas to accumulate in low or confined areas.

- Incompatible materials** : No specific data.

- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

- Hazardous polymerization** : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Not available.

Irritation/Corrosion

Not available.

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

- Information on the likely routes of exposure** : Not available.

Potential acute health effects

- Eye contact** : Contact with rapidly expanding gas may cause burns or frostbite.
Inhalation : At very high concentrations, can displace the normal air and cause suffocation from lack of oxygen.

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Nitrogen
Section 8. Exposure controls/personal protection

- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : The gas can cause asphyxiation without warning by replacing the oxygen in the air. Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. If operating conditions cause high gas concentrations to be produced or any recommended or statutory exposure limit is exceeded, use an air-fed respirator or self-contained breathing apparatus. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

- Physical state** : Gas. [Compressed gas.]
Color : Colorless.
Odor : Odorless.
Odor threshold : Not available.
pH : Not available.
Melting point : -210.01°C (-346°F)
Boiling point : -196°C (-320.8°F)
Critical temperature : -146.95°C (-232.5°F)
Flash point : [Product does not sustain combustion.]
Evaporation rate : Not available.
Flammability (solid, gas) : Not available.
Lower and upper explosive (flammable) limits : Not available.
Vapor pressure : Not available.
Vapor density : 0.967 (Air = 1) Liquid Density@BP: 50.46 lb/ft3 (808.3 kg/m3)
Specific Volume (ft³/lb) : 13.8889
Gas Density (lb/ft³) : 0.072
Relative density : Not applicable.
Solubility : Not available.
Solubility in water : Not available.
Partition coefficient: n-octanol/water : 0.67
Auto-ignition temperature : Not available.
Decomposition temperature : Not available.
Viscosity : Not applicable.
Flow time (ISO 2431) : Not available.
Molecular weight : 28.02 g/mole

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Nitrogen
Section 11. Toxicological information

- Skin contact** : Contact with rapidly expanding gas may cause burns or frostbite.
Ingestion : As this product is a gas, refer to the inhalation section.

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : No specific data.
Inhalation : No specific data.
Skin contact : No specific data.
Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

- Potential immediate effects** : Not available.
Potential delayed effects : Not available.

Long term exposure

- Potential immediate effects** : Not available.
Potential delayed effects : Not available.

Potential chronic health effects

Not available.

- General** : No known significant effects or critical hazards.
Carcinogenicity : No known significant effects or critical hazards.
Mutagenicity : No known significant effects or critical hazards.
Teratogenicity : No known significant effects or critical hazards.
Developmental effects : No known significant effects or critical hazards.
Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.






Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
Nitrogen	0.67	-	low

Mobility in soil

- Soil/water partition coefficient (K_{oc})** : Not available.

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Nitrogen					
Section 12. Ecological information					
Other adverse effects : No known significant effects or critical hazards.					
Section 13. Disposal considerations					
Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Empty Airgas-owned pressure vessels should be returned to Airgas. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.					
Section 14. Transport information					
	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1066	UN1066	UN1066	UN1066	UN1066
UN proper shipping name	NITROGEN, COMPRESSED	NITROGEN, COMPRESSED	NITROGEN, COMPRESSED	NITROGEN, COMPRESSED	NITROGEN, COMPRESSED
Transport hazard class(es)	2.2 	2.2 	2.2 	2.2 	2.2 
Packing group	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.
"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."					
Additional information					
DOT Classification : Limited quantity Yes.					
Quantity limitation Passenger aircraft/rail: 75 kg. Cargo aircraft: 150 kg.					
TDG Classification : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2).					
Explosive Limit and Limited Quantity Index 0.125					
Passenger Carrying Road or Rail Index 75					
IATA : Quantity limitation Passenger and Cargo Aircraft: 75 kg. Cargo Aircraft Only: 150 kg.					
Special precautions for user : Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.					
Transport in bulk according to Annex II of MARPOL and the IBC Code : Not available.					
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Nitrogen

Section 15. Regulatory information

Taiwan

: This material is listed or exempted.

Thailand

: Not determined.

Turkey

: Not determined.

United States

: This material is listed or exempted.

Viet Nam

: Not determined.

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health	0
Flammability	0
Physical hazards	3

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)

Health

0

SA

Flammability

0

Instability/Reactivity

Special

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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
GASES UNDER PRESSURE - Compressed gas	Expert judgment
SIMPLE ASPHYXIANTS	Expert judgment

History

Date of printing

:

4/30/2019

Date of issue/Date of revision

:

4/30/2019

Date of previous issue

:

4/30/2019

Version

:

1.03

Key to abbreviations

:

ATE = Acute Toxicity Estimate

BCF = Bioconcentration Factor

GHS = Globally Harmonized System of Classification and Labelling of Chemicals

IATA = International Air Transport Association

IBC = Intermediate Bulk Container

IMDG = International Maritime Dangerous Goods

LogPow = logarithm of the octanol/water partition coefficient

MARPOL = International Convention for the Prevention of Pollution From Ships, 1973

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4/30/2019

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Nitrogen					
Section 15. Regulatory information					
U.S. Federal regulations : TSCA 8(a) CDR Exempt/Partial exemption: This material is listed or exempted.					
Clean Air Act Section 112 : Not listed					
(b) Hazardous Air Pollutants (HAPs)					
Clean Air Act Section 602 : Not listed					
Class I Substances					
Clean Air Act Section 602 : Not listed					
Class II Substances					
DEA List I Chemicals (Precursor Chemicals) : Not listed					
DEA List II Chemicals (Essential Chemicals) : Not listed					
SARA 302/304					
Composition/information on ingredients					
No products were found.					
SARA 304 RQ : Not applicable.					
SARA 311/312					
Classification : Refer to Section 2: Hazards Identification of this SDS for classification of substance.					
State regulations					
Massachusetts : This material is listed.					
New York : This material is not listed.					
New Jersey : This material is listed.					
Pennsylvania : This material is listed.					
International regulations					
Chemical Weapon Convention List Schedules I, II & III Chemicals					
Not listed.					
Montreal Protocol (Annexes A, B, C, E)					
Not listed.					
Stockholm Convention on Persistent Organic Pollutants					
Not listed.					
Rotterdam Convention on Prior Informed Consent (PIC)					
Not listed.					
UNECE Aarhus Protocol on POPs and Heavy Metals					
Not listed.					
Inventory list					
Australia : This material is listed or exempted.					
Canada : This material is listed or exempted.					
China : This material is listed or exempted.					
Europe : This material is listed or exempted.					
Japan : Japan inventory (ENCs): Not determined.					
Japan inventory (ISHL): Not determined.					
Malaysia : Not determined.					
New Zealand : This material is listed or exempted.					
Philippines : This material is listed or exempted.					
Republic of Korea : This material is listed or exempted.					
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Nitrogen					
Section 16. Other information					
as modified by the Protocol of 1978. ("Marpol" = marine pollution)					
UN = United Nations					
References : Not available.					
Notice to reader					
To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.					
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.					
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Safety Data Sheet

Nitrogen Liquid

Red Ball Oxygen Co., Inc.
P.O. Box 7316
Shreveport, LA 71137-7316
Phone: 318-425-3211
Fax: 318-425-6302
http://www.redballoxygen.com

Section 1: Product and Company Identification

Red Ball Oxygen Co., Inc.
P.O. Box 7316
Shreveport, LA 71137-7316
Phone: 318-425-3211
Fax: 318-425-6302
http://www.redballoxygen.com

Product Code: Nitrogen Liquid
Part Number: 120159

Section 2: Hazards Identification



Danger

Hazard Classification:
Aspiration Hazard (Category 1)
Gases Under Pressure

Hazard Statements:
Contains gas under pressure; may explode if heated
May be fatal if swallowed and enters airways

Precautionary Statements

Response:
Do NOT induce vomiting.
If swallowed: Rinse mouth. Do NOT induce vomiting.
Immediately call a poison center or doctor.

Storage:
Protect from sunlight.
Store in well-ventilated place.
Store locked up.

Dispose:
Dispose of contents and/or container in accordance with applicable regulations.

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Engineering Controls
Handle only in fully enclosed systems.

Eye Protection	Skin Protection	Respiratory Protection
Wear splash resistant safety goggles. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.	Wear appropriate protective, cold insulating clothing.	Respiratory protection may be needed for frequent or heavy exposure.

General Hygiene considerations

- Avoid breathing vapor or mist
- Avoid contact with eyes and skin
- Wash thoroughly after handling and before eating or drinking

Section 9: Physical and Chemical Properties

Physical State	Appearance	Color	Change in Appearance	Physical Form	Odor	Taste
Gas	Clear	Colorless	N/A	Liquefied gas	Odorless	Tasteless

Flash Point	Flammability	Partition Coefficient	Autoignition Temperature	Upper Explosive Limits	Lower Explosive Limits
Not flammable	Not available	Not available	Nonflammable	Nonflammable	Nonflammable

Boiling Point	Freezing Point	Vapor Pressure	Vapor Density	Specific Gravity	Water Solubility	pH	Odor Threshold	Evaporation Rate	Viscosity
-321 F (-196 C)	-346 F (-210 C)	760 mmHg @ -196 C	0.967 (Air=1)	Not applicable	1.6% @ 20 C	Not applicable	Not available	Not applicable	0.01787 cP @ 27 C

Molecular Weight	Molecular Formula	Density	Weight per Gallon	Volatility by Volume	Volatility	Solvent Solubility
28.0134	N ₂	1.2506 g/L	Not available	100%	1	Soluble: Soluble: liquid ammonia Slightly Soluble: alcohol

Section 10: Stability and Reactivity

Stability	Conditions to Avoid	Incompatible Materials
Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Metals, oxidizing materials

Hazardous Decomposition Products	Possibility of Hazardous Reactions
Oxides of nitrogen	Will not polymerize.

Section 11: Toxicology Information

Acute Effects

Oral LD50	Dermal LD50	Inhalation
Not available	Not available	Nausea, vomiting, difficulty breathing, headache, drowsiness, dizziness, tingling sensation, loss of coordination, convulsions, coma

Eye Irritation	Skin Irritation	Sensitization
Frostbite, blurred vision	Blisters, frostbite	Difficulty breathing

Chronic Effects

Carcinogenicity	Mutagenicity	Reproductive Effects	Developmental Effects
Not hazardous	Not available	Not available	No data

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Section 3: Composition/Information on Ingredients

CAS #
7727-37-9

Chemical Substance	Chemical Family	Trade Names
NITROGEN, CRYOGENIC LIQUID	non-metallic	NITROGEN, REFRIGERATED LIQUID; NITROGEN, REFRIGERATED LIQUID, CRYOGENIC LIQUID; NITROGEN; NITROGEN (LIQUID); LIQUID NITROGEN; UN 1977

Section 4: First Aid Measures

Skin Contact	Eye Contact	Ingestion	Inhalation	Note to Physicians
Immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.	Flush eyes with plenty of water. Get medical attention.	If a large amount is swallowed, get medical attention.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	For inhalation, consider oxygen.

Section 5: Fire Fighting Measures

Suitable Extinguishing Media	Products of Combustion	Protection of Firefighters
Non-flammable. Use suitable extinguishing media for surrounding fire. Cylinders may rupture or explode if exposed to heat.	Non-flammable	Respiratory protection may be needed for frequent or heavy exposure.

Section 6: Accidental Release Measures

Personal Precautions	Environmental Precautions	Methods for Containment
Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.	No significant effects from contamination expected.	Stop leak if possible without personal risk.

Methods for Cleanup	Other Information
N/A	N/A

Section 7: Handling and Storage

Handling	Storage
Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101.	Keep separated from incompatible substances.

Section 8: Exposure Controls/Personal Protection

Exposure Guidelines
ACGIH (simple asphyxiant)

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Section 12: Ecological Information

Fate and Transport	Persistence / Degradability	Bioaccumulation / Accumulation	Mobility in Environment
Ice toxicity: Not available Fish toxicity: Not available Invertebrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Not available	Not available	Not available

Section 13: Disposal Considerations

Dispose in accordance with all applicable regulations.

Section 14: Transportation Information

U.S. DOT 49 CFR 172.101

Proper Shipping Name	ID Number	Hazard Class or Division	Packing Group	Labeling Requirements	Passenger Aircraft or Railcar Quantity Limitations	Cargo Aircraft Only Quantity Limitations	Additional Shipping Description
Nitrogen, refrigerated liquid	UN1977	2.2	Not applicable	2.2	75 kg or L	150 kg	N/A

Canadian Transportation of Dangerous Goods

Shipping Name	UN Number	Class	Packing Group / Risk Group
Nitrogen, refrigerated liquid	UN1977	2.2	Not applicable

Section 15: Regulatory Information

U.S. Regulations

CERCLA Sections	SARA 355.30	SARA 355.40
Not regulated	Not regulated	Not regulated

SARA 370.21

Acute	Chronic	Fire	Reactive	Sudden Release
Yes	No	No	No	Yes

SARA 372.65

Not regulated.

OSHA Process Safety

Not regulated.

State Regulations

CA Proposition 65
Not regulated.

Canadian Regulations

WHMIS Classification
Not determined.

National Inventory Status

US Inventory (TSCA)	TSCA 12b Export Notification	Canada Inventory (DSL/NDSL)
Listed on inventory.	Not listed.	Not determined.

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Section 16: Other Information

NFPA Rating
HEALTH=3 FIRE=0 REACTIVITY=0
0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

SAFETY DATA SHEET





Propane

Section 1. Identification

GHS product identifier	: Propane
Chemical name	: propane
Other means of identification	: Propyl hydride; n-Propane; Dimethyl methane; Bottled gas; propane in gaseous state; propane liquefied, n-Propane; Dimethylmethane; Freon 290; Liquefied petroleum gas; Lpg; Propyl hydride; R 290; C3H8; UN 1075; UN 1978; A-108; Hydrocarbon propellant.
Product type	: Liquefied gas
Product use	: Synthetic/Analytical chemistry.
Synonym	: Propyl hydride; n-Propane; Dimethyl methane; Bottled gas; propane in gaseous state; propane liquefied, n-Propane; Dimethylmethane; Freon 290; Liquefied petroleum gas; Lpg; Propyl hydride; R 290; C3H8; UN 1075; UN 1978; A-108; Hydrocarbon propellant.
SDS #	: 001045
Supplier's details	: Airgas USA, LLC and its affiliates 259 North Radnor-Chester Road Suite 100 Radnor, PA 19087-5283 1-610-687-5253
24-hour telephone	: 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture	: FLAMMABLE GASES - Category 1 GASES UNDER PRESSURE - Liquefied gas
GHS label elements	
Hazard pictograms	:  
Signal word	: Danger
Hazard statements	: Extremely flammable gas. Contains gas under pressure; may explode if heated. May cause frostbite. May displace oxygen and cause rapid suffocation. May form explosive mixtures with air.
Precautionary statements	
General	: Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Always keep container in upright position. Approach suspected leak area with caution.
Prevention	: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Response	: Leaking gas fire: Do not extinguish, unless leak can be stopped safely. In case of leakage, eliminate all ignition sources.
Storage	: Protect from sunlight. Store in a well-ventilated place.

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Propane
Section 2. Hazards identification

Disposal	: Not applicable.
Hazards not otherwise classified	: Liquid can cause burns similar to frostbite.

Section 3. Composition/information on ingredients

Substance/mixture	: Substance
Chemical name	: propane
Other means of identification	: Propyl hydride; n-Propane; Dimethyl methane; Bottled gas; propane in gaseous state; propane liquefied, n-Propane; Dimethylmethane; Freon 290; Liquefied petroleum gas; Lpg; Propyl hydride; R 290; C3H8; UN 1075; UN 1978; A-108; Hydrocarbon propellant.
Product code	: 001045
CAS number/other identifiers	
CAS number	: 74-98-6

Ingredient name	%	CAS number
Propane	100	74-98-6

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact	: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.
Inhalation	: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
Skin contact	: Wash contaminated skin with soap and water. Remove contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Get medical attention if symptoms occur. In case of contact with liquid, warm frozen tissues slowly with lukewarm water and get medical attention. Do not rub affected area. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Ingestion	: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if adverse health effects persist or are severe. Ingestion of liquid can cause burns similar to frostbite. If frostbite occurs, get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. As this product rapidly becomes a gas when released, refer to the inhalation section.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact	: Liquid can cause burns similar to frostbite.
Inhalation	: No known significant effects or critical hazards.
Skin contact	: Dermal contact with rapidly evaporating liquid could result in freezing of the tissues or frostbite.

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Propane
Section 4. First aid measures

Frostbite	: Try to warm up the frozen tissues and seek medical attention.
Ingestion	: Ingestion of liquid can cause burns similar to frostbite.

Over-exposure signs/symptoms

Eye contact	: Adverse symptoms may include the following:, frostbite
Inhalation	: No specific data.
Skin contact	: Adverse symptoms may include the following:, frostbite
Ingestion	: Adverse symptoms may include the following:, frostbite

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	: Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments	: No specific treatment.
Protection of first-aiders	: No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media	: Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	: None known.

Specific hazards arising from the chemical

: Contains gas under pressure. Extremely flammable gas. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Gas may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back, causing fire or explosion.

Hazardous thermal decomposition products

: Decomposition products may include the following materials: carbon dioxide carbon monoxide
--

Special protective actions for fire-fighters

: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk. If this is impossible, withdraw from area and allow fire to burn. Fight fire from protected location or maximum possible distance. Eliminate all ignition sources if safe to do so.

Special protective equipment for fire-fighters

: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. For incidents involving large quantities, thermally insulated undergarments and thick textile or leather gloves should be worn.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	: Accidental releases pose a serious fire or explosion hazard. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flames, smoking or flames in hazard area. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
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Propane

Section 6. Accidental release measures

For emergency responders

: If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions

: Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill

: Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.

Large spill

: Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures

: Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Do not get in eyes or on skin or clothing. Avoid breathing gas. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.
Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment.

Advice on general occupational hygiene

: Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities

: Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Eliminate all ignition sources. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F). Keep container tightly closed and sealed until ready for use. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Propane	NIOSH REL (United States, 10/2016). TWA: 1800 mg/m ³ 10 hours. TWA: 1000 ppm 10 hours. OSHA PEL (United States, 5/2018). TWA: 1800 mg/m ³ 8 hours. TWA: 1000 ppm 8 hours. OSHA PEL 1989 (United States, 3/1989). TWA: 1800 mg/m ³ 8 hours. TWA: 1000 ppm 8 hours. ACGIH TLV (United States, 3/2019). Oxygen Depletion [Asphyxiant]. Explosive potential.

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: 10/5/2020

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Propane	
Section 9. Physical and chemical properties	
Critical temperature	: 96.55°C (205.8°F)
Flash point	: Closed cup: -104°C (-155.2°F) Open cup: -104°C (-155.2°F)
Evaporation rate	: Not available.
Flammability (solid, gas)	: Extremely flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and oxidizing materials.
Lower and upper explosive (flammable) limits	: Lower: 1.8% Upper: 8.4%
Vapor pressure	: 109 (psig)
Vapor density	: 1.6 (Air = 1)
Specific Volume (ft ³/lb)	: 8.6206
Gas Density (lb/ft ³)	: 0.116 (25°C / 77 to °F)
Relative density	: Not applicable.
Solubility	: Not available.
Solubility in water	: 0.0244 g/l
Partition coefficient: n-octanol/water	: 1.09
Auto-ignition temperature	: 287°C (548.6°F)
Decomposition temperature	: Not available.
Viscosity	: Not applicable.
Flow time (ISO 2431)	: Not available.
Molecular weight	: 44.11 g/mole
Aerosol product	
Heat of combustion	: -46012932 J/kg
Section 10. Stability and reactivity	

Propane	
Section 8. Exposure controls/personal protection	
Appropriate engineering controls	: Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.
Environmental exposure controls	: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.
Individual protection measures	
Hygiene measures	: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
Eye/face protection	: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.
Skin protection	
Hand protection	: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. If contact with the liquid is possible, insulated gloves suitable for low temperatures should be worn. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
Body protection	: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.
Other skin protection	: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection	: Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.
Thermal hazards	: If there is a risk of contact with the liquid, all protective equipment worn should be suitable for use with extremely low temperature materials.

Section 9. Physical and chemical properties			
Appearance			
Physical state	: Gas.		
Color	: Colorless.		
Odor	: Odorless.BUT MAY HAVE SKUNK ODOR ADDED.		
Odor threshold	: Not available.		
pH	: Not available.		
Melting point	: -187.6°C (-305.7°F)		
Boiling point	: -42.1°C (-43.8°F)		
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Propane	
Section 11. Toxicological information	
<u>Information on toxicological effects</u>	
<u>Acute toxicity</u>	Not available.
<u>Irritation/Corrosion</u>	Not available.
<u>Sensitization</u>	Not available.
<u>Mutagenicity</u>	Not available.
<u>Carcinogenicity</u>	Not available.
<u>Reproductive toxicity</u>	Not available.
<u>Teratogenicity</u>	Not available.
<u>Specific target organ toxicity (single exposure)</u>	Not available.
<u>Specific target organ toxicity (repeated exposure)</u>	Not available.
<u>Aspiration hazard</u>	Not available.

Propane	
Section 11. Toxicological information	
Potential chronic health effects	
Not available.	
General	: No known significant effects or critical hazards.
Carcinogenicity	: No known significant effects or critical hazards.
Mutagenicity	: No known significant effects or critical hazards.
Teratogenicity	: No known significant effects or critical hazards.
Developmental effects	: No known significant effects or critical hazards.
Fertility effects	: No known significant effects or critical hazards.

Numerical measures of toxicity
Acute toxicity estimates
Not available.

Section 12. Ecological information			
Toxicity			
Not available.			
Persistence and degradability			
Not available.			
Bioaccumulative potential			
Product/ingredient name	LogP_{ow}	BCF	Potential
Propane	1.09	-	low

Mobility in soil
Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations	
Disposal methods	: The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Empty Airgas-owned pressure vessels should be returned to Airgas. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.






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Propane	
Section 14. Transport information	
Transport in bulk according to IMO instruments	
: Not available.	
Section 15. Regulatory information	
U.S. Federal regulations	: TSCA 8(a) CDR Exempt/Partial exemption: Not determined Clean Air Act (CAA) 112 regulated flammable substances: propane
Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs)	: Not listed
Clean Air Act Section 602 Class I Substances	: Not listed
Clean Air Act Section 602 Class II Substances	: Not listed
DEA List I Chemicals (Precursor Chemicals)	: Not listed
DEA List II Chemicals (Essential Chemicals)	: Not listed
SARA 302/304	
Composition/information on ingredients	
No products were found.	
SARA 304 RQ	: Not applicable.
SARA 311/312	
Classification	: Refer to Section 2: Hazards Identification of this SDS for classification of substance.
State regulations	
Massachusetts	: This material is listed.
New York	: This material is not listed.
New Jersey	: This material is listed.
Pennsylvania	: This material is listed.
California Prop. 65	

This product does not require a Safe Harbor warning under California Prop. 65.

International regulations
Chemical Weapon Convention List Schedules I, II & III Chemicals
Not listed.
Montreal Protocol
Not listed.
Stockholm Convention on Persistent Organic Pollutants
Not listed.
Rotterdam Convention on Prior Informed Consent (PIC)
Not listed.
UNECE Aarhus Protocol on POPs and Heavy Metals
Not listed.
Inventory list
Australia : This material is listed or exempted.
Canada : This material is listed or exempted.
China : This material is listed or exempted.
Europe : This material is listed or exempted.

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Propane					
Section 14. Transport information					
	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1978	UN1978	UN1978	UN1978	UN1978
UN proper shipping name	PROPANE SEE ALSO PETROLEUM GASES, LIQUEFIED	PROPANE	PROPANE SEE ALSO PETROLEUM GASES, LIQUEFIED (propane)	PROPANE	PROPANE
Transport hazard class(es)	2.1 	2.1 	2.1 	2.1 	2.1 
Packing group	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Additional information
DOT Classification : **Limited quantity**
Yes.
Packaging instruction
Passenger aircraft
Quantity limitation: Forbidden.
Cargo aircraft
Quantity limitation: 150 kg
Special provisions
19, T50
For domestic transportation only, UN1075 may be substituted for the UN number shown as long as the substitution is consistent on package markings, shipping papers, and emergency response information. See 49 CFR 172.102 Special Provision 19.
Containers of NON-ODORIZED liquefied petroleum gas must be marked either NON-ODORIZED or NOT ODORIZED as of September 30, 2006. [49 CFR 172.301(f), 326(d), 330(c) and 338(e)]
TDG Classification : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2)
Explosive Limit and Limited Quantity Index 0.125
ERAP Index 3000
Passenger Carrying Vessel Index 65
Passenger Carrying Road or Rail Index Forbidden
Special provisions 29, 42
IATA : **Quantity limitation** Passenger and Cargo Aircraft: Forbidden. Cargo Aircraft Only: 150 kg.
Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

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Propane	
Section 15. Regulatory information	
Japan	: Japan inventory (ENCs): This material is listed or exempted. Japan inventory (ISHL): This material is listed or exempted.
New Zealand	: This material is listed or exempted.
Philippines	: This material is listed or exempted.
Republic of Korea	: This material is listed or exempted.
Taiwan	: This material is listed or exempted.
Thailand	: Not determined.
Turkey	: This material is listed or exempted.
United States	: This material is active or exempted.
Viet Nam	: This material is listed or exempted.

Section 16. Other information	
Hazardous Material Information System (U.S.A.)	
Health	/ 2
Flammability	4
Physical hazards	0
Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc. The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.	
National Fire Protection Association (U.S.A.)	
	

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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification	
Classification	Justification
FLAMMABLE GASES - Category 1 GASES UNDER PRESSURE - Liquefied gas	Expert judgment Expert judgment
History	
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Propane

Section 16. Other information

Key to abbreviations

- ATE = Acute Toxicity Estimate
- BCF = Bioconcentration Factor
- GHS = Globally Harmonized System of Classification and Labelling of Chemicals
- IATA = International Air Transport Association
- IBC = Intermediate Bulk Container
- IMDG = International Maritime Dangerous Goods
- LogPow = logarithm of the octanol/water partition coefficient
- MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
- UN = United Nations

References

Other special considerations

The information below is given to call attention to the issue of "Naturally occurring radioactive materials". Although Radon-222 levels in the product represented by this MSDS do not present any direct Radon exposure hazard, customers should be aware of the potential for Radon daughter build up within their processing systems, whatever the source of their product streams. Radon-222 is a naturally occurring radioactive gas which can be a contaminant in natural gas. During subsequent processing, Radon tends to be concentrated in Liquefied Petroleum Gas streams and in product streams having a similar boiling point range. Industry experience has shown that this product may contain small amounts of Radon-222 and its radioactive decay products, called Radon "daughters". The actual concentration of Radon-222 and radioactive daughters in the delivered product is dependent on the geographical source of the natural gas and storage time prior to delivery. Process equipment (i.e. lines, filters, pumps and reaction units) may accumulate significant levels of radioactive daughters and show a gamma radiation reading during operation. A potential external radiation hazard exists at or near any pipe valve or vessel containing a Radon enriched stream, or containing internal deposits of radioactive material due to the transmission of gamma radiation through its wall. Field studies reported in the literature have not shown any conditions that subject workers to cumulative exposures in excess of general population limits. Equipment emitting gamma radiation should be presumed to be internally contaminated with alpha emitting decay products which may be a hazard if inhaled or ingested. Protective equipment such as coveralls, gloves, and respirator (NIOSH/MHSA approved for high efficiency particulates and radionuclides, or supplied air) should be worn by personnel entering a vessel or working on contaminated process equipment to prevent skin contamination, ingestion, or inhalation of any residues containing alpha radiation. Airborne contamination may be minimized by handling scale and/or contaminated materials in a wet state.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

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Causes skin irritation. H336: May cause drowsiness or dizziness. H340: May cause genetic defects. H350: May cause cancer.

Precautionary Statements:

P101: If medical advice is needed, have product container or label at hand. P102: Keep out of reach of children. P103: Read label before use. P201: Obtain special instructions before use. P202: Do not handle until all safety precautions have been read and understood. P210: Keep away from heat/sparks/open flames/hot surfaces. -- No smoking. P233: Keep container tightly closed. P240: Ground / bond container and receiving equipment. P241: Use explosion-proof electrical, ventilating, and lighting equipment. P242: Use only non-sparking tools. P243: Take precautionary measures against static discharge. P261: Avoid breathing mist / vapours. P264: Wash skin thoroughly after handling. P271: Use only outdoors or in a well-ventilated area. P273: Avoid release to the environment. P280: Wear protective gloves/protective clothing/eye protection/face protection. P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. P302 + P352: IF ON SKIN: Wash with plenty of soap and water. P303 + P361 + P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing. P308 + P313: IF exposed or concerned: Get medical advice/attention. P312: Call a POISON CENTER or doctor/physician if you feel unwell. P331: Do NOT induce vomiting. P332 + P313: If skin irritation occurs: Get medical advice/attention. P362 + P364: Take off contaminated clothing and wash it before reuse. P370 + P378: In case of fire: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish. P391: Collect spillage. P403 + P233: Store in a well-ventilated place. Keep container tightly closed. P403 + P235: Store in a well-ventilated place. Keep cool. P405: Store locked up. P501: Dispose of contents and container in accordance with local regulations.

Contains: GASOLINE

Other hazard information:

HAZARD NOT OTHERWISE CLASSIFIED (HNOC): None as defined under 29 CFR 1910.1200.

PHYSICAL / CHEMICAL HAZARDS

Material can accumulate static charges which may cause an ignition. Material can release vapors that readily form flammable mixtures. Vapor accumulation could flash and/or explode if ignited.

HEALTH HAZARDS

High-pressure injection under skin may cause serious damage. May be irritating to the eyes, nose, throat, and lungs. Exposure to benzene is associated with cancer (acute myeloid leukemia and myelodysplastic syndrome), damage to the blood-producing system, and serious blood disorders (see Section 11).

ENVIRONMENTAL HAZARDS

Expected to be toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

NFPA Hazard ID: Health: 1 Flammability: 3 Reactivity: 0
HMS Hazard ID: Health: 1* Flammability: 3 Reactivity: 0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks

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SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: GASOLINE, UNLEADED AUTOMOTIVE
Product Description: Hydrocarbons and Additives
Product Code: 123455-20
Intended Use: Fuel, Gasoline

COMPANY IDENTIFICATION

Supplier: EXXON MOBIL CORPORATION
22777 Springwoods Village Parkway
Spring, TX. 77253 USA
800-737-4411
800-424-9300 or 703-527-3887 CHEMTREC
800-662-4525
http://www.exxon.com, http://www.mobil.com

24 Hour Health Emergency
Transportation Emergency Phone
Product Technical Information
MSDS Internet Address

SECTION 2 HAZARDS IDENTIFICATION

This material is hazardous according to regulatory guidelines (see (M)SDS Section 15).

CLASSIFICATION:

Flammable liquid: Category 1.
Skin irritation: Category 2. Germ Cell Mutagen: Category 1B. Carcinogen: Category 1B. Specific target organ toxicant (central nervous system): Category 3. Aspiration toxicant: Category 1.

LABEL:

Pictogram:



Signal Word: Danger

Hazard Statements:

H224: Extremely flammable liquid and vapor. H304: May be fatal if swallowed and enters airways. H315:

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which may vary from person to person.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

This material is defined as a mixture.

Hazardous Substance(s) or Complex Substance(s) required for disclosure

Name	CAS#	Concentration*	GHS Hazard Codes
ETHYL ALCOHOL	64-17-6	< 11%	H225, H319(2A)
GASOLINE	86290-81-6	89 - 100%	H224, H304, H336, H340(1B), H350(1A), H315, H319(2A), H372, H401

Hazardous Constituent(s) Contained in Complex Substance(s) required for disclosure

Name	CAS#	Concentration*	GHS Hazard Codes
BENZENE	71-43-2	<= 1.65%	H225, H303, H304, H340(1B), H350(1A), H315, H319(2A), H372, H401
ETHYL BENZENE	100-41-4	1 - 5%	H225, H332, H373, H401, H412
N-HEXANE	110-54-3	1 - 5%	H225, H304, H336, H361(F), H315, H373, H401, H411
NAPHTHALENE	91-20-3	<1%	H302, H351, H400(M factor 1), H410(M factor 1)
PSEUDOCUMENE (1,2,4-TRIMETHYLBENZENE)	95-63-6	1 - 5%	H226, H332, H336, H315, H319(2A), H401, H411
TOLUENE	108-88-3	5 - 10%	H225, H304, H336, H315, H373, H401, H412
TRIMETHYL BENZENE	25551-13-7	1 - 5%	H226, H315
XYLENES	1330-20-7	5 - 10%	H226, H304, H312, H332, H336, H315, H332(2B), H373, H401

* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

NOTE: The concentration of the components shown above may vary substantially. In certain countries, benzene content may be limited to lower levels. Oxygenates such as tertiary-amy-methyl ether, ethanol, di-isopropyl ether, and ethyl-tertiary-butyl ether may be present. Because of volatility considerations, gasoline vapor may have concentrations of components very different from those of liquid gasoline. The major components of gasoline vapor are: butane, isobutane, pentane, and isopentane. The reportable component percentages, shown in the composition/information on ingredients section, are based on API's evaluation of a typical gasoline mixture. Oxygenates may be present up to the maximum permitted by European Standard EN228. Motor gasoline is considered a mixture by EPA under the Toxic Substances Control Act (TSCA). The refinery streams used to blend motor gasoline are all on the TSCA Chemical Substances Inventory.

As per paragraph (i) of 29 CFR 1910.1200, formulation is considered a trade secret and specific chemical identity and exact percentage (concentration) of composition may have been withheld. Specific chemical

identity and exact percentage composition will be provided to health professionals, employees, or designated representatives in accordance with applicable provisions of paragraph (i).

SECTION 4 FIRST AID MEASURES**INHALATION**

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

Seek immediate medical attention. Do not induce vomiting.

NOTE TO PHYSICIAN

If ingested, material may be aspirated into the lungs and cause chemical pneumonitis. Treat appropriately. This light hydrocarbon material, or a component, may be associated with cardiac sensitization following very high exposures (well above occupational exposure limits) or with concurrent exposure to high stress levels or heart-stimulating substances like epinephrine. Administration of such substances should be avoided.

SECTION 5 FIRE FIGHTING MEASURES**EXTINGUISHING MEDIA**

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect personnel attempting to stop a leak. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Unusual Fire Hazards: Extremely Flammable. Vapors are flammable and heavier than air. Vapors may travel across the ground and reach remote ignition sources causing a flashback fire danger. Hazardous material. Firefighters should consider protective equipment indicated in Section 8.

and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE**HANDLING**

Avoid all personal contact. Prevent exposure to ignition sources, for example use non-sparking tools and explosion-proof equipment. Potentially toxic/irritating fumes/vapors may be evolved from heated or agitated material. Do not siphon by mouth. Use only with adequate ventilation. Do not use as a cleaning solvent or other non-motor fuel uses. For use as a motor fuel only. It is dangerous and/or unlawful to put fuel into unapproved containers. Do not fill container while it is in or on a vehicle. Static electricity may ignite vapors and cause fire. Place container on ground when filling and keep nozzle in contact with container. Do not use electronic devices (including but not limited to cellular phones, computers, calculators, pagers or other electronic devices, etc.) in or around any fueling operation or storage area unless the devices are certified intrinsically safe by an approved national testing agency and to the safety standards required by national and/or local laws and regulations. Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). Use proper bonding and/or ground procedures. However, bonding and grounds may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

Static Accumulator: This material is a static accumulator. A liquid is typically considered a nonconductive, static accumulator if its conductivity is below 100 pS/m (100x10⁻¹² Siemens per meter) and is considered a semiconductive, static accumulator if its conductivity is below 10,000 pS/m. Whether a liquid is nonconductive or semiconductive, the precautions are the same. A number of factors, for example liquid temperature, presence of contaminants, anti-static additives and filtration can greatly influence the conductivity of a liquid.

STORAGE

Ample fire water supply should be available. A fixed sprinkler/deluge system is recommended. The type of container used to store the material may affect static accumulation and dissipation. Keep container closed. Handle containers with care. Open slowly in order to control possible pressure release. Store in a cool, well-ventilated area. Outside or detached storage preferred. Keep away from incompatible materials. Storage containers should be grounded and bonded. Fixed storage containers, transfer containers and associated equipment should be grounded and bonded to prevent accumulation of static charge.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION**EXPOSURE LIMIT VALUES**

Exposure limits/standards (Note: Exposure limits are not additive)

Hazardous Combustion Products: Aldehydes, Incomplete combustion products, Oxides of carbon, Smoke, Fume, Sulfur oxides

FLAMMABILITY PROPERTIES

Flash Point [Method]: <-40°C (-40°F) [ASTM D-56]
Flammable Limits (Approximate volume % in air): LEL: 1.4 UEL: 7.6
Autoignition Temperature: >250°C (482°F)

SECTION 6 ACCIDENTAL RELEASE MEASURES**NOTIFICATION PROCEDURES**

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

PROTECTIVE MEASURES

Avoid contact with spilled material. Warn or evacuate occupants in surrounding and downwind areas if required due to toxicity or flammability of the material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

For emergency responders: Respiratory protection: half-face or full-face respirator with filter(s) for organic vapor and, when applicable, H₂S, or Self Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to aromatic hydrocarbons are recommended. Note: gloves made of polyvinyl acetate (PVA) are not water-resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

SPILL MANAGEMENT

Land Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do it without risk. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Prevent entry into waterways, sewer, basements or confined areas. A vapor suppressing foam may be used to reduce vapors. Use clean non-sparking tools to collect absorbed material. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Large Spills: Water spray may reduce vapor, but may not prevent ignition in closed spaces.

Water Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do it without risk. Do not confine in area of spill. Advise occupants and shipping in downwind areas of fire and explosion hazard and warn them to stay clear. Allow liquid to evaporate from the surface. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave

Substance Name	Form	Limit / Standard	NOTE	Source
BENZENE		OSHA Action level 0.5 ppm	N/A	OSHA Sp.Reg.
BENZENE		STEL 5 ppm	N/A	OSHA Sp.Reg.
BENZENE		TWA 1 ppm	N/A	OSHA Sp.Reg.
BENZENE		STEL 1 ppm	N/A	ExxonMobil
BENZENE		TWA 0.5 ppm	N/A	ExxonMobil
BENZENE		STEL 2.5 ppm	Skin	ACGIH
BENZENE		TWA 0.5 ppm	Skin	ACGIH
ETHYL ALCOHOL		TWA 1900 mg/m ³	1000 ppm	OSHA Z1
ETHYL ALCOHOL		STEL 1000 ppm	N/A	ACGIH
ETHYL BENZENE		TWA 435 mg/m ³	100 ppm	OSHA Z1
ETHYL BENZENE		TWA 20 ppm	N/A	ACGIH
GASOLINE		STEL 200 ppm	N/A	ExxonMobil
GASOLINE		TWA 100 ppm	N/A	ExxonMobil
GASOLINE		STEL 500 ppm	N/A	ACGIH
GASOLINE		TWA 300 ppm	N/A	ACGIH
N-HEXANE		TWA 1800 mg/m ³	500 ppm	OSHA Z1
N-HEXANE		TWA 50 ppm	Skin	ACGIH
NAPHTHALENE		TWA 50 mg/m ³	10 ppm	OSHA Z1
NAPHTHALENE		TWA 10 ppm	Skin	ACGIH
PSEUDOCUMENE (1,2,4-TRIMETHYLBENZENE)		TWA 25 ppm	N/A	ACGIH
TOLUENE		Ceiling 300 ppm	N/A	OSHA Z2
TOLUENE		Maximum concentration 500 ppm	N/A	OSHA Z2
TOLUENE		TWA 200 ppm	N/A	OSHA Z2
TOLUENE		TWA 20 ppm	N/A	ACGIH
TRIMETHYL BENZENE		TWA 25 ppm	N/A	ACGIH
XYLENES		TWA 435 mg/m ³	100 ppm	OSHA Z1
XYLENES		STEL 150 ppm	N/A	ACGIH
XYLENES		TWA 100 ppm	N/A	ACGIH

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

Biological limits

Substance	Specimen	Sampling Time	Limit	Determinant	Source
BENZENE	Creatinine in urine	End of shift	500 ug/g	1,1-Muconic acid	ACGIH BELs (BELs)
BENZENE	Creatinine in urine	End of shift	25 ug/g	S-Phenylmercapturic acid	ACGIH BELs (BELs)
ETHYL BENZENE	Creatinine in urine	End of shift	0.15 g/g	Sum of mandelic acid and phenylglyoxylic acid	ACGIH BELs (BELs)

N-HEXANE	Urine	End of shift at end of work wk	0.4 mg/l	2,5-Hexanedione, without hydrolysis	ACGIH BELs (BEIs)
NAPHTHALENE	No Biological Specimen provided	End of shift	Not Assigned	1-Naphthol, with hydrolysis + 2-Naphthol, with hydrolysis	ACGIH BELs (BEIs)
TOLUENE	Blood	Prior to last shift of work wk	0.02 mg/l	Toluene	ACGIH BELs (BEIs)
TOLUENE	Creatinine in urine	End of shift	0.3 mg/g	o-Cresol, with hydrolysis	ACGIH BELs (BEIs)
TOLUENE	Urine	End of shift	0.03 mg/l	Toluene	ACGIH BELs (BEIs)
XYLENES	Creatinine in urine	End of shift	1.5 g/g	Methylhippuric acids	ACGIH BELs (BEIs)

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:
Use explosion-proof ventilation equipment to stay below exposure limits.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:
Half-face filter respirator

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:
Chemical resistant gloves are recommended.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:
Chemical/oil resistant clothing is recommended.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

GENERAL INFORMATION

Physical State: Liquid
Color: Clear (May Be Dyed)
Odor: Petroleum/Solvent
Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 °C): 0.74
Density (at 15 °C): 720 kg/m³ (5.01 lbs/gal, 0.72 kg/dm³) - 758 kg/m³ (6.33 lbs/gal, 0.76 kg/dm³)
Flammability (Solid, Gas): N/A
Flash Point (Method): <40°C (-40°F) [ASTM D-56]
Flammable Limits (Approximate volume % in air): LEL: 1.4 UEL: 7.6
Autoignition Temperature: >250°C (482°F)
Boiling Point / Range: >20°C (68°F)
Decomposition Temperature: N/D
Vapor Density (Air = 1): 3 at 101 kPa
Vapor Pressure: >26.6 kPa (200 mm Hg) at 20 °C
Evaporation Rate (n-butyl acetate = 1): > 10
pH: N/A
Log Pow (n-Octanol/Water Partition Coefficient): > 3
Solubility in Water: Negligible
Viscosity: <1 cSt (1 mm²/sec) at 40 °C
Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION

Freezing Point: N/D
Melting Point: N/A

SECTION 10 STABILITY AND REACTIVITY

REACTIVITY: See sub-sections below.

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: None

MATERIALS TO AVOID: Alkalies, Halogens, Strong Acids, Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

POSSIBILITY OF HAZARDOUS REACTIONS: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

Hazard Class	Conclusion / Remarks
Inhalation	
Acute Toxicity (Rat): 4 hour(s) LC50 > 5000 mg/m ³ (Vapor)	Minimally Toxic. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 403
Irritation: No end point data for material.	Elevated temperatures or mechanical action may form vapors, mist, or fumes which may be irritating to the eyes, nose, throat, or lungs.
Ingestion	
Acute Toxicity (Rat): LD50 > 5000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 401
Skin	
Acute Toxicity (Rabbit): LD50 > 2000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 402
Skin Corrosion/Irritation (Rabbit): Data available.	Irritating to the skin. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 404
Eye	
Serious Eye Damage/Irritation (Rabbit): Data available.	May cause mild, short-lasting discomfort to eyes. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 405
Sensitization	
Respiratory Sensitization: No end point data for material.	Not expected to be a respiratory sensitizer.
Skin Sensitization: Data available.	Not expected to be a skin sensitizer. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 406
Aspiration: Data available.	May be fatal if swallowed and enters airways. Based on physico-chemical properties of the material.
Germ Cell Mutagenicity: Data available.	Caused genetic effects in laboratory animals, but the relevance to humans is uncertain. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 471 475 476
Carcinogenicity: Data available.	Caused cancer in laboratory animals. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 451
Reproductive Toxicity: Data available.	Not expected to be a reproductive toxicant. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 416 421
Lactation: No end point data for material.	Not expected to cause harm to breast-fed children.
Specific Target Organ Toxicity (STOT)	
Single Exposure: No end point data for material.	May cause drowsiness or dizziness.
Repeated Exposure: Data available.	Not expected to cause organ damage from prolonged or repeated exposure. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 410 412 453

TOXICITY FOR SUBSTANCES

NAME	ACUTE TOXICITY
ETHYL BENZENE	Inhalation Lethality: 4 hour(s) LC50 17.8 mg/l (Vapor) (Rat); Oral Lethality: LD50 3.5 g/kg (Rat)
NAPHTHALENE	Inhalation Lethality: 4 hour(s) LC50 > 0.4 mg/l (Max attainable vapor conc.) (Rat); Oral Lethality: LD50 533 mg/kg (Mouse)

OTHER INFORMATION

For the product itself:

Laboratory animal studies have shown that prolonged and repeated inhalation exposure to light hydrocarbon vapors in the same boiling range as this product can produce adverse kidney effects in male rats. However, these effects were not observed in similar studies with female rats, male and female mice, or in limited studies with other animal species. Additionally, in a number of human studies, there was no clinical evidence of such effects at normal occupational levels. In 1991, The U.S. EPA determined that the male rat kidney is not useful for assessing human risk.

Vapor concentrations above recommended exposure levels are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.

Small amounts of liquid aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary edema. Very high exposure (confined spaces / abuse) to light hydrocarbons may result in abnormal heart rhythm (arrhythmias). Concurrent high stress levels and/or co-exposure to high levels of hydrocarbons (above occupational exposure limits), and to heart-stimulating substances like epinephrine, nasal decongestants, asthma drugs, or cardiovascular drugs may initiate arrhythmias.

Gasoline unleaded: Caused cancer in animal tests. Chronic inhalation studies resulted in liver tumors in female mice and kidney tumors in male rats. Neither result considered significant for human health risk assessment by the United States EPA and others. Did not cause mutations *In Vitro* or *In Vivo*. Negative in inhalation developmental studies and reproductive toxic studies. Inhalation of high concentrations in animals resulted in reversible central nervous system depression, but no persistent toxic effect on the nervous system. Non-sensitizing in test animals. Caused nerve damage in humans from abusive use (sniffing).

Contains:

BENZENE: Caused cancer (acute myeloid leukemia and myelodysplastic syndrome), damage to the blood-producing system, and serious blood disorders in human studies. Caused genetic effects and effects on the immune system in laboratory animal and some human studies. Caused toxicity to the fetus and cancer in laboratory animal studies. **ETHANOL:** Prolonged or repeated exposure to high concentrations of ethanol vapor or overexposure by ingestion may produce adverse effects to brain, kidney, liver, and reproductive organs, birth defects in offspring, and developmental toxicity in offspring.

NAPHTHALENE: Exposure to high concentrations of naphthalene may cause destruction of red blood cells, anemia, and cataracts. Naphthalene caused cancer in laboratory animal studies, but the relevance of these findings to humans is uncertain.

N-HEXANE: Prolonged and/or repeated exposures to n-Hexane can cause progressive and potentially irreversible damage to the peripheral nervous system (e.g. fingers, feet, arms, legs, etc.). Simultaneous exposure to Methyl Ethyl Ketone (MEK) or Methyl Isobutyl Ketone (MIBK) and n-Hexane can potentiate the risk of adverse effects from n-Hexane on the peripheral nervous system. n-Hexane has been shown to cause testicular damage at high doses in male rats. The relevance of this effect for humans is unknown.

TOLUENE: Concentrated, prolonged or deliberate inhalation may cause brain and nervous system damage. Prolonged and repeated exposure of pregnant animals (> 1500 ppm) have been reported to cause adverse fetal developmental effects.

TRIMETHYLBENZENE: Long-term inhalation exposure of trimethylbenzene caused effects to the blood in laboratory animals.

ETHYL BENZENE: Caused cancer in laboratory animal studies. The relevance of these findings to humans is uncertain.

The following ingredients are cited on the lists below:

Chemical Name	CAS Number	List Citations
BENZENE	71-43-2	1, 3, 6
ETHYL BENZENE	100-41-4	5
GASOLINE	86290-81-5	5
NAPHTHALENE	91-20-3	2, 5

1 = NTP CARC
2 = NTP SUS

--REGULATORY LISTS SEARCHED--
3 = IARC 1
4 = IARC 2A

5 = IARC 2B
6 = OSHA CARC

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Expected to be toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

MOBILITY

More volatile component -- Highly volatile, will partition rapidly to air. Not expected to partition to sediment and wastewater solids.
Less volatile component -- Low solubility and floats and is expected to migrate from water to the land.
Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Majority of components -- Expected to be inherently biodegradable

Atmospheric Oxidation:

More volatile component -- Expected to degrade rapidly in air

BIOACCUMULATION POTENTIAL

Majority of components -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

REGULATORY DISPOSAL INFORMATION

RCRA Information: Disposal of unused product may be subject to RCRA regulations (40 CFR 261). Disposal of the used product may also be regulated due to ignitability, corrosivity, reactivity or toxicity as determined by the Toxicity Characteristic Leaching Procedure (TCLP). Potential RCRA characteristics: IGNITABILITY, TCLP (BENZENE)

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (DOT)

Proper Shipping Name: GASOLINE
Hazard Class & Division: 3
ID Number: 1203
Packing Group: II
Marine Pollutant: Yes
ERG Number: 128
Label(s): 3
Transport Document Name: UN1203, GASOLINE, 3, PG II, MARINE POLLUTANT

LAND (TDG)

Proper Shipping Name: GASOLINE
Hazard Class & Division: 3
UN Number: 1203
Packing Group: II
Special Provisions: 17

SEA (IMDG)

Proper Shipping Name: MOTOR SPIRIT or GASOLINE or PETROL
Hazard Class & Division: 3
EMS Number: F-E, S-E

UN Number: 1203
Packing Group: II
Marine Pollutant: Yes
Label(s): 3
Transport Document Name: UN1203, MOTOR SPIRIT or GASOLINE or PETROL, 3, PG II, (-40°C c.c.), MARINE POLLUTANT

AIR (IATA)

Proper Shipping Name: MOTOR SPIRIT or GASOLINE or PETROL
Hazard Class & Division: 3
UN Number: 1203
Packing Group: II
Label(s) / Mark(s): 3
Transport Document Name: UN1203, GASOLINE, 3, PG II

SECTION 15 REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: This material is considered hazardous in accordance with OSHA HazCom 2012, 29 CFR 1910.1200.

Listed or exempt from listing/notification on the following chemical inventories: AICS, DSL, ENCS, KECI, PICCS, TSCA

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302

CERCLA: This material is not subject to any special reporting under the requirements of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Contact local authorities to determine if other reporting requirements apply.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: Fire, Immediate Health, Delayed Health.

SARA (313) TOXIC RELEASE INVENTORY:

Chemical Name	CAS Number	Typical Value
BENZENE	71-43-2	<= 1.65%
ETHYL BENZENE	100-41-4	1 - 5%
N-HEXANE	110-54-3	1 - 5%
NAPHTHALENE	91-20-3	<1%
PSEUDOCUMENE (1,2,4-TRIMETHYLBENZENE)	95-63-6	1 - 5%
TOLUENE	106-88-3	5 - 10%
XYLENES	1330-20-7	5 - 10%

The following ingredients are cited on the lists below:

Chemical Name	CAS Number	List Citations
BENZENE	71-43-2	1, 2, 4, 10, 11, 13, 15, 16, 17, 18, 19
ETHYL ALCOHOL	64-17-5	1, 4, 13, 16, 17, 18
ETHYL BENZENE	100-41-4	1, 4, 10, 13, 16, 17, 18, 19
GASOLINE	86290-81-5	1, 18
N-HEXANE	110-54-3	1, 4, 13, 16, 17, 18, 19
NAPHTHALENE	91-20-3	1, 4, 10, 17, 19
PSEUDOCUMENE (1,2,4-TRIMETHYLBENZENE)	95-63-6	1, 13, 16, 17, 18, 19
TOLUENE	106-88-3	1, 4, 11, 13, 15, 16, 17, 18, 19
TRIMETHYLBENZENE	25551-13-7	1, 13, 16, 17, 18
XYLENES	1330-20-7	1, 4, 13, 15, 16, 17, 18, 19

--REGULATORY LISTS SEARCHED--
1 = ACGIH ALL
2 = ACGIH A1
3 = ACGIH A2
4 = OSHA Z
5 = TSCA 4

6 = TSCA 5a2
7 = TSCA 5e
8 = TSCA 6
9 = TSCA 12b
10 = CA P65 CARC

11 = CA P65 REPRO
12 = CA RTK
13 = IL RTK
14 = LA RTK
15 = MI 293

16 = MN RTK
17 = NJ RTK
18 = PA RTK
19 = RI RTK

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16 OTHER INFORMATION

This warning is given to comply with California Health and Safety Code 25249.6 and does not constitute an admission or a waiver of rights. This product contains a chemical known to the State of California to cause cancer, birth defects, or other reproductive harm. Chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm are created by the combustion of this product.

N/D = Not determined, N/A = Not applicable

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):

H224: Extremely flammable liquid and vapor; Flammable Liquid, Cat 1
H225: Highly flammable liquid and vapor; Flammable Liquid, Cat 2
H228: Flammable liquid and vapor; Flammable Liquid, Cat 3
H302: Harmful if swallowed; Acute Tox Oral, Cat 4
H303: May be harmful if swallowed; Acute Tox Oral, Cat 5
H304: May be fatal if swallowed and enters airways; Aspiration, Cat 1
H312: Harmful in contact with skin; Acute Tox Dermal, Cat 4
H315: Causes skin irritation; Skin Corrosion/Irritation, Cat 2
H319(2A): Causes serious eye irritation; Serious Eye Damage/Irr, Cat 2A
H320(2B): Causes eye irritation; Serious Eye Damage/Irr, Cat 2B
H332: Harmful if inhaled; Acute Tox Inh, Cat 4
H335: May cause respiratory irritation; Target Organ Single, Resp Irr
H336: May cause drowsiness or dizziness; Target Organ Single, Narcotic
H340(1B): May cause genetic defects; Germ Cell Mutagenicity, Cat 1B
H350(1A): May cause cancer; Carcinogenicity, Cat 1A
H350(1B): May cause cancer; Carcinogenicity, Cat 1B
H351: Suspected of causing cancer; GHS Carcinogenicity, Cat 2

H361(D): Suspected of damaging the unborn child; Repro Tox, Cat 2 (Develop)
H361(F): Suspected of damaging fertility; Repro Tox, Cat 2 (Fertility)
H372: Causes damage to organs through prolonged or repeated exposure; Target Organ, Repeated, Cat 1
H373: May cause damage to organs through prolonged or repeated exposure; Target Organ, Repeated, Cat 2
H400: Very toxic to aquatic life; Acute Env Tox, Cat 1
H401: Toxic to aquatic life; Acute Env Tox, Cat 2
H410: Very toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 1
H411: Toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 2
H412: Harmful to aquatic life with long lasting effects; Chronic Env Tox, Cat 3

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:

Section 06: Accidental Release - Spill Management - Water information was modified.
Section 06: Protective Measures information was modified.
Section 07: Handling and Storage - Handling information was modified.
Section 07: Handling and Storage - Storage Phrases information was modified.
Section 08: Biological Exposure Limits (ACG BEL) Table information was modified.
Section 10: Materials to Avoid information was modified.
Section 11: Chronic Tox - Component information was modified.
Section 11: Other Health Effects information was modified.

THIS MSDS COVERS THE FOLLOWING MATERIALS: ESSO EXTRA MIDGRADE UNLEADED | ESSO MIDGRADE UNLEADED | ESSO PREMIUM UNLEADED | ESSO REGULAR UNLEADED | ESSO SUPER PREMIUM UNLEADED | EXXON MIDGRADE UNLEADED | EXXON PREMIUM UNLEADED | EXXON REGULAR UNLEADED | GASOLINE | INDOLENE GASOLINE | MIDGRADE UNLEADED | MOBIL EXTRA UNLEADED | MOBIL REGULAR UNLEADED | MOBIL SPECIAL UNLEADED | MOBIL SUPER UNLEADED | PREMIUM UNLEADED | REGULAR UNLEADED | UNLEADED GASOLINE

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Internal Use Only

MHC: 1A, 0B, 0, 0, 4, 1

PPEC: CF

DGN: 2000316XUS (1011203)

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**Oxygen, compressed**

Safety Data Sheet P-4638



This SDS conforms to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.
Date of issue: 01/01/1979 Revision date: 01/27/2021 Supersedes: 08/28/2020 Version: 2.0

SECTION 1: Product and company identification**1.1. Product identifier**

Product form : Substance
Trade name : Oxygen, MediPure Oxygen
CAS-No. : 7782-44-7
Formula : O₂
Other means of identification : Oxygen, Compressed, MediPure Oxygen; Aviator's Breathing Oxygen; USP Oxygen; Oxygen - Diving Grade

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Medical applications
Industrial use
Diving Gas (Underwater Breathing)

1.3. Details of the supplier of the safety data sheet

Linde Inc.
10 Riverview Drive
Danbury, CT 06810-6268 - USA

1.4. Emergency telephone number

Emergency number : Onsite Emergency: 1-800-645-4633

CHEMTREC, 24hr/day 7days/week
— Within USA: 1-800-424-8300, Outside USA: 001-703-527-3587
(collect calls accepted, Contract 17729)

SECTION 2: Hazard identification**2.1. Classification of the substance or mixture**

GHS US classification
Ox. Gas 1 H270
Press. Gas (Comp.) H280

2.2. Label elements

GHS US labeling
Hazard pictograms (GHS US)



Signal word (GHS US) : Danger

Hazard statements (GHS US)

H270 - MAY CAUSE OR INTENSIFY FIRE; OXIDIZER
H280 - CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED

Precautionary statements (GHS US)

P202 - Do not handle until all safety precautions have been read and understood.
P220 - Keep away from combustible materials, clothing
P244 - Keep reduction valves/valves and fittings free from oil and grease
P271+P403 - Use and store only outdoors or in a well-ventilated place.
P270+P376 - IN CASE OF FIRE: Stop leak if safe to do so
CGA-PG05 - Use a back flow preventive device in the piping.

EN (English US)

SDS ID: P-4638

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**Oxygen, compressed**

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CGA-PG20+CGA-PG10 - Use only with equipment of compatible materials of construction and rated for cylinder pressure.
CGA-PG22 - Use only with equipment cleaned for oxygen service.
CGA-PG12 - Do not open valve until connected to equipment prepared for use.
CGA-PG21 - Open valve slowly.
CGA-PG08 - Close valve after each use and when empty.
CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F).

2.3. Other hazards

Other hazards not contributing to the classification : Breathing 80 percent or more oxygen at atmospheric pressure for more than a few hours may cause nasal stuffiness, cough, sore throat, chest pain, and breathing difficulty. Breathing oxygen at higher pressure increases the likelihood of adverse effects within a shorter time period. Breathing pure oxygen under pressure may cause lung damage and central nervous system (CNS) effects, resulting in dizziness, poor coordination, tingling sensation, visual and hearing disturbances, muscular twitching, unconsciousness, and convulsions. Breathing oxygen under pressure may cause prolongation of adaptation to darkness and reduced peripheral vision.

2.4. Unknown acute toxicity (GHS US)

No data available

SECTION 3: Composition/information on ingredients**3.1. Substances**

Name : Oxygen, compressed
CAS-No. : 7782-44-7

Name	Product identifier	%
Oxygen	(CAS-No.) 7782-44-7	99.5 - 100

3.2. Mixtures

Not applicable

SECTION 4: First aid measures**4.1. Description of first aid measures**

First-aid measures after inhalation : Move to fresh air. Get medical advice/attention.
First-aid measures after skin contact : Adverse effects not expected from this product.
First-aid measures after eye contact : Adverse effects not expected from this product. In case of eye irritation: Rinse immediately with plenty of water. Consult an ophthalmologist if irritation persists.
First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

4.2. Most important symptoms and effects, both acute and delayed

No additional information available

4.3. Indication of any immediate medical attention and special treatment needed

None.

SECTION 5: Firefighting measures**5.1. Extinguishing media**

Suitable extinguishing media : Vigorously accelerates combustion. Use media appropriate for surrounding fire. Water (e.g. safety shower) is the preferred extinguishing media for clothing fires.

5.2. Special hazards arising from the substance or mixture

Fire hazard : Oxidizing agent; vigorously accelerates combustion. Contact with flammable materials may cause fire or explosion.

EN (English US)

SDS ID: P-4638

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Oxygen, compressed

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5.3. Advice for firefighters

Firefighting instructions	<ul style="list-style-type: none">High-pressure, oxidizing gas.
Special protective equipment for fire fighters	<ul style="list-style-type: none">Evacuate all personnel from the danger area. Use self-contained breathing apparatus (SCBA) and protective clothing. Immediately cool containers with water from maximum distance. Stop flow of gas if safe to do so, while continuing cooling water spray. Remove ignition sources if safe to do so. Remove containers from area of fire if safe to do so. On-site fire brigades must comply with OSHA 29 CFR 1910.156 and applicable standards under 29 CFR 1910 Subpart L—Fire Protection.
Specific methods	<ul style="list-style-type: none">Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas containers to rupture. Cool endangered containers with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.
Other information	<ul style="list-style-type: none">Stop flow of product if safe to do so.Use water spray or fog to knock down fire flames if possible.Heat of fire can build pressure in container and cause it to rupture. Containers are equipped with a pressure relief device. (Exceptions may exist where authorized by DOT.) No part of the container should be subjected to a temperature higher than 125°F (52°C). Smoking, flames, and electric sparks in the presence of enriched oxygen atmospheres are potential explosion hazards.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures	<ul style="list-style-type: none">Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Ensure adequate air ventilation. Eliminate ignition sources. Evacuate area. Try to stop release. Monitor concentration of released product. Wear self-contained breathing apparatus when entering area unless atmosphere is proven to be safe. Stop leak if safe to do so.
6.1.1. For non-emergency personnel	No additional information available
6.1.2. For emergency responders	No additional information available

6.2. Environmental precautions

	Try to stop release.
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6.3. Methods and material for containment and cleaning up

	No additional information available
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6.4. Reference to other sections

	See also sections 8 and 13.
--	-----------------------------

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Skin and body protection

	<ul style="list-style-type: none">Wear metatarsal shoes and work gloves for cylinder handling, and protective clothing where needed. Wear appropriate chemical gloves during cylinder changeout or whenever contact with product is possible. Select per OSHA 29 CFR 1910.132, 1910.136, and 1910.138. As needed for welding, wear hand, head, and body protection to help prevent injury from radiation and sparks. (See ANSI Z49.1.) At a minimum, this includes welder's gloves and protective goggles, and may include arm protectors, aprons, hats, and shoulder protection as well as substantial clothing.
--	---

Respiratory protection

	<ul style="list-style-type: none">When workplace conditions warrant respirator use, follow a respiratory protection program that meets OSHA 29 CFR 1910.134, ANSI Z88.2, or MSHA 30 CFR 72.710 (where applicable). Use an air-supplied or air-purifying cartridge if the action level is exceeded. Ensure that the respirator has the appropriate protection factor for the exposure level. If cartridge type respirators are used, the cartridge must be appropriate for the chemical exposure. For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus (SCBA).
--	--

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Gas
Appearance	Colorless gas.
Molecular mass	32 g/mol
Color	Colorless.
Odor	No odor warning properties.
Odor threshold	No data available
pH	Not applicable.
Relative evaporation rate (butyl acetate=1)	No data available
Relative evaporation rate (ethanol=1)	Not applicable.
Melting point	-219 °C (-362°F)
Freezing point	No data available
Boiling point	-183 °C (-297°F)
Flash point	Not applicable.
Critical temperature	-118.6 °C (-181.48°F)
Auto-ignition temperature	Not applicable.
Decomposition temperature	No data available
Flammability (solid, gas)	No data available
Vapor pressure	Not applicable.
Critical pressure	50.4 bar (731.4 psia)
Relative vapor density at 20 °C	0.0827 lb/lb (1.325 kg/m ³) absolute vapor density at 70°F/21.1°C, 1 atm
Relative density	1.1
Density	1.4289 kg/m ³ (at 21.1 °C)
Relative gas density	1.1
Solubility	Water: 39 mg/l
Log Pow	Not applicable.
Log Kow	Not applicable.
Viscosity, kinematic	Not applicable.
Viscosity, dynamic	Not applicable.
Explosive properties	Not applicable.
Oxidizing properties	Oxidizer.
Explosion limits	No data available

9.2. Other information

Gas group	Compressed gas
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SECTION 7: Handling and storage

7.1. Precautions for safe handling	<ul style="list-style-type: none">Wear leather safety gloves and safety shoes when handling cylinders. Protect cylinders from physical damage; do not drag, roll, slide or drop. While moving cylinder, always keep in place removable valve cover. Never attempt to fit a cylinder by its cap; the cap is intended solely to protect the valve. When moving cylinders, even for short distances, use a cart (hobby, hand truck, etc.) designed to transport cylinders. Never insert an object (e.g. wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Slowly open the valve. If the valve is hard to open, discontinue use and contact your supplier. Close the container valve after each use; keep closed even when empty. Never apply flame or localized heat directly to any part of the container. High temperatures may damage the container and could cause the pressure relief device to fail prematurely, venting the container contents. For other precautions in using this product, see section 16.
Safe use of the product	<ul style="list-style-type: none">The suitability of this product as a component in underwater breathing gas mixtures is to be determined by or under the supervision of personnel experienced in the use of underwater breathing gas mixtures and familiar with the physiological effects, methods employed, frequency and duration of use, hazards, side effects, and precautions to be taken.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions	<ul style="list-style-type: none">Store only where temperature will not exceed 125°F (52°C). Post "No Smoking/No Open Flames" signs in storage and use areas. There must be no sources of ignition. Separate packages and protect against potential fire and/or explosion damage following appropriate codes and requirements (e.g. NFPA 30, NFPA 55, NFPA 70, and/or NFPA 221 in the U.S.) or according to requirements determined by the Authority Having Jurisdiction (AHJ). Always secure containers upright to keep them from falling or being knocked over. Install valve protection cap, if provided, firmly in place by hand when the container is not in use. Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods. For other precautions in using this product, see section 16.
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OTHER PRECAUTIONS FOR HANDLING, STORAGE, AND USE: When handling product under pressure, use piping and equipment adequately designed to withstand the pressure to be encountered. Never work on a pressurized system. Use a back flow preventive device in the piping. Store and use with adequate ventilation. If a leak occurs, close the container valve and blow down the system in a safe and environmentally correct manner in compliance with all international, federal/national, state/provincial, and local laws; then repair the leak. Never place a container where it may become part of an electrical circuit.

7.3. Specific end use(s)

	None
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SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Oxygen, compressed (7782-44-7)	
ACGIH	Not established
USA OSHA	Not established
Oxygen (7782-44-7)	
ACGIH	Not established
USA OSHA	Not established

8.2. Exposure controls

Appropriate engineering controls	<ul style="list-style-type: none">Avoid oxygen rich (>23.5%) atmospheres. Use a local exhaust system with sufficient flow velocity to maintain an adequate supply of air in the worker's breathing zone. Mechanical (general): General exhaust ventilation may be acceptable if it can maintain an adequate supply of air.
Eye protection	<ul style="list-style-type: none">Wear safety glasses with side shields.

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Additional information

	<ul style="list-style-type: none">Gas/vapor heavier than air. May accumulate in confined spaces, particularly at or below ground level.
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SECTION 10: Stability and reactivity

10.1. Reactivity	No additional information available
10.2. Chemical stability	Stable under normal conditions.
10.3. Possibility of hazardous reactions	Violently oxidizes organic material.
10.4. Conditions to avoid	None under recommended storage and handling conditions (see section 7).
10.5. Incompatible materials	Keep equipment free from oil and grease. Consider the potential toxicity hazard due to the presence of chlorinated or fluorinated polymers in high pressure (> 30 bar) oxygen lines in case of combustion. May react violently with combustible materials. May react violently with reducing agents.
10.6. Hazardous decomposition products	None.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity	Not classified
Skin corrosion/irritation	Not classified
Serious eye damage/irritation	pH: Not applicable. Not classified
Respiratory or skin sensitization	pH: Not applicable. Not classified
Germ cell mutagenicity	Not classified
Carcinogenicity	Not classified
Reproductive toxicity	Not classified
Specific target organ toxicity – single exposure	Not classified
Specific target organ toxicity – repeated exposure	Not classified
Aspiration hazard	Not classified

SECTION 12: Ecological information

12.1. Toxicity	
Ecology – general	No ecological damage caused by this product.
12.2. Persistence and degradability	
Oxygen, compressed (7782-44-7)	
Persistence and degradability	No ecological damage caused by this product.
Oxygen (7782-44-7)	
Persistence and degradability	No ecological damage caused by this product.

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12.3. Bioaccumulative potential

Oxygen, compressed (7782-44-7)	
Log Pow	Not applicable.
Log Kow	Not applicable.
Bioaccumulative potential	No ecological damage caused by this product.
Oxygen (7782-44-7)	
Log Pow	Not applicable.
Log Kow	Not applicable.
Bioaccumulative potential	No ecological damage caused by this product.

12.4. Mobility in soil

Oxygen, compressed (7782-44-7)	
Mobility in soil	No data available.
Ecology - soil	No ecological damage caused by this product.
Oxygen (7782-44-7)	
Mobility in soil	No data available.
Ecology - soil	No ecological damage caused by this product.

12.5. Other adverse effects

Effect on ozone layer	None.
Effect on the global warming	No known effects from this product.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product/Packaging disposal recommendations	Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.
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SECTION 14: Transport information

In accordance with DOT

Transport document description	UN1072 Oxygen, compressed, 2.2
UN-No (DOT)	UN1072
Proper Shipping Name (DOT)	Oxygen, compressed
Class (DOT)	2.2 - Class 2.2 - Non-flammable compressed gas 49 CFR 173.115
Hazard labels (DOT)	2.2 - Non-flammable gas 5.1 - Oxidizer



DOT Special Provisions (49 CFR 172.102)	110 - Fire extinguishers transported under UN1044 may include installed actuating cartridges (cartridges, power device of Division 1.4C or 1.4S), without changing the classification of Division 2.2, provided the aggregate quantity of deflagrating (propellant) explosives does not exceed 3.2 grams per extinguishing unit. A14 - This material is not authorized to be transported as a limited quantity or consumer commodity in accordance with 173.305 of this subchapter when transported aboard an aircraft.
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Additional information

Emergency Response Guide (ERG) Number	122 (UN1072)
Other information	No supplementary information available.

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15.2.2. National regulations

Oxygen, compressed (7782-44-7)	
Listed on the AICS (Australian Inventory of Chemical Substances)	
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)	
Listed on the Korean ECL (Existing Chemicals List)	
Listed on NZCIS (New Zealand Inventory of Chemicals)	
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)	
Listed on INSD (Mexican National Inventory of Chemical Substances)	
Listed on the TCSI (Taiwan Chemical Substance Inventory)	

15.3. US State regulations

Oxygen, compressed (7782-44-7)	
U.S. - California - Proposition 65 - Carcinogens List	No
U.S. - California - Proposition 65 - Developmental Toxicity	No
U.S. - California - Proposition 65 - Reproductive Toxicity - Female	No
U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No
State or local regulations	U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

Oxygen (7782-44-7)			
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male
No	No	No	No

Oxygen (7782-44-7)	
U.S. - Massachusetts - Right To Know List	
U.S. - New Jersey - Right to Know Hazardous Substance List	
U.S. - Pennsylvania - RTK (Right to Know) List	

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Special transport precautions

- Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers:
 - Ensure there is adequate ventilation.
 - Ensure that containers are firmly secured.
 - Ensure cylinder valve is closed and not leaking.
 - Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
 - Ensure valve protection device (where provided) is correctly fitted.

Transport by sea

UN-No. (IMDG)	1072
Proper Shipping Name (IMDG)	OXYGEN, COMPRESSED
Class (IMDG)	2 - Gases
Division (IMDG)	2.2 - Non-flammable, non-toxic gases
MFAG-No	122

Air transport

UN-No. (IATA)	1072
Proper Shipping Name (IATA)	Oxygen, compressed
Class (IATA)	2
Civil Aeronautics Law	Gases under pressure/Gases nonflammable nontoxic under pressure

SECTION 15: Regulatory information

15.1. US Federal regulations

Oxygen, compressed (7782-44-7)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
SARA Section 311/312 Hazard Classes	Sudden release of pressure hazard Fire hazard
All components of this product are listed on the Toxic Substances Control Act (TSCA) inventory.	

15.2. International regulations

CANADA

Oxygen, compressed (7782-44-7)	
Listed on the Canadian DSL (Domestic Substances List)	
Oxygen (7782-44-7)	
Listed on the Canadian DSL (Domestic Substances List)	

EU-Regulations

Oxygen, compressed (7782-44-7)	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	

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SECTION 16: Other information

Other information	When you mix two or more chemicals, you can create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an industrial hygienist or other trained person when you evaluate the end product. Before using any plastics, confirm their compatibility with this product.
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Linde asks users of this product to study this SDS and become aware of the product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this SDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.

The opinions expressed herein are those of qualified experts within Linde Inc. We believe that the information contained herein is current as of the date of this Safety Data Sheet. Since the use of this information and the conditions of use are not within the control of Linde Inc, it is the user's obligation to determine the conditions of safe use of the product.

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01/27/2021

Revision date

NFPA health hazard

- 0 - Materials that, under emergency conditions, would offer no hazard beyond that of ordinary combustible materials.

NFPA fire hazard

- 0 - Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.

NFPA instability

- 0 - Material that in themselves are normally stable, even under fire conditions.

NFPA specific hazard

- OX - Materials that possess oxidizing properties.



SDS US GHS DUAL BRANDED LINDE-PRAXAIR

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

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SAFETY DATA SHEET

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier
Trade name or designation of the mixture Purolite® CT252
Registration number -
Synonyms None.
Issue date 22-December-2011
Version number 02
Revision date 31-October-2016
Supersedes date 22-December-2011

1.2. Relevant identified uses of the substance or mixture and uses advised against
Identified uses Ion Exchange, Absorbent and/or Catalyst
Uses advised against None known.

1.3. Details of the supplier of the safety data sheet

Supplier Purolite Ltd.
Llantrisant Business Park
Llantrisant, Wales, UK CF72 8LP
Telephone +44 1443 229334
Fax +44 1443 227073

Manufacturer Purolite
150 Monument Road
Bala Cynwyd, PA 19004 USA
Telephone +1 610 668 9090
Fax +1 610 668 8139

Purolite S.R.L.
Str. Aldea Uzinei nr.11,
505700 Victoria
Județul Brasov
Romania 505 700
Telephone +40 26 824 3001
Fax +40 26 824 3002

Purolite (China) Co. Limited,
Qianlong Economic Development Zone,
Qianyan Town, Deqing County,
Huzhou City, Zhejiang, China 313216
Telephone +86 572 842 2908
Fax +86 572 842 5345

Contact person SDS Coordinator
e-mail msds@purolite.com

1.4. Emergency telephone number
+1 866 357 7344
+1 780 502 8703

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture
The mixture has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies.

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905388 Version #: 02 Revision date: 31-October-2016 Issue date: 22-December-2011 1/7

Ingestion Rinse mouth thoroughly. Get medical attention if any discomfort continues. Never give liquid to an unconscious person. Do not induce vomiting. If vomiting occurs, the head should be kept low so that stomach vomit doesn't enter the lungs.
Eye contact Contact may cause irritation with redness, tearing, pain, and/or blurred vision.

4.2. Most important symptoms and effects, both acute and delayed
4.3. Indication of any immediate medical attention and special treatment needed
Treat symptomatically.

SECTION 5: Firefighting measures

General fire hazards This product is not flammable. Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours.

5.1. Extinguishing media
Suitable extinguishing media Extinguish with foam, carbon dioxide, dry powder or water fog.
Unsuitable extinguishing media None known.

5.2. Special hazards arising from the substance or mixture
By heating and fire, harmful vapours/gases may be formed.

5.3. Advice for firefighters
Special protective equipment for firefighters Wear self-contained breathing apparatus and protective clothing.
Special fire fighting procedures In the event of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk. Prevent runoff from fire control or dilution from entering streams, sewers or drinking water supply.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
For non-emergency personnel Keep unnecessary personnel away. Avoid contact with skin and eyes. For personal protection, see section 8 of the SDS.
For emergency responders Keep unnecessary personnel away. Wear protective clothing as described in Section 8 of this safety data sheet.

6.2. Environmental precautions
Prevent further leakage or spillage if safe to do so. Cover with plastic sheet to prevent spreading. Do not allow to enter drains, sewers or watercourses.
6.3. Methods and material for containment and cleaning up
Avoid the generation of dusts during clean-up.
Large Spills: Dike the spilled material, where this is possible. Sweep or shovel up material and place in a clearly labeled container for waste. For waste disposal, see section 13 of the SDS.
Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal.
Never return spills to original containers for re-use.

6.4. Reference to other sections
For personal protection, see section 8 of the SDS. For waste disposal, see section 13 of the SDS.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Wear protective clothing as described in Section 8 of this safety data sheet. Observe good industrial hygiene practices. Use with adequate ventilation. Wash thoroughly after handling. Avoid release to the environment.
7.2. Conditions for safe storage, including any incompatibilities
Keep containers tightly closed in a dry, cool and well-ventilated place. Store away from incompatible materials (see section 10 of the SDS).

7.3. Specific end use(s)
Ion Exchange, Absorbent and/or Catalyst

SECTION 8: Exposure controls/personal protection

8.1. Control parameters
Occupational exposure limits No exposure limits noted for ingredient(s).
Biological limit values No biological exposure limits noted for the ingredient(s).
Recommended monitoring procedures Follow standard monitoring procedures.

Derived no effect levels (DNELs)
Not available.

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Classification according to Regulation (EC) No 1272/2008 as amended

Health hazards
Serious eye damage/eye irritation Category 2 H319 - Causes serious eye irritation.

Hazard summary Exposure to powder or dusts may be irritating to eyes, nose and throat.

2.2. Label elements
Label according to Regulation (EC) No. 1272/2008 as amended



Hazard pictograms
Signal word Warning

Hazard statements
H319 Causes serious eye irritation.

Precautionary statements

Prevention
P264 Wash thoroughly after handling.
P280 Wear eye protection/face protection.

Response
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 If eye irritation persists: Get medical advice/attention.

Storage
Store away from incompatible materials.

Disposal
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Supplemental label information
None.

2.3. Other hazards
Not a PBT or vPvB substance or mixture.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

General Information	Chemical name	%	CAS-No. / EC No.	REACH Registration No.	INDEX No.	Notes
	Polystyrene sulfonic acid	35 - 65	69011-20-7	-	-	
Classification:	Eye Irrit. 2/H319					
	Water	35 - 65	7732-18-5	-	-	
Classification:	-		231-791-2			

List of abbreviations and symbols that may be used above

CLP: Regulation No. 1272/2008.
#: This substance has been assigned Union workplace exposure limit(s).
M: M-factor
PBT: persistent, bioaccumulative and toxic substance.
vPvB: very persistent and very bioaccumulative substance.

Composition comments The full text for all H-statements is displayed in section 16. All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

SECTION 4: First aid measures

General information If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

4.1. Description of first aid measures

Inhalation Move into fresh air and keep at rest. Get medical attention if any discomfort continues.
Skin contact Wash off immediately with soap and plenty of water. If irritation persists get medical attention.
Eye contact Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. If eye irritation persists, get medical advice/attention.

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Predicted no effect concentrations (PNECs)
Not available.
Exposure guidelines
This material does not have established exposure limits.

8.2. Exposure controls
Appropriate engineering controls
Provide adequate ventilation. Provide eyewash station.

Individual protection measures, such as personal protective equipment

General information Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment. Personal protective equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.

Eye/face protection
Wear safety glasses with side shields (or goggles).

Skin protection
Hand protection For prolonged or repeated skin contact use suitable protective gloves.
SPECIFIC RECOMMENDATIONS
Breaththrough time: > 10 min (EN 374-3 Class 1).
Suitable gloves can be recommended by the glove supplier.

- Other
Respiratory protection Wear appropriate clothing to prevent repeated or prolonged skin contact.
No personal respiratory protective equipment normally required.

Thermal hazards
None known.

Hygiene measures
Avoid contact with eyes. Handle in accordance with good industrial hygiene and safety practices.
Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

Environmental exposure controls
Environmental manager must be informed of all major spillages.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Beads.
Physical state	Solid.
Form	Solid. Beads.
Colour	Gold, Amber, Light brown, Dark brown, Black, Green.
Odour	Odourless.
Odour threshold	Not available.
pH	Acidic
Melting point/freezing point	Not available.
Initial boiling point and boiling range	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Vapour pressure	Not applicable.
Vapour density	Not available.
Relative density	1.15 - 1.3
Solubility(ies)	None.
Partition coefficient (n-octanol/water)	No data available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Explosive properties	Not explosive.
Oxidising properties	Not oxidising.

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9.2. Other information No relevant additional information available.

SECTION 10: Stability and reactivity

10.1. Reactivity The product is stable and non reactive under normal conditions of use, storage and transport.
10.2. Chemical stability Material is stable under normal conditions.
10.3. Possibility of hazardous reactions No dangerous reaction known under conditions of normal use.
10.4. Conditions to avoid Heat, sparks, flames, elevated temperatures. Contact with incompatible materials.
10.5. Incompatible materials Strong oxidising agents. Nitric acid.
10.6. Hazardous decomposition products Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours.

SECTION 11: Toxicological information

General information Occupational exposure to the substance or mixture may cause adverse effects.
Information on likely routes of exposure
Inhalation Under normal conditions of intended use, this material is not expected to be an inhalation hazard. Inhalation of dusts may cause respiratory irritation.
Skin contact May cause mild skin irritation. **Eye** Causes serious eye irritation.
contact Causes serious eye irritation.
Ingestion May cause discomfort if swallowed.
Symptoms Eye contact: Contact may cause irritation with redness, tearing, pain, and/or blurred vision.
11.1. Information on toxicological effects
Acute toxicity May cause discomfort if swallowed.
Skin corrosion/irritation Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation Causes serious eye irritation.
Irritation
Respiratory sensitisation Due to partial or complete lack of data the classification is not possible.
Skin sensitisation Due to partial or complete lack of data the classification is not possible.
Germ cell mutagenicity Due to partial or complete lack of data the classification is not possible.
Carcinogenicity Due to partial or complete lack of data the classification is not possible.
Reproductive toxicity Due to partial or complete lack of data the classification is not possible.
Specific target organ toxicity - single exposure Due to partial or complete lack of data the classification is not possible.
Specific target organ toxicity - repeated exposure Due to partial or complete lack of data the classification is not possible.
Aspiration hazard Due to partial or complete lack of data the classification is not possible.
Mixture versus substance information Not available.
Other information Not available.

SECTION 12: Ecological information

12.1. Toxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
12.2. Persistence and degradability No data available.
12.3. Bioaccumulative potential No data available.
Partition coefficient No data available.
n-octanol/water (log Kow)
Bioconcentration factor (BCF) Not available.
12.4. Mobility in soil No data available.
Mobility in general No data available.
12.5. Results of PBT and vPvB assessment Not a PBT or vPvB substance or mixture.
12.6. Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

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National regulations Follow national regulation for work with chemical agents.

15.2. Chemical safety assessment No Chemical Safety Assessment has been carried out.

SECTION 16: Other information

List of abbreviations
DNEL: Derived No-Effect Level.
PNEC: Predicted No-Effect Concentration. PBT: Persistent, bioaccumulative and toxic. vPvB: Very Persistent and very Bioaccumulative.
References Not available.
Information on evaluation method leading to the classification of mixture The classification for health and environmental hazards is derived by a combination of calculation methods and test data, if available.
Full text of any H-statements not written out in full under Sections 2 to 15 HS19 Causes serious eye irritation.
Training information Follow training instructions when handling this material.
Further information This mixture is exempted from Registration according to the provisions of Title II and VI and Article 2(9) of REACH.
Disclaimer The information provided in this safety data sheet is based on current knowledge about the product and current legal requirements and standards. It relates specifically to health, safety and environmental requirements and standards, may not identify all hazards associated with the product or its uses or mixtures. Does not signify any warranty with regard to the properties of the product, and only applies when the product is used for the purposes indicated in section 1. This product is not sold as suitable for other purposes and such other usage may cause risks not mentioned in this safety data sheet.

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SECTION 13: Disposal considerations

13.1. Waste treatment methods
Residual waste Dispose of in accordance with local regulations.
Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal.
EU waste code Waste codes should be assigned by the user based on the application for which the product was used.
Disposal methods/information Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 14: Transport information

ADR 14.1, - 14.6.; Not regulated as dangerous goods.
RID 14.1, - 14.6.; Not regulated as dangerous goods.
ADN 14.1, - 14.6.; Not regulated as dangerous goods.
IATA 14.1 - 14.6.; Not regulated as dangerous goods.
IMDG 14.1 - 14.6.; Not regulated as dangerous goods.
14.7. Transport in bulk Not applicable.
according to Annex II of Marpol and the IBC Code

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
EU regulations
Regulation (EC) No. 1905/2009 on substances that deplete the ozone layer, Annex I and II, as amended Not listed.
Regulation (EC) No. 850/2004 On persistent organic pollutants, Annex I as amended Not listed.
Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended Not listed.
Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended Not listed.
Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended Not listed.
Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended Not listed.
Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry, as amended Not listed.
Regulation (EC) No. 1907/2006, REACH Article 58(10) Candidate List as currently published by ECHA Not listed.
Authorisations
Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorisation, as amended Not listed.
Restrictions on use
Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended Not listed.
Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work, as amended. Not listed.
Other EU regulations
Directive 2012/18/EU on major accident hazards involving dangerous substances, as amended Not listed.
Other regulations The product is classified and labeled in accordance with EC directives or respective national laws. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006, as amended.

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Attachment 3

Environmental Assessment Statement



LDEQ RECEIPT
2023 JUN 19 PM 1:47

Koch Methanol St. James
5181 Wildcat Street
St. James, LA 70086

Post Office Box 510
Vacherie, LA 70090

HAND DELIVERED

June 19, 2023

Louisiana Department of Environmental Quality
Office of Environmental Services
PO Box 4313
Baton Rouge, LA 70821-4313

**RE: Koch Methanol St. James, LLC
Koch Methanol Facility
Revised Environmental Assessment Statement in support of the
KMe Optimization Project: Application for a Significant Modification to
Title V Permit No. 2560-00295-V4 and an Initial PSD Permit
AI No. 194165
Activity Nos. PER20220006 and PER20220007**

Dear Sir or Madam:

Koch Methanol St. James, LLC (Koch) operates the Koch Methanol (KMe) Plant and KMe Terminal located in St. James, St. James Parish, Louisiana. The KMe Plant currently operates under Title V Permit No. 2560-00295-V5, and the KMe Terminal currently operates under Title V Permit No. 3169-V3. Koch is submitting this revised Environmental Assessment Statement (EAS) in support of the Application for a Significant Modification to Title V Permit No. 2560-00295-V4 and an initial PSD permit. The changes addressed in this EAS primarily reflect the results of revised 1-hour NO₂ National Ambient Air Quality Standard (NAAQS) air dispersion modeling, which are presented in a revised Air Quality Impact Assessment (AQIA) modeling report submitted to the LDEQ on June 1, 2023.

Enclosed are the revised EAS and two copies, as required by LDEQ; and per LAC 33:III.533.B.1, a copy of the revised EAS is also being submitted to the United States Environmental Protection Agency, Region 6. Additionally, pursuant to the requirements of La. R.S. 30:2018 of the Environmental Quality Act, the revised EAS is being provided to the local governmental authority and designated public library where the facility is located for public viewing.

If you or your staff have any questions or require additional information during your review of this revised EAS, please contact Brian Glover at (225) 408-2741, bglover@ramboll.com, or you may contact me at (580) 478-7621, kevan.reardon@kochind.com.

Sincerely,

A handwritten signature in blue ink, appearing to read "Kevan Reardon", written over a horizontal line.

Kevan Reardon
EH&S and Security Leader

cc: Mr. Anthony Randall, LDEQ

EPA Region 6 (r6airpermitsla@epa.gov)

APPENDIX D

ENVIRONMENTAL ASSESSMENT STATEMENT

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- Attachment D-2 EJ Modeling Input Tables

1. INTRODUCTION AND OVERVIEW

Koch Methanol St. James, LLC (Koch) operates the Koch Methanol Plant and the adjacent Koch Methanol Terminal, collectively known as the KMe Facility, on 1,300 acres in St. James, St. James Parish, Louisiana. The KMe Facility has been designed and constructed with state-of-the-art pollution abatement equipment to meet applicable state and federal environmental standards. Construction of the facility began in 2017 and it has been fully operational since 2021, with portions of the plant starting operations in late 2020.

As part of Koch's ongoing efforts to optimize the KMe Facility, Koch is proposing to implement, and seeking air permit authorization for, the KMe Optimization Project ("the Project"). Koch is also seeking to revise certain existing permit emission limits. These changes were described in Part 2 of the application for significant modification to Title V Permit No. 2560-00295 and an initial PSD Permit submitted to LDEQ on November 2, 2022 ("November 2022 Application"), as well as the addendum to that application (the Addendum) submitted to LDEQ on February 1, 2023.

Additionally, Koch submitted a permit application to the LDEQ on May 18, 2023, to update the existing Louisiana Pollutant Discharge Elimination System (LPDES) Permit LA0127367 in support of the Project ("May 2023 LPDES Application"), which included a separate EAS. Elements of the Project will result in an increase in the volume of wastewater flow sent to the KME Facility's existing wastewater treatment facility as well as an increase in volume of boiler and cooling tower blowdown, demineralized regeneration wastewater, and return waters from the feed water treatment plant clarifier systems, with a commensurate increase in the volume of effluent discharged to the Mississippi River. Further detail is provided in Section 2.3.4 of this document and are also provided in the May 2023 LPDES Application.

An initial Environmental Assessment Statement (EAS) for the KMe Facility was submitted for the initial Title V permit application and reviewed by LDEQ prior to original construction. A subsequent EAS was completed for the initial LPDES permit application. An EAS addressing the Project was included with the November 2022 Application, and a revised EAS was submitted in support of the Addendum. (Note that a separate EAS addressing the project was submitted in support of the May 2023 LPDES Application.) This EAS replaces in full the EAS for the Project, which was included as Appendix D in the November 2022 Application and previously revised in support of the Addendum. The changes addressed in this EAS primarily reflect the results of revised 1-hour NO₂ national ambient air quality standard air dispersion modeling, which are reflected in a revised Air Quality Impact Assessment (AQIA) modeling report submitted to the LDEQ on June 1, 2023 ("June 2023 Revised AQIA").

As described in Part 1 of the November 2022 Application, the proposed Project along with other requested permit revisions will result in increases in facility-wide emissions of Prevention of Significant Deterioration (PSD) regulated pollutants that will result in the KMe Facility being classified, for the first time, as a major source under the PSD program. As described in Part 3 of the November 2022 Application and in Part 2 of the Addendum, while not required, with this permitting action Koch is voluntarily undergoing PSD¹ review and permitting for the KMe Facility. Accordingly, this EAS has been prepared in support of the November 2022 Application and Addendum and is being revised consistent with the June 2023 Revised AQIA.²

The requirement for an Environmental Assessment Statement (EAS) arose out of litigation involving the construction of a new proposed commercial hazardous waste incineration facility by International Technology Corp., also known as “IT”. The “IT” Decision (Save Ourselves v. La. Env. Control Commission, Louisiana Supreme Court) in 1984 interpreted the Louisiana Constitution as reflecting a “public trust” doctrine that imposes a “rule of reasonableness” and requires the Louisiana Department of Environmental Quality (LDEQ) to determine, before granting approval of action affecting the environment, that any adverse environmental impacts resulting from the action have been minimized or avoided as much as possible consistent with the health, safety, and public welfare of Louisiana citizens.

The requirement derives from Article IX, Section 1 of the Louisiana Constitution which provides:

The natural resources of the state, including air and water, and the healthful, scenic, historic, and aesthetic quality of the environment shall be protected, conserved, and replenished insofar as possible and consistent with the health, safety and welfare of the people. The legislature shall enact laws to implement this policy.

The “IT” Decision concluded that to satisfy the Constitution, LDEQ must adhere to statutes that the legislature has enacted to protect the environment. The Legislature enacted La. R.S. 30:2018 in 1997 to require that LDEQ affirmatively protect the environment by ensuring that permit applicants have addressed the five questions announced in the decision. This statute requires an EAS for all new major environmental permits issued by LDEQ and for major modifications to those permits. These five IT questions were largely based on the Court’s interpretation

¹ The air quality in St. James Parish currently meets the National Ambient Air Quality Standards (NAAQS) for all criteria pollutants; therefore, the PSD program is the only New Source Review permitting program that applies to major sources in the parish.

² This EAS addresses potential impacts resulting from both the KMe Optimization Project and the other permit revisions requested in the November 2022 Application and Addendum.

that the review should be much like an environmental assessment under an analogous federal law – the National Environmental Policy Act (NEPA).

The remainder of this Introduction and Overview provides background information about Koch Industries, the KMe Facility and the proposed Project. The remaining sections of the EAS address the five IT Questions.

1.1 Koch Industries and the KMe Facility

Koch Industries, Inc. (KII) is a privately held multinational conglomerate corporation based in Wichita, Kansas and is the second largest privately held company in the United States. KII creates products to address life's basic necessities, while innovating ways to make them even better. The companies that are part of KII include Georgia Pacific, Guardian Glass, Flint Hills Resources, INVISTA, Infor, Molex, Koch Engineered Solutions, Koch Minerals and Trading, and Koch Ag & Energy Solutions (KAES), which owns and operates a number of ammonia, urea, and other fertilizer production operations. Koch Methanol St. James, LLC is a subsidiary of KAES and the KMe Facility is its only methanol production facility.

1.1.1 KII's Commitment to Environmental and Social Stewardship and its Governance Priorities

Through business and philanthropic endeavors, KII seeks to make society better through mutual benefit. KII contributes to creating the best possible environment where all people have the opportunity to develop their unique talents and abilities. The company provides engagement opportunities that enable employees to build relationships, have meaningful and fulfilling experiences, and make a positive difference in their communities based on what is important to them. More broadly, KII is committed to building mutually beneficial, long-term partnerships with customers, employees, suppliers, regulators, and the communities in which KII operates. KII gives preference to those who are principled and committed to creating value in society. KII's Stewardship Framework further defines the company's commitment and describes priorities around environmental and social stewardship and governance.³

1.1.1.1 Environmental Stewardship/Environmental Priorities⁴

With more than 300 manufacturing sites across the United States (US) – and about 100 more globally – KII is one of America's largest manufacturers. Every day, across those sites, KII strives to create more value, using fewer resources than the day before. KII does this through constant improvement and innovation – both in the products KII makes and how they are made, and by managing resources in a

³ <https://www.kochind.com/KOCHInd-Dev/media/assets/files/koch-stewardship-framework.pdf>, accessed October 31, 2022.

⁴ <https://www.kochind.com/stewardship/environmental-stewardship>, accessed October 31, 2022.

way that benefits customers, employees, partners, community members and society. *KII's five environmental stewardship priorities are: innovation, energy efficiency, air quality, water quality and consumption, and responsible resource management.*

Essential to stewardship, and KII's long-term success, is the discovery of new technologies and methods to create more value for customers while using fewer resources, minimizing waste and improving the environmental performance and effectiveness of products and processes. Since 2015, KII has invested more than \$1.8 billion, and years of hard work and innovation, in energy efficiency projects across its US facilities. In addition, KII has invested another \$1.7 billion toward energy transformation technologies, such as electric battery, energy storage and solar power infrastructure in the past two years.

Across operations, KII continually works to improve energy efficiency and develop innovative technologies. As an active partner and leader in the industry, KII was recognized as an Energy Star Partner of the Year in 2022.⁵ The award recognizes organizations that have made outstanding contributions to protecting the environment through energy efficiency, and is the highest honor jointly bestowed by the United States Environmental Protection Agency (EPA) and United States Department of Energy.

KII continually seeks new ways to reduce and improve air emissions. KII companies have reduced criteria air pollutants — among those most common to industry — by 48% from 2008-2021. And in the US, KII's greenhouse gas emissions are down by 18% since 2014 (approximately 5 million metric tons of CO₂e). KII companies are also applying new technologies to monitor certain types of emissions leaks and correct and prevent them in real time.

Because clean, plentiful water is vital to life – for humans and the countless plant and animal species with which we share this planet, KII continually explores new opportunities to reduce water consumption and to improve the quality of water discharges throughout operations.

Stewardship encompasses the responsible management of actions and the resources entrusted to the company's care in a manner that respects the rights of others. KII makes it a priority to ensure resources are managed to create value for KII's constituencies and for KII. From 2014 to 2021, the amount of production-related waste generated at our U.S. facilities is down by approximately 250 million pounds (~40%). In 2021, KII reporting facilities recycled, recovered for energy or treated 90% (369 million pounds) of all waste produced.

⁵ <https://www.epa.gov/newsreleases/epa-recognizes-koch-industries-incorporated-energy-star-award-winner>, accessed October 31, 2022.

1.1.1.2 Social Stewardship/Social Priorities

KII's social stewardship priorities include health and safety, employee experience and community involvement/philanthropy.

The safety and well-being of KII's employees and communities is the company's first priority. KII makes this happen every day by building capability through employees and resilience in plant systems, so when the unexpected happens, employees, partners and communities stay safe.⁶

At KII's companies, an individual's character and contributions are valued over credentials, connections, or group affiliation. KII believes in helping all employees have opportunities that fit their gifts and abilities to contribute to society and improve their own lives – and KII rewards their individual contributions based on the value they create.⁷

KII believes everyone can discover and develop their innate abilities and apply them to contribute and succeed when empowered to do so. KII seeks to create opportunities based on each individual's unique gifts and potential to contribute. KII continually looks for mutually beneficial outcomes by providing employees with benefit choices aligned with their values and personal situations. KII strives to treat every person with dignity and respect, encourage and foster networking, and sponsor activities that are inclusive and focus on shared interests.

KII celebrates the uniqueness of each individual and believes it is disrespectful to judge a person—positively or negatively— based on group identity. KII selects and empowers employees, including leaders, who have a variety of perspectives, aptitudes, skills, knowledge, experiences, and backgrounds. This diversity enables working together to identify opportunities, solve problems, and create greater value for others. KII solicits challenge consistently and respectfully from employees at all levels of the organization.

With community involvement and philanthropic endeavors, KII seeks to make society better through mutual benefit that gives people the opportunity to flourish. Through a multitude of programs and initiatives, KII works to help people discover, develop and unleash their true potential while removing barriers to opportunity in their lives and communities.⁸

KII focuses on creating the best possible environment where all people can develop their unique talents and abilities – empowering them to transform their lives, their

⁶ <https://www.kochind.com/stewardship/social-stewardship/health-safety>, accessed October 31, 2022.

⁷ <https://www.kochind.com/stewardship/social-stewardship/employee-experience>, accessed October 31, 2022.

⁸ <https://www.kochind.com/stewardship/social-stewardship/community-involvement-philanthropy>, accessed October 31, 2022.

work and their communities. Since 2018, KII has averaged more than 2,000 charitable contributions per year – contributing in nearly every US state as well as in countries around the world. KII’s community involvement and philanthropy encompasses the following areas.⁹

Enhancing Education: KII supports an environment where students are able to discover, develop and apply their unique abilities, establishing a foundation for a life of contribution and fulfillment. KII partners with programs and institutions that support scholarships for qualifying students and offer curriculums that empower scholars to excel, as well as organizations that provide skilled and technical training.

Youth Development: Helping others find their innate gifts, passions and best path forward can make a life-changing difference. KII is honored to partner with organizations that do just that. KII supports community-based initiatives that help young people unlock their full potential through mentorship, educational support and social-emotional skill development.

Strengthening Workforce: KII supports partnerships that seek to develop a skilled workforce ready to continuously adapt to a rapidly changing world. KII seeks to empower entrepreneurs to launch and grow businesses, provide alternative educational opportunities for rapid skill development and remove barriers to entry for traditional employment opportunities.

Uplifting Communities: KII serves as an active and engaged community partner by developing effective and collaborative relationships, as well as contributing ideas and bottom-up solutions that lead to healthier communities. Through financial and employee volunteer support, KII seeks to strengthen the communities in which it operates.

1.1.1.3 Governance Priorities

In KII’s business, being good stewards starts with acting with the proper regard for the rights of others, as well as complying with laws and regulations. Practicing stewardship and acting with integrity are how KII supports employees, protects the environment and invests in communities – today and into the future.¹⁰ KII has several governance priorities including the following related to environmental protection and community engagement:

- Compliance and ethics standards – robust compliance standards and risk management systems, as well as a Global Code of Conduct that outlines expectations for all employees and third parties to raise issues and concerns.

⁹ <https://www.kochind.com/stewardship/social-stewardship>, accessed October 31, 2022.

¹⁰ <https://www.kochind.com/stewardship/governance>, accessed October 31, 2022.

- Oversight and continuous improvement – board-level oversight of audit and assurance programs. Tools used to learn and improve performance include audits, self-assessments, incident tracking, investigations, and knowledge sharing.
- Open communication – open and proactive communication with employees, the community, and customers about KII’s principles and EHS performance.

As mentioned above, KII operates under a Global Code of Conduct¹¹ that emphasizes the company’s, and its employees’, commitment to integrity, stewardship and compliance as well as other company guiding principles.

1.1.2 KMe Facility Overview

Methanol is produced at the KMe Facility by combining steam, oxygen, and natural gas under high pressures and temperatures using the licensed Lurgi MegaMethanol® technology. The methanol production process consists of three main steps: synthesis gas (syngas) production, crude methanol synthesis and methanol distillation. Part 1, Section 1.3 of the November 2022 Application describes the production process in detail. The facility is designed to allow four modes of product distribution: truck, rail, barge, and ocean vessel. An advanced truck and rail terminal is operated by Koch, and an existing third-party dock facility located adjacent to the site is used for shipping along the Mississippi River.

With the Project, which is described in more detail in Part 2, Section 2.2 of the November 2022 Application, Koch is aiming to increase the KMe Facility design production rate from 4,950 to approximately 6,200 metric tons per day of refined methanol.

1.1.2.1 Methanol Chemical Information and Uses

As a naturally occurring and organic molecule, methanol is considered a building block of life. Methanol is a clear, colorless liquid that evaporates when exposed to air, is soluble in water, and is biodegradable.

Methanol occupies a critical position in the chemical industry as a highly versatile building block for the manufacture of countless products. The methanol produced at the KMe Facility is sent worldwide and used as a feedstock to make everyday products such as:

- High performance plastics
- Synthetic fabrics and fibers, including carpet
- Adhesives and solvents

¹¹ <https://codeofconduct.kochind.com/en-US/Front-cover>, accessed October 31, 2022.

- Paint
- Plywood
- Chemical agents in pharmaceuticals and agrichemicals
- Wastewater treatment plant additives

Methanol as a Fuel

In addition to the uses of methanol listed above, methanol is increasingly being considered a clean and sustainable fuel. Methanol is being employed around the globe in many innovative applications to meet growing energy demand. Methanol is used to fuel cars and trucks, marine vessels, boilers, cookstoves, and kilns, among a growing list of market applications. Its inherent clean-burning properties produce lower criteria pollutant emissions from land/marine vehicle combustion (while improving fuel efficiency) compared to many traditional fuels.¹²

Methanol's use as a fuel, including as a transportation fuel, is growing. Methanol is a versatile, affordable alternative to conventional transportation fuel due to its efficient and clean combustion, ease of distribution, and wide availability around the globe. Methanol is used in gasoline blends around the world, and as a diesel substitute for use in heavy-duty vehicles (HDVs).¹³

Methanol-fueled vessels are on the water today, and more are on the way. There is a broad range of methanol-fueled vessels including pilot boats, tug/push boats, ferries, cruise ships, superyachts, crew transfer vessels, and multi-purpose ships. Also, more methanol-compatible engines are being developed by the major engine manufacturers and vessel designers. Methanol is a simple, safe liquid fuel, miscible in water, and is plentiful, available globally, and priced competitive to marine gas oil. Methanol benefits from safer handling characteristics compared to some other alternative fuels. It works with existing engine technologies as a drop-in or a dual fuel and requires only minor modifications to current bunkering infrastructure.¹⁴

Cooking with higher polluting fuels such as coal, biomass and waste has led to indoor air pollution being one of the leading health risk factors in developing countries. As a safe, clean burning fuel that is easy to handle (because it is a liquid at ambient temperature and pressure), methanol is suitable for regions that do not have access to gaseous fuels. Methanol's properties allow it to be used as a cooking fuel in industrial kitchens, households, refugee camps, and on ships. Most importantly, it is a cost-efficient fuel for households in developing countries that wish to transition to cleaner cooking solutions.¹⁵

¹² <https://www.methanol.org/applications/>, accessed October 31, 2022.

¹³ <https://www.methanol.org/road/>, accessed October 31, 2022.

¹⁴ <https://www.methanol.org/marine/>, accessed October 31, 2022.

¹⁵ <https://www.methanol.org/heat/>, accessed October 31, 2022.

Methanol as a Hydrogen Carrier

As the global economy prepares for an energy transition that will change the future of energy landscapes, new alternative fuels are coming to the fore. Hydrogen has been gaining traction as a clean alternative fuel as it only emits water upon combustion. However, there are a number of inherent challenges with the production, handling, and consumption of hydrogen with the state of technology today. It is still expensive to produce clean hydrogen from renewable sources. As a gas, hydrogen also requires capital-intensive infrastructure for its storage and transport.

Methanol is tomorrow's hydrogen, today. It is an extremely efficient hydrogen carrier. Being a liquid at ambient conditions, methanol can be handled, stored, and transported with ease by leveraging existing infrastructure that supports the global trade of methanol.¹⁶ Methanol reformers are able to generate on-demand hydrogen from methanol at the point of use to avoid the complexity and high cost associated with the logistics of hydrogen as a fuel.

Fuel cells use hydrogen as a fuel to produce electricity that can power cars, trucks, buses, ships, cell phone towers, homes and businesses. Methanol is an excellent hydrogen carrier fuel, packing more hydrogen in this simple alcohol molecule than can be found in hydrogen that has been compressed (350-700 bar) or liquified (-253 °C).

Methanol can be "reformed" on-site at a fueling station to generate hydrogen for fuel cell powered vehicles,¹⁷ or in stationary power units feeding fuel cells for mobile phone towers, construction sites, or ocean buoys. Methanol fuel cells can be fueled just as quickly as a gasoline or diesel vehicle, and can extend the range of a battery electric vehicle from 200 km to over 1,000 km.

1.1.3 Local Environmental and Social Commitments

Koch strives to minimize the environmental impact of its business activities and operations and maximize efficiencies in the methanol manufacturing process to reduce its environmental footprint to the maximum extent practicable. The sustainability of a business hinges on the responsible stewardship of resources and the environment. To the KMe Facility team, sustainability means keeping people safe, protecting the environment and constantly innovating to make products using fewer resources, while minimizing waste and reducing energy intensity.

¹⁶ Shen Y, Zhan Y, Li S, Ning F, Du Y, Huang Y, He T, Zhou X. Hydrogen generation from methanol at near-room temperature. Chem Sci. 2017 Nov 1;8(11):7498-7504. doi: 10.1039/c7sc01778b. Epub 2017 Sep 20. PMID: 29163903, available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5676115/>, accessed October 25, 2022.

¹⁷ <https://www.offshore-energy.biz/methanol-to-hydrogen-generator-gets-approved-for-marine-use/>, accessed October 25, 2022.

1.1.3.1 Local Environmental Stewardship

The KMe Facility is committed to environmental stewardship and uses advanced technologies to produce methanol. The KMe Facility is committed to following all local, state and federal requirements and uses a variety of emissions controls.

Air emissions controls include ultra-low and low nitrogen oxide (NOx) burners and selective catalytic reduction (SCR) systems for NOx control; catalytic oxidation for controlling carbon monoxide (CO) and volatile organic compounds (VOCs); modern cooling tower drift eliminators for particulate matter emissions minimization; a flare for controlling VOC emissions from process vents; a vapor control unit for controlling VOC emissions from truck and railcar loading operations; and internal floating roofs, the flare, or a vent gas scrubber to control VOC emissions from storage tanks. As part of the November 2022 Application and Addendum, whereby Koch is voluntarily undergoing PSD review, a Best Available Control Technology (BACT) analysis has been completed, which demonstrates that all air emissions sources at the KMe Facility are equipped with BACT for the control of air emissions (see Part 4 of the November 2022 Application, as well as Part 3 of the Addendum).

The KMe Facility was designed to minimize methanol streams sent to its wastewater collection and treatment plant. Methanol-containing streams such as methanol tank scrubber water and off-spec methanol with high methanol content are routed to a methanol slop tank and reprocessed in the KMe Facility as useful product. Additionally, an extensive system of piping routes methanol-containing streams from maintenance and decommissioning activities to the closed methanol slop system for reprocessing. By designing the KMe Facility in this manner, fugitive drain emissions to air and effluent discharge impacts are minimized. For process wastewater streams that require treatment prior to discharge, the KMe Facility is equipped with a wastewater collection and treatment plant that is designed and operated to meet the stringent federal and state wastewater discharge requirements of the LPDES permit. This is achieved via equalization, pH adjustment, biological treatment, and clarification.

The KMe Facility utilizes and treats water from the Mississippi River as its source of process water; it does not use groundwater for process water. Additionally, only a small amount of municipal water is utilized for potable water purposes, such as for safety shower and eye wash stations.

The facility has a stormwater pollution prevention plan (SWPPP) for the management and monitoring of stormwater, which incorporates Best Management Practices (BMP). The SWPPP also ensures that the potential adverse environmental effects associated with the generation of solid and/or hazardous wastes resulting from spills of oil or hazardous substances are minimized to the maximum extent possible. Section 2.3.4.2 provides further detail on the types of controls and BMPs implemented at the KMe Facility.

1.1.3.2 Local Social Commitments

The KMe Facility maintains the highest safety standards and ensures, through both facility design and operation, safe working conditions for employees. Safety performance is Koch's first order of business, with a goal of zero incidents. This, in turn, protects employees, partners, neighbors, and the community.

One of the many ways the KMe Facility demonstrates its commitment to the highest safety standards is by going above and beyond regulatory requirements for process safety and risk management by managing all process units consistent with EPA and Occupational Safety and Health Agency (OSHA) risk prevention program elements even though the regulations apply only to certain process units. This heightened commitment to process safety and risk management materially mitigates the potential for an unplanned release to the surrounding community. In the event there were to be a release or spill, trained facility personnel are available 24/7 to respond with portable monitors within the plant and along fence line areas as needed to determine if there are detectable levels of materials and to take other appropriate actions based on the monitor readings.

The KMe Facility also conducts joint drills with local emergency services and facility personnel. Last summer (August 18, 2022), KMe also had the local responders on-site to tour and learn important information about the facility. Affected employees are properly trained on the KMe Facility's Emergency Response Plan, which is reviewed annually and incorporated into site operations.

As mentioned previously, KII believes that strong communities are good for business. The company's core philosophy is anchored in a belief that for a business to survive and prosper long term, it must develop and use its capabilities to create sustainable value for both its customers and society. Working directly with local organizations is a key focus, and Koch is investing locally in the following four key areas.

Education: Supporting programs that give students and future workers the skills necessary for today's workplace. These programs include St. James Parish school initiatives, local scholarships, and Science, Technology, Engineering, Arts, and Math (STEAM) programs. For example, Koch has established two scholarships at River Parish Community College for students majoring in Industrial Trades, one for high school students and one for adult learners.¹⁸

Community Enrichment: Working with organizations that support community needs and allow for employee engagement through volunteering with various organizations. This includes financial and volunteer support for the Bonfire Festivals. An additional example, following Hurricane Ida in 2021, Koch and its

¹⁸ <https://www.rpcc.edu/news/1747275/rpcc-held-the-first-ever-rougarou-awards-breakfast>, accessed October 31, 2022.

employees engaged in hurricane relief efforts, which included supplying water, tarps, essential products, cooked meals and food items to community organizations.¹⁹

Entrepreneurship: Promoting entrepreneurial development while fostering economic and critical thinking skills, with a focus on initiatives that align with KII's Principled Based Management™ philosophy (as detailed in Section 3.1).

Environment: Assisting organizations that foster environmental responsibility and provide environmental learning opportunities (as detailed in Section 3.1).

Community outreach also includes engaging with local authorities and the community regarding ongoing facility operations and activities. The KMe Facility hosted a St. James Citizens Advisory Panel (CAP) meeting in April 2022 that was attended by industry representatives, local residents, elected officials and local emergency response personnel. Attendees were provided a tour of the facility. Additional community meetings were held in 2022 to discuss general community concerns, community views of industry, the KMe Facility, and the proposed Project and other changes addressed in the November 2022 Application. Specifically, Koch arranged two focus group meetings that were held in St. James in July 2022 to solicit feedback about the St. James Parish community in general, including the most significant impactors on the community, the most prominent concerns about the future of the community, and the greatest opportunities for the St. James Parish community moving forward. During the second meeting, feedback regarding the KMe Facility and its operations was also solicited. Some key pieces of feedback received at these meetings included that the community highly values the ability to engage with industry directly on an ongoing basis, and that the community values the support Koch has provided to the community (e.g., support after Hurricane Ida, donating school resources, and providing scholarships). As a result of this feedback, Koch is currently working to establish an ongoing community advisory board (CAB) between the KMe Facility and the community so engagement can occur on a routine basis. Feedback from the 2022 panel was discussed at a reconvening of the focus group members on January 17, 2023. Although only a few of the original focus group members attended, the discussion regarding initiation of a CAB was very well received.

Additionally, a Community Outreach Meeting was held on August 30, 2022, to provide local community members with information regarding the KMe Facility, including information regarding the proposed Project and Koch's plans to file a permit application. Further detail of that meeting as well as the earlier meetings is included in Section 2.11.3.3., Meaningful Involvement with Community.

¹⁹ https://www.csrwire.com/press_releases/744481-out-storm-koch-employees-resilient-spirit-helps-hurricane-stricken-neighbors, accessed October 31, 2022.

1.2 Description of Proposed Project and Air Permitting

Koch is seeking both to revise certain existing permit emission limits and authorize the construction of a project to increase the design production rate of the KMe Facility as described in the November 2022 Application and Addendum. A detailed description of the proposed Project is included in Part 2, Section 2.2 of the November 2022 Application. Koch has applied for both a PSD permit and a significant modification to Title V Permit No. 2560-00295 as further discussed below.

1.2.1 Title V Major Source for Criteria Pollutants and HAP/LTAP

The KMe Facility is currently considered a major source of hazardous air pollutants (HAP) because potential HAP emissions exceed the applicable major source threshold of 10 tons per year (tpy) for a single HAP (including methanol and n-hexane) and 25 tpy for all combined HAP. The facility is also a major source of Louisiana Toxic Air Pollutants (LTAP) pursuant to the LAC 33:III. Chapter 51 – Comprehensive Toxic Air Pollutant Emission Control Program. As a result of the emissions increases proposed with the November 2022 Application and Addendum, facility-wide potential to emit (PTE) for NO_x, CO, and VOC will exceed the major source threshold for criteria pollutants (100 tpy) under the Title V program.

1.2.2 PSD Review and Technical Analyses

The KMe Facility is located in St. James Parish, which is designated by the EPA as “attainment” or “unclassifiable” for all NAAQS. Therefore, LDEQ’s Prevention of Significant Deterioration (PSD) regulations (LAC 33:III.509) potentially apply for all PSD-regulated pollutants. Part 3, Section 3.1 of the November 2022 Application includes a discussion of the PSD regulations. An updated PSD applicability review for the KMe Facility was included in Section 2.2.1 of the Addendum. As further explained in Section 3.1 of the November 2022 Application and Section 2.2.1 of the Addendum, Koch has voluntarily and conservatively elected to go through PSD review as part of this permitting action.

When PSD applies, LAC 33:III.509 requires the utilization of BACT to minimize the emissions of regulated PSD pollutants emitted in significant amounts. Therefore, because Koch has voluntarily elected to go through PSD review, a BACT analysis was included in Part 4 of the November 2022 Application and Part 3 of the Addendum. The analysis covers all existing emissions units (no new emissions units are being proposed) with the potential to emit NO_x, CO, PM, PM₁₀, PM_{2.5}, VOC, and GHG. A BACT summary is also included in Section 2.3.1.3 of this EAS.

Similarly, a PSD Air Quality Impact Assessment (AQIA) was also conducted. As part of that assessment, facility-wide NO_x, CO, VOC, PM_{2.5}, and PM₁₀ emissions have been evaluated as the “net emissions increase” and modeled according to the protocol approved by LDEQ. The AQIA along with the approved protocol were

contained in Appendix E of the November 2022 Application. Revised AQIAs were submitted February 8, 2023 (February 2023 Revised AQIA) and June 1, 2023 (June 2023 Revised AQIA). A summary of the modeling results, which demonstrate that facility-wide emissions at the rates proposed will not cause or contribute to an exceedance of any air quality standard, is included in Section 2.3.1.2 of this EAS.

1.3 Water Permitting

Koch submitted a permit application to the LDEQ on May 18, 2023, to update the site's Individual LPDES Permit No. LA0127367, as further described in Section 2.3.4.1. The update addresses the increase in wastewater flowrates and loading at the final outfall that discharges to the Mississippi River due to increased production rates resulting from the Project. Increased production rates will result in additional process-generated wastewaters, increased blowdown waters from cooling and steam systems, and increased demineralized regeneration wastewater.

2. ENVIRONMENTAL IMPACTS

Have the potential and real adverse environmental effects of the proposed project been avoided to the maximum extent possible?

Yes. The KMe Facility was initially planned and designed such that the potential and real adverse environmental effects of the construction activities and operations were avoided to the maximum extent possible. As noted in Section 1, an EAS was completed for the initial construction of this facility as well as a follow-up EAS with the wastewater treatment plant (WWTP) installation. Both were reviewed and considered by LDEQ. The proposed Project, which is the focus of this EAS, is being planned and designed consistent with that same desired outcome. Specifically, construction and operation of the Project are planned such that they will not cause or contribute to an exceedance of any ambient air standard for any criteria pollutant or HAP/LTAP; an exceedance of any ambient water quality standard; further impairment to receiving water bodies; material change in waste management; excess noise, light, or odors; significant degradation of wetlands; or adverse impacts that would disproportionately affect environmental justice (EJ) communities. Key points that demonstrate the real and potential adverse environmental impacts of the proposed Project have been and will be avoided to the greatest extent feasible are outlined below.

2.1 Environmental Impacts Related to Project Site Location

The proposed Project will be performed at the existing KMe Facility in St. James Parish. The facility is located along the West Bank of the Mississippi River, about 30 miles south of Baton Rouge. The KMe Facility started up and was fully operational in the third quarter of 2021. As discussed in Section 5, the site selection for the location of the KMe Facility considered avoidance of environmental impacts including use of existing infrastructure where practical. Such infrastructure at the current site includes access to the Mississippi River for transportation and as a water source, proximity to existing highways and railroads, established electrical systems, and proximity to existing pipelines for feedstock natural gas and ethane. Locating in areas of existing infrastructure significantly minimizes environmental impacts.

The proposed Project will primarily increase the design production rate at the existing Facility, which is located in an area currently zoned as industrial, and will utilize the existing manufacturing facility as well as the existing infrastructure. Because the proposed Project is a modification to the existing site, the environmental impacts related to the Project site location will be minimal. Existing roads will be used for access to the extent possible. Furthermore, the Project will not adversely affect wetlands or the geology, topography, soils, vegetation, or food production in the vicinity. Releases of pollutants to soils from the KMe Facility are

unlikely due to the use of paved process areas and compliance with required spill containment and control regulations.

The air emissions increases resulting from the Project will meet all applicable technology standards. Importantly, the air quality analysis demonstrates that the emissions increases associated with the proposed Project will not cause or contribute to any exceedance of a federal National Ambient Air Quality Standard (NAAQS) or Louisiana Ambient Air Standard (LAAS). These ambient air standards have been established by EPA and LDEQ to be protective of human health with a margin of safety. A review of the changes in effluent resulting from the proposed Project will be conducted by LDEQ during the LPDES permitting review process. Effluent discharges are and will continue to be subject to stringent technology based LPDES permit limits and will not cause any exceedance of any ambient water quality criteria. Such ambient water quality criteria have been established by EPA and LDEQ to be protective of human health, aquatic life, and to ensure receiving waters meet designated uses.

2.2 Environmental Impacts During Construction Phase

As with the initial KMe Facility, construction of the proposed Project will incorporate best management practices (BMPs), engineering practices, and regulatory requirements to ensure that potential adverse environmental effects occurring as the result of construction activities are avoided to the maximum extent possible. The following BMPs, engineering practices, and regulatory requirements will be used and followed, as applicable, for the proposed Project.

- Safe work permits will be used to ensure work sites are returned to a clean and safe condition when work is completed.
- During the construction phase, air emissions will primarily consist of exhaust emissions from equipment and delivery vehicles. KMe Facility inspectors and construction supervisors will notify equipment operators and contractors if any equipment is observed to be performing poorly (e.g., as evidenced by dark exhaust emissions), and will require that the equipment be promptly repaired or replaced.
- Contractors will be required to develop and implement a dust management plan to minimize dust during construction. KMe Facility construction inspectors and contract construction supervisors will make observations regarding the contractors' compliance with the plan. The facility will require that roads and high traffic areas be wetted as necessary to minimize the generation of dust due to vehicle traffic.
- General trash and debris generated during construction will be containerized and disposed of offsite in accordance with applicable regulatory requirements. Used oil and lubricants from equipment maintenance will be

stored in closed containers and managed in accordance with all applicable rules and will be sent to used oil recycling contractors.

- Solid and/or hazardous waste generated during construction may include waste such as construction material debris, used solvents, paint wastes, used lubricants and oils, and general trash. Any waste generated from construction will be stored temporarily onsite in accordance with all applicable federal and state regulations prior to transport off-site to an authorized treatment, storage, recycling, or disposal facility.
- Construction related activities will be performed in accordance with applicable state requirements of LAC 33:IX.Chapter 9 for Spill Prevention and Control (SPC) as well as federal Spill Prevention, Control, and Countermeasure (SPCC) requirements of 40 CFR Part 112. In tandem, these regulations cover all liquids and solids listed under LAC 33:I.3931 as well as oils that could be immediately transported to waters of the state in event of a release. Such rules apply to any container storing 55 gallons or more of subject fluids that may be present on site either permanently or temporarily. The facility's existing SPCC/SPC Plan will be amended to include any additional subject containers brought on site as a result of the Project.
- Given the current Project scope, the impact to soil is minimal and is not anticipated to exceed acreage thresholds for requiring coverage under a construction stormwater general permit; however, a permit will be pursued if scope changes such that one is required. Regardless, the facility maintains an operational Stormwater Pollution Prevention Plan (SWPPP) which incorporates BMPs to protect surface water bodies that traverse the site or receive stormwater discharges from the site. The SWPPP is a "living document" that will be updated as construction progresses and for operation of the facility once the Project is completed, to ensure appropriate and effective management practices are applied as site conditions change.

2.3 Environmental Impacts During Operations

2.3.1 Air Quality

Potential adverse environmental effects from air emissions increases resulting from the Project will be avoided, minimized, or mitigated to the maximum extent practicable. Although this EAS is in support of the proposed Project, Koch has voluntarily and conservatively evaluated total facility-wide emissions (not just the proposed emissions increases) by conducting an air quality impact assessment (AQIA) pursuant to PSD regulations, which are designed to protect public health and welfare and ensure that economic growth occurs in a manner consistent with the preservation of existing clean air resources (i.e., without allowing significant deterioration of existing good air quality). That AQIA demonstrates that total facility-wide emissions will not cause or contribute to an exceedance of any National

Ambient Air Quality Standards (NAAQS) and thus will not have a significant impact on air quality.

As part of the voluntary and conservative PSD review, Koch also performed a Best Available Control Technology (BACT) evaluation for all emission sources authorized by the permit. In addition to meeting BACT, the KMe Facility emission sources will meet all applicable New Source Performance Standards (NSPS) and Maximum Achievable Control Technology (MACT) Standards, and all state emissions limitations and work practice requirements.

2.3.1.1 Local Ambient Air Monitors

LDEQ operates a network of ambient monitoring stations approved by EPA that continually monitor and record ambient concentrations of certain air pollutants. For the criteria pollutants evaluated as part of the AQIA (see Appendix E of the November 2022 Application, February 2023 Revised AQIA, and June 2023 Revised AQIA), the following are the closest monitoring stations to the KMe Facility that monitor each pollutant.²⁰

Table D-1: LDEQ Monitoring Stations Closest to the KMe Facility	
Monitoring Station	Pollutants Monitored
Geismar	PM _{2.5}
Dutchtown	NO _x
Convent	Ozone
Capitol	CO, PM ₁₀

Monitored concentrations of criteria pollutants at these stations show that the design value for each pollutant is less than the respective NAAQS. The monitored design values in the form of the NAAQS²¹ over the 3-year period 2019-2021²² for each relevant pollutant and averaging period are shown below and compared to the NAAQS.

²⁰ LDEQ's Air Assessment and Planning Division won a competitive EPA air-monitoring grant announced in November 2022 that will provide funding to add two temporarily located community (TLC) monitors, including one in St. James Parish.
(<https://deq.louisiana.gov/assets/docs/DiscoverDEQ/2022/DiscoverDEQNewsletter-Issue131-December2022.pdf>, accessed Feb. 14, 2023.)

²¹ The appropriate "rank" of data chosen for comparison to the NAAQS depends on the pollutant and averaging period. For example, for the 1-hour CO data, the appropriate choice of data for comparison to the NAAQS is the second-highest observation recorded over the year. This is what is referred to in air quality analyses as the "form of the NAAQS".

²² Evaluation of ambient air data versus the NAAQS requires an average of the most recent three years of the appropriate rank of data. This 3-year average has been calculated and listed in each case.

Table D-2: LDEQ Monitoring Station Monitored Values Compared to the NAAQS				
Pollutant	Averaging Period	Units	Monitored Design Value	NAAQS
CO	1-Hour	µg/m ³	1,610	40,000
	8-Hour	µg/m ³	1,266	10,000
NO ₂	1-Hour	µg/m ³	56.4	188
	Annual	µg/m ³	11.5	100
Ozone	8-Hour	µg/m ³	116	137
PM _{2.5}	24-Hour	µg/m ³	17.6	35
	Annual	µg/m ³	7.9	12.0
PM ₁₀	24-Hour	µg/m ³	53	150

2.3.1.2 Air Quality Impact Assessment (AQIA)

The AQIA presented in Appendix E of the November 2022 Application, and revised in February 2023 and June 2023, evaluated whether emissions from the KMe Facility would cause or contribute to an exceedance of the applicable National Ambient Air Quality Standards (NAAQS) and PSD increments. The NAAQS include both primary standards, which are designed to protect the health of sensitive populations such as asthmatics, children and the elderly, as well as secondary standards, which are designed to protect the environment. The NAAQS is a maximum allowable concentration "ceiling." A PSD increment, on the other hand, is the maximum allowable increase in concentration that is allowed to occur above a baseline concentration for a pollutant. The baseline concentration is defined for each pollutant and, in general, is the ambient concentration existing at the time that the first complete PSD permit application affecting the area is submitted. LTAP emissions increases, specifically ammonia and methanol emissions increases from the Project, were also evaluated in the AQIA.

St. James Parish is designated as "attainment" or "unclassifiable" for all NAAQS, meaning the air quality meets these standards. PSD review was completed for the following pollutants emitted from the KMe Facility: NO_x, CO, PM/PM₁₀/PM_{2.5}, VOC, and GHG.

Rather than evaluate just the Project emissions increases, Koch has conservatively evaluated total facility emissions of each criteria pollutant where such emissions exceed the PSD significance threshold. The AQIA is performed primarily through conducting computer modeling of the dispersion of air emissions from the facility. PSD Significance Modeling is the first step in conducting the PSD AQIA. The results

of the significance modeling determine whether the maximum off-site impact resulting from the KMe Facility exceeds the PSD significant impact level (SIL) for any NAAQS. For each NAAQS pollutant and averaging period for which the PSD significance modeling results exceed the SIL, full NAAQS modeling and PSD Increment modeling (where applicable) are performed. These more refined analyses require the development of an inventory of offsite emissions sources (i.e., other facilities) that affect the air quality in the area included in the modeling. The area of the offsite inventory is determined during the significance modeling and inventory data is provided by LDEQ. The significant impact analysis modeling results are summarized in Table D-3.

Table D-3: Significant Impact Analysis – Modeling Results				
Pollutant	Averaging Period	Maximum Modeled Concentration^{a,b} (µg/m³)	SIL (µg/m³)	> SIL?
CO	1-hour	1453.56	2,000	No
	8-hour	441.48	500	No
NO ₂	Annual	0.40 ^c	1	No
	1-hour	13.47 ^c	7.5	Yes
PM ₁₀	Annual	0.16	1	No
	24-hour	1.32	5	No
PM _{2.5} ^d	Annual	0.11	0.2	No
	24-hour	1.01	1.2	No
Notes: a. For the annual averaging period, modeled concentrations represent the maximum annual average concentration over five years. b. For the short-term averaging periods, modeled concentrations represent the maximum highest first high (H1H) value over five years, except for the 1-hour NO ₂ and 24-hour PM _{2.5} , which represent the highest five-year average. c. Tier 3 (OLM) was used for 1-hour modeling. Tier 1 (full conversion) was used for annual modeling. d. The modeled concentrations for PM _{2.5} include secondary concentrations calculated using the MERP methodology as presented in Section 2.3 of the AQIA.				

The only pollutant and averaging period for which modeling indicated that the SIL was exceeded is 1-hour NO₂. Thus, refined modeling for 1-hour NO₂ was required. (There is no PSD Increment associated with 1-hour NO₂; therefore, PSD increment analysis is not required.) Refined modeling including emissions from nearby sources was performed to assess impacts for the 1-hour NO₂ NAAQS; the results of the NAAQS analysis are shown in the following table.

Table D-4: Full-Impact NAAQS Analysis Results						
Pollutant	Averaging Period	Modeled Concentration ($\mu\text{g}/\text{m}^3$)	Background Concentration ($\mu\text{g}/\text{m}^3$) ^a	Modeled + Background ($\mu\text{g}/\text{m}^3$)	NAAQS ($\mu\text{g}/\text{m}^3$)	> NAAQS?
NO ₂	1-hour	126.0	56.4	182.4	188	NO
Notes: a. The background concentration for 1-hour NO ₂ was based on the 2019-2021 design values for the Dutchtown Station (AQS # 22-005-0004).						

In summary, the PSD modeling demonstrates that potential impacts from the KMe facility-wide emissions are below the SIL except for 1-hr NO₂. For 1-hr NO₂, the refined modeling results do not exceed the NAAQS; therefore, the AQIA demonstrates that emissions from the facility will not cause or contribute to exceedance of any NAAQS or PSD increment and thus will not result in significant deterioration of ambient air quality.

The Louisiana Ambient Air Standards (LAAS) for ammonia and methanol were also considered as part of the AQIA. Because prior permitting actions for the KMe Facility have included AQIAs that evaluated impacts from facility LTAP emissions, the AQIA has evaluated LTAP emissions increases proposed in the November 2022 Application and the Addendum (note, however, that portions of the EJ analysis included in Section 2.11 of this EAS are based on total LTAP emissions from the facility). Per LDEQ LTAP modeling guidance, ambient modeling is assessed in steps. In Step 1, emissions from the facility alone are modeled and if the resulting modeled concentration is $\leq 7.5\%$ of the LAAS, no further modeling is required. If Step 1 modeling shows that the modeled concentration is $> 7.5\%$, then additional modeling is required. The LTAP analysis modeling results are summarized in Table D-5. Modeled concentrations were below 7.5% of the LAAS.

Table D-5: LTAP Analysis – Modeling Results					
Pollutant	Averaging Period	Maximum Modeled Concentration ($\mu\text{g}/\text{m}^3$)	LAAS ($\mu\text{g}/\text{m}^3$)	Modeled Concentration as Percent of LAAS	>7.5%?
Ammonia	8-hour	44.04	640	6.9%	No
Methanol	8-hour	72.02	6,240	1.2%	No

Additional analyses were conducted in accordance with the PSD requirements of LAC 33:III.509.O and P. These analyses evaluated the potential air quality impacts

projected for the area as a result of general commercial, residential, industrial and other growth associated with the KMe Facility as well as the potential for impairment to soils, vegetation, and visibility as a result of the KMe Facility and general commercial, residential, industrial and other growth associated with the facility. An analysis of the potential for impacts on nearby Class I areas was also performed. Per the growth analysis, the Project is not expected to result in significant air quality impacts as a result of associated general commercial, residential, industrial and other growth because such growth is expected to be minimal. The analysis of soil and vegetation impacts demonstrates that the KMe Facility emissions will not result in harmful effects to soils and vegetation because emissions from the facility will not cause or contribute to an exceedance of any secondary NAAQS.²³

A Level 1 visibility screening was conducted that showed that the level of proposed facility-wide emissions will not yield significant impairment to local visibility. Finally, the potential for Class I area impacts resulting from the KMe Facility was considered. The review determined that neither a notification to the Federal Land Manager nor an evaluation of Class I Air Quality Related Values is required. A detailed Air Quality Impact Assessment Report was included in Appendix E to the November 2022 Application, and revised in February 2023 and June 2023.

2.3.1.3 BACT Summary

The KMe Facility will minimize any potential impact from air emissions associated with not just the proposed Project but also with operation of the overall facility by voluntarily applying BACT to all emission units authorized by the permit. The detailed BACT analysis is presented in Part 4 of the November 2022 Application and Part 3 of the Addendum. Applying BACT means that a facility is controlling emissions to the extent demonstrated to be technically feasible and economically reasonable, without causing adverse energy and environmental impacts.

Under the PSD program as voluntarily and conservatively applied to this permitting action, Koch has proposed BACT for each emissions unit at the facility to minimize the emissions of each PSD-regulated pollutant for which the facility potential to emit will be greater than or equal to the pollutant-specific PSD “significance” level following the proposed Project. BACT may be an add-on control device or a design, equipment, work practice or operational standard. The BACT determination process for each emissions unit involves identifying all available and technically feasible emission control options for each pollutant and, selecting as BACT, the option that will achieve the maximum degree of reduction after consideration of cost and any associated economic, energy, or environmental impacts that would result from

²³ United States Environmental Protection Agency. New Source Review Workshop Manual: Prevention of Significant Deterioration and Nonattainment Area Permitting. Web. 1990. <https://www.epa.gov/sites/production/files/2015-07/documents/1990wman.pdf>, accessed October 31, 2022.

application of the control option. A technically feasible technology that is more effective at reducing emissions can be rejected as BACT in favor of a less effective control option if it is determined that the more effective technology is not cost effective or would cause economic, energy or environmental impacts that render it undesirable. The permit applicant is responsible for conducting and documenting the BACT analysis and presenting the proposed BACT selection for each emissions unit-pollutant combination to LDEQ in the permit application. Evaluations of capital cost, operating costs, and any energy, environmental or economic impacts must be included if any top-ranked technically feasible control options are rejected as BACT. The minimum BACT standard that must be used ("floor") is either an applicable Maximum Achievable Control Technology (MACT) Standard or a New Source Performance Standard (NSPS). MACT and NSPS standards are federal regulations intended to limit emissions of hazardous and criteria air pollutants, respectively, from facilities in various manufacturing categories or defined emission units.

The following summarizes the proposed controls and work practice standards for the KMe Facility emission sources to meet BACT (see Part 4 of the November 2022 Application and Part 3 of the Addendum for the detailed BACT analysis):

- The steam methane reformer (SMR) and boiler (BLR) are equipped with selective catalytic reduction (SCR), which is the top-ranked control option for NO_x; they are also equipped with an oxidation catalyst, which is the top-ranked control option for both CO and VOC. Good combustion practices are used to minimize PM, PM₁₀ and PM_{2.5} emissions, and energy efficiency measures, including good combustion practices, and clean burning fuels, are used to minimize GHG emissions. Also, the Lurgi MegaMethanol® process is inherently carbon efficient relative to other methanol technologies, as described in the BACT analysis.
- The flare, used as a control device for various process vents, will be operated in accordance with 40 CFR 60.18 (NSPS) and 40 CFR 63.11 (MACT) for control of VOC emissions.
- Truck and rail loading vapors are routed to a vapor control unit (VCU) for destruction of VOC emissions; use of natural gas as fuel, energy efficiency, and good operating practices minimize combustion emissions, including GHGs, from the VCU.
- The wastewater treatment plant (WWTP) operates in compliance with the stringent MACT requirements of 40 CFR Part 63, Subpart G.
- The fugitive components are managed with a leak detection and repair (LDAR) program in accordance with NSPS 40 CFR 60, Subpart VVa and MACT 40 CFR 63, Subpart H to reduce VOC emissions.

- Fugitive components containing greater than 5% methane or carbon monoxide will be managed with an LDAR program to reduce GHG and CO emissions.
- Emergency engines, generators and fire water pumps comply with applicable NSPS and MACT standards, including work practices.
- The cooling tower uses high-efficiency drift eliminators for control of particulate matter emissions. The cooling tower is designed as direct-contact and monitoring and repair of leaks is performed in accordance with the MACT standards of 40 CFR 63, Subpart F to minimize VOC, CO, and GHG emissions from HON-regulated heat exchange systems.
- The methanol tanks and slop vessel are equipped with vapor collection and are routed to a scrubber and flare, respectively, to minimize VOC emissions. As noted, the flare will comply with applicable NSPS and MACT standards.
- Terminal tanks are equipped with internal floating roofs to control VOC emissions.
- The gasoline tank is equipped with submerged fill pipe to control VOC emissions.

2.3.2 Greenhouse Gas Emissions

The Project consists of a number of activities with the collective primary goal of increasing utilization of the existing KMe Facility assets and achieving a 25% increase of the KMe Facility design production rate. Accordingly, the Project will leverage the existing energy and carbon efficiency that has been integrated into the KMe Facility's Combined Reforming process design as described below.

Energy and carbon efficiency have been integrated into the Combined Reforming (SMR+ATR) process design. Specifically, with Combined Reforming, adding an AutoThermal Reactor (ATR) downstream of steam methane reforming (SMR) optimizes the carbon monoxide to hydrogen stoichiometry/ratio (key components to produce methanol), and thus carbon efficiency. As a result, the Combined Reforming process design is inherently carbon efficient converting nearly 80% of the carbon entering the facility into methanol (final product).²⁴ This contrasts significantly with other industrial processes that leverage SMR, such as on purpose Hydrogen (H₂) plants which typically convert all carbon from feedstocks/fuels to carbon dioxide emissions (process is selective for H₂ product). Natural gas-based methanol production via Combined Reforming is estimated to emit 10-20% of the GHG emitted by coal-based methanol produced internationally and is also more carbon efficient than more traditional SMR based natural gas to methanol production common in U.S. and other global markets. According to the

²⁴ "Table 3: Overall Carbon Balance of the Plant": Demonstrating Large Scale Industrial CCS through CCU – A Case Study for Methanol Production – ScienceDirect.

International Panel for Climate Change (IPCC) Guidance for National Inventories summarized in IPCC's Emission Factor Database (EFDB), the carbon emissions intensity of the Lurgi MegaMethanol[®] process utilized at the KMe Facility is roughly half that of conventional natural gas-based SMR methanol production on a MT CO₂/MT of methanol basis.²⁵

In its September 2022 Net Zero Tracking Report on Chemicals²⁶, the International Energy Agency (IEA) highlights the importance of private and public sector investments in energy efficiency and conversion from coal- to natural gas-based chemical processing, stating:

"The coal-based chemical industry, particularly prevalent in China, poses a significant environmental challenge, as emission intensities are considerably higher than in natural gas-based production. Methanol can be produced far more affordably from coal in China, which has in turn facilitated the large-scale (and rapidly growing) route of producing plastics from coal.... Increased energy efficiency – achieved both through incremental improvements to existing methods and step changes resulting from switching to fundamentally more efficient methods (e.g. from coal- to natural gas-based processing) is also important in the Net Zero Scenario."

Koch's continued investment in the KME Facility's Combined Reforming process is consistent with IEA's stated step change goal noted above as it not only reflects investment in low carbon feedstock-based methanol production, but also investment in the Combined Reforming process design, which is fundamentally more carbon efficient than other more traditional natural gas-based methanol production that relies solely on SMR.

The fraction of carbon that is not converted into product is emitted as carbon dioxide at low concentrations in the post combustion exhaust stream. Greenhouse gas emissions are regulated under PSD regulations, thus utilizing carbon capture and sequestration (CCS) to further reduce GHG emissions was evaluated as part of the BACT analysis (see Part 4 of the November 2022 Application).

For the KMe Facility, a CCS process would include equipment to capture the carbon dioxide from the dilute combustion stream. This can be accomplished by running the combustion gases through a tower (vessel) where they come into contact with an amine solution that preferentially absorbs the carbon dioxide while the rest of the gases are emitted. Then a separate process would use heat to remove the relatively pure carbon dioxide as a concentrated stream, essentially regenerating the amine to be used again to capture CO₂ in a recycle loop. The carbon dioxide stream would then be pressurized and transported to a location where it could be

²⁵ https://www.ipcc-nggip.iges.or.jp/EFDB/find_ef.php, accessed October 31, 2022.

²⁶ <https://www.iea.org/reports/chemicals>, accessed October 31, 2022.

injected into a geologic formation where it would be sequestered, unless sequestration is available on the facility property. Each of these processes (capture, concentration, compression, transport, and sequestration) requires significant capital equipment/investment and energy to pump fluids, compress them, heat them (to remove CO₂ from the amine), and ultimately sequester them in an underground cavern. Additionally, as noted in more detail in the BACT analysis presented in Part 4 of the November 2022 Application, this process becomes a significant GHG producer as well and, therefore, reduces overall carbon capture efficiency unless the system is sized to not only capture emissions from the facility, but also from the additional boiler emissions associated with the steam generation needed to regenerate the amine, which would add further significant cost.

To further evaluate the technical feasibility and cost effectiveness of CCS technology specifically for the KMe Facility, Koch contracted two outside engineering firms, one to conduct preliminary engineering to estimate the capital expenditures, annual utilities and operating expenditures, and develop equipment lists for the capture and compression components of CCS (the Capture and Compress Study), and the other to evaluate the geological fit for sequestration below the site property (the Sequestration Study). The Capture and Compress Study determined that the dilute post combustion streams could likely be captured via amine but would require approximately 5 million MMBtu of natural gas firing annually for the generation of steam to regenerate the amine resulting in additional CO₂ and traditional criteria pollutant emissions. An electricity-based heat pump option was considered, which would use electricity rather than a natural gas fired boiler to regenerate the amine. However, this option was found to be both less cost efficient than a natural gas fired boiler and not commercially demonstrated at the size required.

The Sequestration Study evaluated cost but also focused on the geological fit for sequestration below site property. While the Sequestration Study found the geological conditions at the site to be a strong fit for sequestration potentially making onsite sequestration feasible, the Capture and Compress Study found that capture and compression of the available post combustion, dilute and low-pressure CO₂ streams dominate the economic assessment and proved consistent with BACT precedent – i.e., that CCS is not a cost effective option for the KMe Facility's process. The findings were also directionally consistent with the recently published Louisiana State University (LSU) study on Carbon Capture potential in Louisiana's Industrial Corridor.²⁷ That study quickly ruled out low quality industrial candidates with dilute, post combustion streams such as the KMe Facility and found that CCS was not likely economically feasible for even the most ideal industrial sites with

²⁷ https://www.lsu.edu/ces/publications/2019/doe_carbonsafe_02-18-19.pdf, accessed October 31, 2022.

more than 10 times the emissions and availability of concentrated CO₂ streams, noting:

"However, industrial CCS is expensive. The capture component of an industrial CCS project is the largest individual cost item and can account for as much as half of an industrial CCS investment (Simbolotti, 2010). Industrial CCS investment costs, however, are a little more nuanced than those associated with coal-fired power plants since they are driven in part by the CO₂ emissions purity and, as noted earlier, the partial pressure of the CO₂ source. Higher CO₂ concentrations and pressures allow for capture systems with lower operational and capital costs."

As for transportation costs associated with offsite sequestration, they are a very small portion of total annualized cost given the significant capital and operating costs associated with capture.

As noted above, the inherent carbon efficiency of the combined reforming process (SMR with ATR), which has a natural incentive to maximize conversion of feed carbon into carbon monoxide building blocks for methanol production, does not result in waste streams rich in CO₂. The KMe Facility continues to evaluate advances in the technology and potential future market incentives to competitively implement CCS and plans to meet with the LDEQ periodically to share learnings.

BACT for greenhouse gas emissions will be implemented in the form of energy efficient operations and maintenance that will be made enforceable through a permit condition limiting emissions of CO₂e per ton of methanol produced on an annual basis,²⁸ which is similar to what has been determined as BACT for other chemical processing sites, including methanol facilities. The proposed two-tiered limit is reflective of the inherent carbon efficiency of KMe's Combined Reforming process and will ensure energy efficient operation. Furthermore, the limit

²⁸ As noted above, the IEA has recognized that the increase in energy efficiency achieved through step changes resulting from switching to fundamentally more efficient methanol production methods, including conversion from coal- to natural gas-based methanol production, is key to GHG emissions reductions goals. Therefore, while the Project itself will result in a relatively modest increase in GHG gas emissions from the KMe Facility, it is very possible that the Project increase will be more than offset by global reductions resulting from the displacement of less efficient, coal-based methanol production and/or more traditional natural gas-based methanol production that relies solely on SMR. Moreover, even if only the direct Project GHG emissions increases were considered, quantifying any potential impacts from such emissions is not possible and, therefore, has not been attempted. As EPA states in its PSD and Title V Permitting Guidance for Greenhouse Gases, "[C]limate change modeling and evaluations of risks and impacts of GHG emissions currently is typically conducted for changes in emissions orders of magnitude larger than the emissions from individual projects that might be analyzed in PSD permit reviews. Quantifying these exact impacts attributable to the specific GHG source obtaining a permit in specific places is not currently possible with climate change modeling." PSD and Title V Permitting Guidance for Greenhouse Gases, EPA-457/B-11-001, March 2011 at p. 42 (available at <https://www.epa.gov/sites/default/files/2015-08/documents/ghgguid.pdf>, accessed October 28, 2022).

recognizes that onsite steam generation results in higher emissions of CO₂e per ton of methanol produced compared to sites that purchase steam from an offsite supplier.

As noted in the BACT analysis, Koch will also be implementing a new leak detection and repair (LDAR) program for monitoring and minimizing leaks from piping components in methane (natural gas) service to reduce fugitive GHG emissions.

Additionally, as noted in Section 1.1.1.1, KII continues to focus on energy efficiency and energy intensity, which has resulted in recognition by EPA with corporate Energy Star Partner of the Year award in 2022. Consistent with KII's focus on energy efficiency, Koch has invested in and is in the process of commissioning a steam condensing electrical generation turbine to leverage excess process steam (otherwise released to atmosphere) to reduce grid electricity consumption by 30-50% and is working to optimize up to 90% reduced grid electricity consumption under normal operation. Leveraging EPA's latest regional Egrid factors, a 50-75% annualized reduction in purchased electricity would reduce KMe's Scope 2 (indirect) GHG emissions by 15,000-25,000 Metric Tons CO₂e/year plus approximately 5% associated distribution line losses which would be avoided with onsite power generation.

2.3.3 Water Usage

The KMe Facility obtains the water it uses for process water, utility water, and fire water directly from the Mississippi River through an intake structure. The Project will result in an increase in water demand of up to 25%, but overall demand post Project will remain within the currently authorized limit of 10.8 MMgal/day (actual use has averaged approximately 4MM gal/day with peak withdrawal of 5.6 MMgal/day). The KMe Facility potable water is supplied from a public utility. From an environmental impact standpoint, compared to potential concerns related to groundwater aquifer resource availability, there are no identifiable concerns with the industrial use of Mississippi River water.

Section 316(b) of the Clean Water Act requires EPA to issue regulations governing the design and operation of water intake structures (the pipe and screens in the river connected to water supply pumps), in order to minimize potential adverse impacts to aquatic life. As part of the initial installation and commissioning of the site, KMe was required to perform testing on the facility's water intake structure pursuant to Section 316(b) to ensure that aquatic life would not be adversely impacted by the water intake structure. This initial testing was completed at maximum expected water intake flowrates and the results showed no adverse effects. To ensure no adverse effects during facility operation, an enforceable limit on the intake velocity across the intake screens was established. With this Project there will be an incremental increase of roughly 1 MMgal/day in water demand to supply additional cooling water and boiler feed water makeup (required to meet the

increased steam demand). However, the increase in water demand will not require any physical modifications to the intake structure or installation of any additional pumps. Therefore, no additional testing is expected to be required since KMe will continue to meet the existing intake velocity limit.

2.3.4 Wastewater and Stormwater Discharges

2.3.4.1 Wastewater

In Louisiana, the National Pollutant Discharge Elimination System (NPDES) program has been delegated to LDEQ, with federal oversight, and is called the LPDES permitting program. The KMe Facility operates under LPDES Permit Number LA0127367.

The facility discharges into two waterbodies, the Mississippi River (subsegment 070301) and the St. James Canal (subsegment 020101). The Mississippi River segment receiving the discharges is not impaired (i.e., it does not exceed any ambient water quality standard). Prior to discharge, the process wastewater streams are sent to a wastewater treatment facility, which includes equalization, pH adjustment, biological treatment, and clarification and is designed and operated to meet the stringent federal and state wastewater discharge requirements of the LPDES permit. The treated discharges to the Mississippi River are also subject to LPDES Technology Based Effluent Limits (TBELs) commensurate with the nature of the facility's operations, specifically the requirements under 40 CFR Part 414, Subparts F & I for the Organic Chemicals, Plastics and Synthetic Fibers production category. The treated process wastewater is combined with other wastewater streams, including boiler and cooling tower blowdown, demineralized regeneration wastewater, and return waters from the feed water treatment plant clarifier systems prior to discharge to the Mississippi River.

Non-process area stormwater, hydrostatic test water and other miscellaneous waters are discharged to the St. James Canal in accordance with EPA and Louisiana regulations, guidance and/or pertinent general permits. The St. James Canal is impaired for nitrates, phosphorous, fecal coliform, and dissolved oxygen, but the LDEQ has determined that the wastewater discharges to the canal from the KMe facility are protective of human health, aquatic life, the environment and designated uses of the St. James Canal. The proposed Project will not impact discharges to the St. James Canal.

The Project will result in an increase in production rates, which will result in an increase in the volume of process-generated wastewaters sent to the wastewater treatment facility as well as an increase in the volume of blowdown waters from cooling and steam systems, demineralized regeneration wastewater, and return waters from the feed water treatment plant clarifier systems. The increase in volume of wastewater flow will result in a commensurate increase in volume of

wastewater discharged to the Mississippi River. While a change in concentration of pollutants in the wastewater discharge is not anticipated, there will be an associated increase in pollutant loading (lb/day) from the final outfall that discharges to the Mississippi River due to the increase in discharge volume. An update to the KMe Facility's LPDES permit was requested to account for these changes and the KMe Facility will ensure that the facility's WWTP is designed and operated to comply with all permit conditions. As part of this permitting process, KMe also requested changes to the LPDES permit to better reflect the as-built operation of the KMe Facility. These changes included narrative updates, updates to represented streams routed to each permitted outfall, updates to the layout and location of permitted stormwater outfalls, and other minor changes.

The site will continue to perform annual Whole Effluent Toxicity (WET) testing on the final outfall to the Mississippi River. This testing is in place to ensure that wastewater effluent discharged into the Mississippi River does not negatively impact aquatic ecosystems.

2.3.4.2 Stormwater Pollution Prevention Plan (SWPPP) Including Best Management Practices (BMPs)

KMe recognizes how critical the water quality of the nearby St. James Canal is to area residents using the waterway in a variety of ways. As a result, KMe is committed to responsibly managing its permitted discharge of stormwater to the St. James Canal. Stormwater associated with industrial activity at the site is managed and monitored in accordance with a Stormwater Pollution Prevention Plan (SWPPP) as required under the permit LA0127367. The SWPPP incorporates Best Management Practices (BMPs) to protect nearby surface water bodies that traverse the site or receive stormwater discharges from the site. BMPs can include both structural and non-structural measures. The SWPPP is a "living document" and is updated routinely to ensure appropriate and effective management practices are applied as site conditions change.

The SWPPP also ensures that the potential adverse environmental effects associated with the generation of solid and/or hazardous wastes resulting from spills of oil or hazardous substances are minimized to the maximum extent possible. Some areas of the facility have very specific controls/BMPs in place due to the nature of the activity performed and to protect the quality of the stormwater leaving the site. As listed in the SWPPP, these specific BMPs and/or good housekeeping measures include, but are not limited to:

- Containment dikes provided for chemical storage tanks, with visual inspections prior to release of accumulated stormwater;
- Minimization of exposed bare soils;

- Wastes and chemicals are stored in covered containers or designated storage areas under roofing to prevent contact with stormwater;
- Immediate cleanup of spills prior to next storm event; and,
- Maintenance operations conducted under roof where practicable, and maintenance related fluids stored indoors or within covered containers.

If necessary, the KMe Facility will obtain coverage under an LPDES General stormwater permit for construction activities associated with the proposed Project. Regardless, Koch will update its existing SWPPP as necessary to ensure appropriate and effective best management practices are applied and implemented to address activities during construction as well as to address post-project changes related to operations.

To minimize the quantity of stormwater leaving the KMe Facility, the site's original footprint includes permeable surfaces in areas of low contamination potential. While impermeable surfaces are utilized directly in the process block areas to provide proper containment, the outlying areas are majority gravel and/or grass, thus reducing the runoff coefficient and thus the volume of runoff that leaves the site. The proposed Project will have minimal impact to impermeable surfaces and therefore minimal impact to the quantity of stormwater runoff.

The containment areas in the process block have a higher potential for contamination and therefore the site utilizes a "first-flush" protocol to protect against potentially contaminated stormwater being sent directly to offsite waters. This protocol requires stormwater that is generated within the process block area from the first inch of rainfall to be collected in a separate, segregated sewer system (the Potentially Contaminated Sewer System, or PCSS) and to be routed to the onsite WWTP for treatment prior to discharge to the Mississippi River. After the first inch of rainfall, to prevent overwhelming the wastewater treatment plant, the PCSS is diverted to a lined pond that can discharge to the Mississippi River (this stream is not discharged to the St. James Canal). Note that after the first inch of rainfall, the potential for contamination is low and, therefore, treatment at the WWTP is not necessary.

2.3.4.3 Spill Prevention, Control, and Countermeasure (SPCC) Plan

The KMe Facility operates under an SPCC/SPC Plan in accordance with requirements of 40 CFR 112 and LAC 33:IX.Chapter 9 to aid in the prevention of spills of subject fluids at the facility. This includes routine inspection of containers of stored oils and chemicals to ensure that all are in working order with no signs of maintenance needs or imminent failure. The facility's existing SPCC/SPC Plan will be amended to include any Project related equipment, as necessary.

2.3.5 Solid and Hazardous Waste

The KMe Facility is registered with LDEQ as a Small Quantity Generator (SQG), as the facility produces less than 2,200 lb/month of hazardous waste. This is not anticipated to change as a result of the Project. The KMe facility does not own or operate a hazardous waste treatment, storage or disposal unit on-site. All hazardous wastes are properly managed under the generator rules and are manifested for off-site treatment, disposal or recycle.

Koch is also registered with the LDEQ as a generator of industrial solid wastes (G-093-13828). Koch complies with the LDEQ solid waste regulations by appropriately managing solid wastes prior to off-site disposal and by submitting annual generator reports.

Solid and hazardous waste minimization practices are implemented facility-wide through a variety of best management practices, from generation minimization to reuse where possible.

Wastes generated during normal operation of the facility are characterized, transported and disposed of in compliance with all applicable solid and/or hazardous waste regulations. The KMe Facility produces a number of routine “wastes” and also materials that are reused/recycled, including:

- Used Oil that is shipped offsite and reused in compliance with used oil regulations (thus not considered a “waste”)
- Non-Hazardous Industrial Solid Waste
 - Oily rags and debris wastes, such as clean up from oil spills, absorbent pads, contaminated gravel and debris
 - Plant water treatment lab testing wastes, which do not contain methanol
 - Wastewater Treatment Plant centrifuge cake, which is a solid waste and stored in a lined roll-off box prior to off-site disposal
- Hazardous Waste
 - Methanol lab testing wastes
 - Off-Spec methanol (when <5,000 BTU/lb) waste, such as methanol spill clean ups and methanol purges
 - Aerosol can liquid waste/unpunctured aerosol cans
 - Waste paint, coatings, and thinner waste
- Universal waste
 - Batteries (non-alkaline), lamps/bulbs (i.e., fluorescent), mercury-containing equipment, and pesticides

All KMe Facility wastes are managed in appropriate tanks or containers located on concrete surfaces so as to preclude any potential for impacts to soils and underlying groundwater resources. After being containerized, industrial wastes are taken to the onsite Central Accumulation Area (CAA) and stored properly until disposal. The proposed Project is not anticipated to generate any new wastes, change the facility's generator status from SQG, or require any updates to current waste management practices. Wastes generated during construction of the Project will be managed as described above in accordance with applicable regulations.

2.4 Noise, Odor, Light, and Aesthetics – Minimization of Impacts

The methanol manufacturing process is not prone to excessive noise that would create a public nuisance, and standard operational procedures have been implemented to minimize any noise from railcar coupling and decoupling. Compliance with OSHA noise standards for employee hearing protection serves to minimize noise as well. Through these and other measures, the KMe Facility complies with generally accepted noise ordinance standards. The proposed Project will be executed (constructed and operated) within the existing facility, thus within the current operating footprint, with no discernable change in noise level. Furthermore, the KMe Facility implements standard practices for hearing conservation for all employees and contractors. The standard practices set forth criteria used to develop safe work practices necessary to minimize the impact of exposure to workplace noise and that outline procedures to anticipate the potential for hazardous exposures, control exposures, and verify the effectiveness of control measures.

No offensive odors are associated with current operations, nor anticipated in connection with the Project. Notably, the odor threshold for methanol is approximately 2,000 ppm.²⁹ The modeling analysis conducted as part of this permit action predicted a maximum increase in ground level concentration of methanol at or beyond the property boundary of 0.072 ppm. In the event an incident occurs resulting in a release or spill that leads to detection of odors, the KMe Facility will use an air monitoring team trained to use air monitoring instruments to determine if there are detectable levels of odors at the fence line. Data will be gathered to investigate and take any necessary corrective actions.

Facility area lighting required for safe, 24/7 operations of the facility is consistent with the industrial zoning for the site³⁰. This includes the process area lighting as well as lighting on the flare and other elevated structures. Minimization of non-routine flaring is a priority both from the standpoint of minimizing associated emissions and visual aesthetics and is inherently driven by the desire to minimize

²⁹ <https://kochfertilizer.com/Communities/kochfertilizer/getdsds.ashx?ID=1150>, accessed October 31, 2022.

³⁰ <https://www.stjamesla.com/DocumentCenter/View/690/Land-Use-Map-PDF>, accessed October 31, 2022.

the lost production and product that may be associated with non-routine flaring events.

2.5 Impacts to Traffic and Local Infrastructure

A traffic study³¹ conducted in 2016 prior to construction of the KMe Facility, showed that existing roadways and intersections had adequate capacity to handle all traffic associated with the original construction of the facility and with plant operations out to the year 2026. Nonetheless, two additional turn lanes were constructed on the Highway 3127 entrance to the facility to minimize any potential traffic impacts. Additionally, in response to a community member request, lighting was recently installed on the underside of the heavy haul bridge over Highway 18 to increase traffic visibility at that location.

The long-term impact of the proposed Project on roads and vehicle traffic is expected to be minimal compared to current conditions. Raw materials will continue to arrive at the facility primarily by pipeline, but also by truck. Products will continue to leave via truck, rail, and the marine dock adjacently located up-river of the marine offloading facility. The materials transported will be of the same types that are already handled by the facility and its transporters. Although there will be some increased volume via these modes of transportation, there will be no significant changes that would impact public resources. This is due to the fact that although production rate is increasing, the additional production volume is expected to primarily serve non-local customers and thus be shipped by rail and marine vessel.

There may be an increase in road traffic during construction expected to last a number of months; however, increased traffic on nearby roadways is anticipated to be manageable, as Highway 3127 is a two-lane highway with adequate shoulders and turn lanes, including the turn lanes added as part of the initial construction of the KMe Facility. During construction on the Project, the KMe Facility will have a traffic control plan in effect, and project teams will work with the St. James Parish Sheriff's Office to provide traffic control and assistance, as needed, at the facility entrances as well as within the local community. State and parish permit procedures will be followed and coordinated with the Louisiana State Police to minimize the traffic impact. Adequate privately-owned existing roadways leading from Highway 3127 to the facility are suitable for handling the traffic volumes and no additional accesses are required. Additionally, the KMe Facility does not foresee or anticipate the need for off-site or remote parking.

Infrastructure to the surrounding communities will not be impacted by the proposed Project due to the following factors:

³¹ Traffic Analysis Report, 138643-0000-RPT-CS-0001, YUHUANG CHEMICAL, INC., METHANOL PLANT, ST. JAMES PARISH, LOUISIANA.

- There will be no need for additional medical facilities in the surrounding communities. There is a hospital in St. James Parish (located in Lusher approximately 20 miles from the KMe Facility), as well as several urgent care and medical clinics within near proximity. Additional metropolitan hospitals and specialty health services are available within close proximity in the New Orleans and Baton Rouge areas. St. James Parish is also located within the Acadian Ambulance service area.³²
- There are no anticipated significant additional costs for schools as a result of this Project. In fact, the economic impact from additional taxes generated by the Project will provide increased long-term funds to improve local schools (see more details in Section 3.1 of this EAS). Further, Koch's community efforts with its partner schools and other local area schools will continue.

2.6 Louisiana Department of Natural Resources (LDNR) and Louisiana Coastal Protection and Restoration Authority (CPRA) Requirements

The KMe Facility is located within the Louisiana Coastal Zone. Certain work within the Coastal Zone is regulated by the Louisiana Department of Natural Resources – Coastal Management Division (LDNR) per Louisiana Administrative Code Title 43, Part I. Unless otherwise exempt, activities that may impact coastal resources within the Coastal Zone require authorization from LDNR in the form of a Coastal Use Permit. Coastal Use Permitting is pursued through a Joint Permit Application submitted online to both the LDNR and the United States Army Corps of Engineers (USACE).

The majority of the KMe Facility site is above the 5-foot elevation contour (considered to be "fastland"), and thus is exempt from Coastal Use Permitting per LAC 43:I.723.B.1. The initial construction of the landward side of the facility (work performed within the Mississippi River levee flood protection area) was determined to be exempt from LDNR Coastal Use Permitting through issuance of Coastal Use Permit Exemption P20141674 dated January 20, 2015. The heavy haul road and marine offloading ramp were not exempt from permitting and their construction was approved by LDNR through issuance of Coastal Use Permit P20150795 dated January 27, 2016. Installation of a water intake structure adjacent to the marine offloading ramp was authorized by LDNR through Coastal Use Permit P20170424 issued October 9, 2017. To reflect final facility design plans, updates were proposed, and the exemption was confirmed through issuance of Coastal Use Permit Exemption P20161140 on January 10, 2017, for the landward side of the facility, and the timeline for Coastal Use Permit P20150795 was extended on February 24, 2021 for the heavy haul bridge, road and marine offload facilities. A previously authorized onsite marine barge loading dock was not constructed.

³² <https://acadianambulance.com/locations/louisiana/>, accessed October 31, 2022.

Instead, the KMe Facility uses the marine loading dock located adjacent to the site that is operated by Plains Marketing LP.

The proposed Project will not require onsite physical construction activities, such as dirt work, that could impact coastal resources. Thus, a Coastal Use Permit is not required for the Project.

The Coastal Protection and Restoration Authority (CPRA) was established as the single state entity with authority to articulate a clear statement of priorities and to focus development and implementation efforts to achieve comprehensive coastal protection for Louisiana. It currently operates under the Louisiana Coastal Management Zone Master Plan implemented in 2017, with plans to update the Master Plan in 2023.³³ The 2017 Master Plan includes one project within the KMe Facility area, known as the St. James – Vacherie Nonstructural Risk Reduction (Project ID: STJ.02N). The project is focused on properties that are at risk for future flood damage based on their location within flood-prone areas and encompasses a large area of the west bank of the parish beyond the KMe Facility area. It includes floodproofing of non-residential properties where 100-year flood depths are 1-3 feet, elevating residential properties where 100-year flood depths are 3-14 feet, and acquiring residential properties where 100-year flood depths are greater than 14 feet. The project specifications currently include mitigation of two non-residential properties and ten residential properties.³⁴

No other CPRA projects were identified within the vicinity of the KMe Facility.

The existing KMe Facility does not impact the current CPRA Master Plan as described above. The November 2022 Application and Addendum do not propose any changes to the site that would impact the current CPRA Master Plan. Koch will review the new 2023 Master Plan when available to stay apprised of any future planned projects in the area in relation to the KMe Facility site and operations, including the proposed Project.

2.7 Cultural and Historical Resources Effects

The following sections summarize actions that have been and will be taken to ensure that the proposed Project does not impact previously identified historic resources.

2.7.1 Sugar Mill Remains

A Phase I Cultural Resource Survey was performed prior to construction of the site in August and September 2014. The survey identified remnants of a historic sugar

³³ <https://coastal.la.gov/our-plan/>, accessed October 31, 2022.

³⁴ See 2017 Louisiana Comprehensive Master Plan for a Sustainable Coast at p. 125, available at http://coastal.la.gov/wp-content/uploads/2017/04/2017-Coastal-Master-Plan_Web-Book_CFinal-with-Effective-Date-06092017.pdf, accessed November 1, 2022

mill at the site, referred to as Site 16SJ82. The survey was reviewed and approved by the State Historic Preservation Officer (SHPO) in letters dated February 20 and April 17, 2015. Phase II Archeological Testing and Evaluation to further define Site 16SJ82 with respect to its eligibility for nomination to the National Register of Historic Places was conducted in February 2015, under a site investigation plan approved by SHPO. Based on the results of the Phase II Evaluation, an Avoidance Plan was developed to set aside the area of archeological Site 16SJ82 to protect it from any future ground-disturbing activities. The area has been fenced off and secured to prevent entry by unauthorized personnel, and the area has been fallow since completion of the historic resource evaluation. SHPO approved the Avoidance Plan by letter dated July 22, 2015.

Koch is not proposing any construction activities near Site 16SJ82 in connection with the proposed Project. The area will remain protected in accordance with the Avoidance Plan.

2.7.2 Graugnard Farms Plantation House

The Phase I Cultural Resource Survey also identified the Graugnard Farms Plantation House, a property listed on the National Register of Historic Places, located on property near the KMe Facility that is not owned by Koch. In a letter dated July 22, 2015, the State Historic Preservation Office (SHPO) concurred that the initial construction of the KMe Facility would not adversely impact the plantation home. Subsequently, in August 2016, the Graugnard Farms Plantation House was sold to a new owner who planned to relocate the home. The house was lifted from its original pier foundation and placed on steel girders in preparation for moving. All plumbing and electrical connections were disconnected.

At the current time, the house is on steel girders in preparation for moving but has not been relocated and remains on the property that KMe does not own, near the KMe Facility. We understand that ownership of the house may have reverted to the Graugnard family. Koch is not proposing any construction activities near the house in association with the proposed Project.

2.7.3 Other Historic Resources

The September 2014 Phase I Cultural Resource Survey included evaluation of cultural resources situated within or immediately adjacent to the site. With respect to cemeteries and historic structures, the survey included a review of the area within 1 mile of the site location. Other than the Graugnard Farms Plantation House described previously, no other identified historic structures met the criteria for listing in the National Register of Historic Places. SHPO agreed with these findings in a letter dated April 17, 2015. With the November 2022 Application and Addendum, Koch is not proposing expansion of the site or any construction activities that would require further evaluation of potential cultural resources in the area.

2.8 Wetlands/Waters of US

USACE issued a Jurisdictional Determination (JD) on July 29, 2015, identifying the extent of wetlands and other waters of the US (WOUS) on the property subject to USACE jurisdiction. With the exception of the Mississippi River levee batture, the JD documents that there are no wetlands regulated under Section 404 of the Clean Water Act on the property. Some portions of the drainage ditches on the property were documented as being jurisdictional WOUS.

The November 2022 Application and Addendum do not propose onsite construction activities that are anticipated to impact jurisdictional wetlands or WOUS that would require USACE permitting by Koch. A scope item that is part of the Project includes connecting an existing, off-property, third-party ethane supply pipeline to new piping at the KMe Facility. The third party that will be constructing the ethane supply piping will secure any necessary wetland permits for its work on or off Koch property.

2.9 Threatened, Endangered, Protected Species Impacts

Prior to the initial construction of the KMe Facility, the site consisted of land that was in agricultural service for decades. No threatened or endangered species or sensitive habitats were identified in the field as part of the initial site surveys conducted prior to the initial construction of the facility. In addition, in conjunction with the USACE jurisdictional review in 2015, a review of the Project area (landward) was conducted using the Information for Planning and Consultation (IPaC) online tool provided by the US Fish and Wildlife Service (USFWS) to determine whether critical habitat or species would be adversely impacted by the initial construction of the facility. The USFWS-based review determined that the new facility would not have an effect on Federal trust resources under USFWS jurisdiction and protected by the Endangered Species Act of 1973. The USFWS IPaC tool was used again in 2017 to assess the potential for impacts to listed species as a result of construction of the marine offloading facility, heavy haul bridge and heavy haul road. The IPaC tool noted three listed species that have the potential to occur in the Project vicinity. These include the West Indian Manatee (*Trichechus manatus*), the Pallid Sturgeon (*Scaphirhynchus albus*), and the Monarch Butterfly (*Danaus plexippus*). The manatee (listed as threatened) and sturgeon (listed as endangered) are both aquatic species; therefore, only where construction is proposed in the marine environment (i.e., in the Mississippi River) would there be a potential impact to these species. Currently, the Monarch Butterfly is listed as a candidate species and, as such, there are no regulatory requirements related to this particular species at this time.

The proposed Project will not involve construction activities in the Mississippi River thus there are no potential impacts to manatee or sturgeon. In addition, the only

construction is landward construction primarily associated with existing equipment (within the developed/industrial footprint) that would not impact any listed species.

2.10 Emergency Response and Prevention

Potential adverse environmental effects associated with operation of the KMe Facility could result from a fire, an explosion, a hazardous materials release, a spill, a security breach, or a combination of these. Any of these incidents can affect any or all of the three environmental media: air, water, and land. The KMe Facility implements regulatory requirements and best practices to avoid these incidents to the maximum extent. Following implementation of the Project, the KMe Facility operations will continue to be addressed by the following security and emergency response related requirements and practices:

- Compliance with OSHA's Process Safety Management (PSM) rules at 29 CFR Part 1910, Subpart H
- Compliance with EPA's Risk Management Program (RMP) regulations (40 CFR Part 68) and the equivalent LDEQ program (LAC 33:III.Chapter 59)
- Compliance with the federal, state, and local requirements of the Emergency Planning and Community Right-to-Know Act as set forth in 40 CFR Parts 355 to 372 and LAC 33:V.10101 to 10123
- Adoption of and conformance with voluntary best practices including partnering with local, state, and federal authorities
- Design to meet applicable fire codes

The PSM program, implemented pursuant to OSHA regulation 29 CFR 1910, is a comprehensive program designed to prevent or minimize the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals to employees and contractors of a regulated facility.³⁵ The PSM regulations require that process safety information be developed and that such information be used to prepare safe operating procedures and to train persons who will be involved with such processes. In addition, a process hazard analysis is required to be conducted for each process initially and updated periodically. The PSM program entails the development of a written plan of action regarding employee participation as well as consulting with employees on the conduct and development of process hazard analyses and on the development of other elements of PSM required under the rule. The KMe Facility will fully comply with these regulations with respect to the proposed Project, including any new equipment and project modifications.

Key elements of the PSM rule are the requirement to implement a Management of Change (MOC) program for any changes to a process and to conduct a pre-startup

³⁵ For more information on the OSHA PSM program, see <https://www.osha.gov/SLTC/processsafetymanagement/>, accessed October 31, 2022.

safety review. As required by these PSM regulations, the KMe Facility employs a comprehensive and proactive MOC system. Any "changes" to existing processes occurring as a result of the Project will be identified via the MOC process and will undergo the appropriate review and documentation. Prior to startup of the facility following construction of the proposed Project, a safety review will be conducted and documented. Any identified unsafe condition will be mitigated prior to startup.

Piping and instrumentation diagrams/drawings (P&IDs) as well as operating procedures and instructions will be updated, as necessary, to reflect implementation of the proposed Project. If the changes made by the Project affect the operating and/or maintenance procedures, then operating personnel as well as employees engaged in routine and non-routine work in the process area will receive refresher or additional training. Any incident investigation recommendations, compliance audit findings, or process hazard analysis recommendations will be reviewed and addressed, as necessary, before initiating startup following implementation of the proposed Project.

The KMe Facility is also subject to EPA rules in 40 CFR Part 68 - called the Risk Management Program (RMP). Many of the compliance components of the RMP rules are identical to the requirements of the OSHA PSM rules. However, while the PSM rules are intended to protect facility employees, the RMP rules are intended to protect surrounding communities.³⁶ One requirement of RMP that differs from PSM regulations is the requirement for a facility to determine its worst-case and alternative release scenarios and provide those to the EPA for the purpose of planning emergency response. The LDEQ has adopted the EPA RMP rules by reference, with a few additional requirements, at LAC 33:III.Chapter 59. The KMe Facility is currently a Program Level 1 facility under RMP, which is the lowest level, because no public receptors are predicted to be impacted in the event of a worst-case scenario.

Koch has ensured that the facility is prepared and that emergency response services are available in the unlikely event of potential environmental releases and/or fire. Koch has adopted a policy that it will respond to all emergencies within the facility 24 hours per day, 365 days per year, using on-duty facility Emergency Response Teams. The KMe Facility maintains an Emergency Response Plan (ERP) that describes the planning and capabilities of the facility and provides the Emergency Action Plan (EAP) to inform employees of the required actions in the case of an emergency. Appropriate updates will be made to the ERP to address the proposed Project.

The KMe Facility Emergency Response Plan also provides emergency health care information on the proper first aid treatment for exposure, as well as employee

³⁶ For more information on the EPA RMP program, see <https://www.epa.gov/rmp/risk-management-program-rmp-rule-overview>, accessed October 31, 2022.

training for informing the public and response agencies (e.g., the fire department) should an incident occur. Information regarding the Emergency Response Plan is also routinely shared with the St. James Parish Emergency Preparedness Department. KMe Facility personnel will contact and maintain communications with the St. James Local Emergency Planning Commission if and when there is a potential for direct impact to the public.

2.11 Environmental Justice (EJ)

An environmental justice assessment was performed to ensure that any adverse environmental effects of the proposed Project, including any adverse environmental effects on communities of color or people living with low income, have been avoided to the maximum extent possible. This assessment was performed utilizing the EPA's Environmental Justice Screening and Mapping Tool (EJScreen), Version 2.1 (October 2022).³⁷ While this EAS and thus this environmental justice assessment are both focused on assessing the potential impacts from the proposed Project, because the EJScreen results do not account for the existing KMe Facility, this analysis conservatively addresses the potential impacts on the surrounding community from the entire KMe Facility following implementation of the proposed Project.

Accordingly, throughout this environmental justice assessment, potential impacts from the KMe Facility are considered and assessed.

This Section is organized as follows:

- Section 2.11.1 provides an overview of environmental justice and relevant federal policies guiding this analysis;
- Section 2.11.2 summarizes the baseline environmental justice analysis conducted using EPA's EJScreen version 2.1 to identify the baseline burdens and vulnerabilities in the community surrounding the KMe Facility;
- Section 2.11.3 identifies potential adverse and beneficial impacts from the Facility and assesses these impacts in the context of baseline conditions to understand potential cumulative impacts to the community.
- Section 2.11.4 describes how Koch fosters meaningful engagement and involvement in the community, and describes the specific activities conducted to engage the community with respect to this permit application; and
- Section 2.11.5 provides conclusions of the environmental justice analysis.

³⁷ US Environmental Protection Agency (EPA). EJScreen: Environmental Justice Screening and Mapping Tool (version 2.10). Oct 11, 2022.

2.11.1 Definition of Environmental Justice and Applicable Regulations

Currently, there is no specific regulatory requirement or guidance from the EPA or LDEQ requiring an environmental justice analysis for this major air permitting effort. This following federal policy summary is provided as a general framework guiding consideration of environmental justice within this EAS.

In 1994, in response to growing concern that minority³⁸ and low-income populations bear a disproportionate amount of adverse health and environmental effects, President Clinton issued Executive Order 12898 on environmental justice formally focusing federal agency attention on this issue. Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires federal agencies to assess the potential for their actions to have disproportionately high and adverse environmental and health impacts on minority and low-income populations, and directs them to develop strategies for implementing environmental justice.

The EPA defines “environmental justice” as follows:³⁹

The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

The EPA defines “fair treatment” as follows:³⁹

No group of people, including a racial, ethnic, or a socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.

The EPA defines “meaningful involvement” as follows:³⁹

- 1) Potentially affected community residents have an appropriate opportunity to participate in decisions about a proposed activity that will affect their environment and/or health;
- 2) The public’s contribution can influence the regulatory agency’s decision;

³⁸ To utilize more inclusive language, for the remainder of this assessment the terms “people of color” or “communities of color” are used instead of the term “minority;” the EPA has also adopted similar phrasing updates in EJScreen 2.1.

³⁹ EPA. 1998. Final Guidance for Incorporating Environmental Justice Concerns in EPA’s NEPA Compliance Analyses.

- 3) The concerns of all participants involved will be considered in the decision-making process; and,
- 4) The decision-makers seek out and facilitate the involvement of those potentially affected.

Recently, EPA provided *Principles for Addressing Environmental Justice in Air Permitting*,⁴⁰ which provides suggested direction to guide federal, state, and local permitting programs that can inform this EAS process. Additional guides, *Environmental Justice and Civil Rights in Permitting Frequency Asked Questions*⁴¹ and *EPA Legal Tools to Advance Environmental Justice*⁴² provide additional direction, specifically addressing questions related to permitting processes and cumulative impacts analysis. This environmental justice analysis takes into account these and other guidance documents and provides an environmental justice perspective of potential environmental effects of the proposed Project being evaluated in this EAS.

In this analysis, impacts are defined as adverse or beneficial health or environmental effects of the KMe Facility on the surrounding community. This includes cumulative impacts on the surrounding community that could result when any impacts from the KMe Facility combine with other impacts. Disproportionate impacts are defined as adverse impacts borne disproportionately on the basis of race, color, or national origin.

2.11.2 Baseline Environmental Justice Assessment Using EJScreen

This section presents a screening-level review of the baseline conditions, burdens, and vulnerabilities for the community in the area surrounding the KMe Facility using EJScreen (Version 2.1, released October 2022).³⁷³⁷ EJScreen is the most widely used federal assessment tool for evaluating potential impacts to communities facing environmental justice-related concerns. It provides a nationally consistent dataset and approach for combining environmental and demographic socioeconomic indicators used to assess potential exposure in vulnerable communities. In this analysis, the results of the tool were used to identify potential baseline environmental concerns present in the community that warrant additional review and guide further assessment of whether the KMe Facility might contribute to adverse and disproportionate impacts.

⁴⁰ EPA. 2022. Principles for Addressing Environmental Justice in Air Permitting. Memorandum from Joseph Goffman, Principal Deputy Assistant Administrator, Office of Air and Radiation, to Air and Radiation Division Directions, EPA Regions I-X. December 22, 2022.

⁴¹ EPA. 2022. Environmental Justice and Civil Rights in Permitting Frequency Asked Questions. Office of General Counsel. August 2022.

⁴² EPA. 2022. EPA Legal Tools to Advance Environmental Justice. Office of General Counsel. May 2022.

2.11.2.1 EJScreen Overview

EJScreen calculates 12 “Environmental Justice Indexes (EJ Indexes),” one for each of 12 individual environmental indicators, where the EJ Index is a percentile ranking among two comparison populations: state and US. Each EJ Index is available at state and US comparison levels within the standard reports (Attachment D-1) exportable from the tool.

As recommended by EPA, the 80th percentile is a suggested starting point for the purpose of identifying geographic areas in the US that may warrant further consideration, analysis, or outreach.⁴³ That is, if any of the EJ Indexes are at or above the 80th percentile, then further review may be appropriate. LDEQ also has used the 80th percentile as the threshold for assessing the need for further evaluation.^{44,45} In this analysis, EJ Indexes equal to or greater than the 80th percentile among either of the two comparison populations are scrutinized to assess the potential for disproportionate impacts.

An EJ Index for a particular environmental indicator (e.g., PM_{2.5} or Air Toxics Cancer Risk) combines the following information for the user-specified study area:

- the environmental indicator percentile for a Census block group,
- a demographic index for a Census block group, consisting of percent low-income population⁴⁶ and percent people of color, and
- population size for block group.

The EJ Index results are intended to represent the average resident within the study area; however, the data used to calculate the index are based on a combination of Census tract- and Census block group-levels, which can be larger geographic areas than the user-defined study area. In this way, the EJ Indexes represent the closest approximation to the average resident in the study area but are estimates only, with some imprecision.

2.11.2.2 Study Area Definition

Figure D-1 shows the 30.18 square mile study area for this environmental justice analysis, which is defined as a 3.1-mile (5 kilometer [km]) ring centered around the

⁴³ EPA. 2022. EJSCREEN Technical Documentation; EPA. 2019. EJSCREEN Technical Documentation (note: both guides remain relevant as the 2022 update does not provide the comprehensive level of information that the 2019 version includes).

⁴⁴ LDEQ. June 3, 2022. Basis for Decision, Magnolia Power LLC – Magnolia Power Generating Station Unit 1, AI No. 222431. LDEQ-EDMS Document 13323744, see discussion of “EJSCREEN,” on page 22.

⁴⁵ LDEQ. April 29, 2022. Basis for Decision, Indorama Ventures Olefins, LLC – Westlake Ethylene Plant, AI No. 5337. LDEQ-EDMS Document 13275727, see discussion of “EJSCREEN,” on page 22.

⁴⁶ The low-income population metric is developed using a threshold of two times the federal poverty level.

KMe Facility. Use of a 3.1-mile radius is consistent with LDEQ^{44,45} and EPA practice,⁴⁷ and is also the maximum distance recommended by EPA.⁴³ The 3.1-mile study area is large enough to encompass multiple census blocks near the KMe Facility, thereby reducing uncertainties in demographic estimates, while also not including areas that are too distant and not representative of the area closest to the Facility.

EJScreen was used to generate reports for the study area encompassed within a 3.1-mile distance from the KMe Facility. As an alternate point of comparison, a study area defined by a 1-mile radius was also evaluated. Comparisons across different study area sizes may suggest large differences are present in environmental vulnerabilities though this is not necessarily an accurate interpretation. The EJScreen technical guide indicates, "...EJ index values are often very uncertain at block group resolution. Therefore, modest differences in percentile scores between block groups or small buffers should not be interpreted as meaningful because of the uncertainties in demographic and environmental data at the block group level."⁴⁸

The study area defined by a 3.1-mile (5 km) ring is located at a point between the KMe Plant production unit (M1) and the KMe Terminal (T1) (29.984221,-90.850335) (see Figure D-1 and the EJScreen Reports in Attachment D-1). The smaller, 1-mile study area was centered around the same point. The 1-mile radius is comprised of Census block group 220930405001 within Census tract 22093040500. The same Census tract and block group are included within the 3.1-mile study area along with Census block groups 220930405002 and 220930404002 in Census tract 22093040400.

The EJScreen analysis based on the 3.1-mile ring is more representative and relevant for characterizing the environmental justice vulnerability of the communities surrounding the KMe Facility than the 1-mile ring based on the following rationale:

- The 3.1-mile ring covers 30.18 square miles and an approximate population of 1,142 and incorporates the nearest communities in St. James Parish. The 1-mile ring does not provide adequate coverage of neighboring communities further away from the KMe Facility or the east bank of the river, covering only 3.14 square miles and an approximate population of 41.
- EPA cautions on use of smaller study areas (e.g., less than one mile) with smaller population counts due to uncertainties in the spatial resolution of the Census and environmental datasets that are used in EJScreen. The 1-mile

⁴⁷ https://www.epa.gov/system/files/documents/2022-07/Valero%20Houston%20Order_6-30-22_0.pdf, accessed February 17, 2023.

⁴⁸ EPA. 2019. EJSCREEN Technical Documentation.

study area population count of 41 may introduce uncertainties due to small sample size.

This environmental justice analysis will focus on the EJScreen results for the 3.1-mile study area. However, the EJScreen report for both the 3.1- and 1-mile radii are included in Attachment D-1.

2.11.2.3 EJ Indexes

The demographic index and population count are combined with each of the 12 individual environmental indicators to yield 12 EJ Indexes. An EJ Index is higher for Census block groups where the demographic index is higher, where there are more people living with low income and/or a higher percentage of people of color. As discussed previously, EJ Indexes equal to or greater than the 80th percentile, when compared with state or US populations are highlighted in this analysis. Table D-6 provides a summary of the EJ Indexes exceeding the 80th percentile among the state or US for the 3.1-mile study area; 7 of 12 EJ Indexes are included in this table. The complete EJScreen results are provided in Attachment D-1.

Table D-6: EJ Indexes Exceeding the 80th Percentile		
EJ Indexes > 80 th Percentile	State Percentile	US Percentile
<i>Area: 30.18 square miles; Population: 1,142</i>		
EJ Index for 2017 Air Toxics Cancer Risk	91	95
EJ Index for Air Toxics Respiratory HI	90	94
EJ Index for Diesel Particulate Matter	86	90
EJ Index for Lead Paint	80	81
EJ Index for Particulate Matter 2.5	83	89
EJ Index for RMP Facility Proximity	79	87
EJ Index for Wastewater Discharge	87	90
Notes: HI = hazard index RMP = Risk Management Program *These values do not take into account any impact from the KMe Facility or Project.		

The EJ Indexes representing the 2017 Air Toxics Cancer Risk, Air Toxics Respiratory Hazard Index (HI), diesel particulate matter (DPM), Lead Paint, PM_{2.5}, Risk Management Program (RMP) Facility Proximity, and Wastewater Discharge exceed the 80th percentile in the state and/or US comparison populations. These percentiles do not necessarily indicate health concerns but rather the need to review site-specific data or perform additional analysis for the study area. In addition to the percentiles, EPA also suggests considering the following:

- if and to what extent the environmental data show values above relevant health-based or regulatory thresholds,
- the significance of said thresholds, severity of health or impacts of environmental concern, and,
- the degree of any disparity amongst various groups exposed to environmental pollutants.

These EJ Indexes are further discussed in the context of the KMe Facility-specific impacts in Section 2.11.3.

2.11.2.4 Environmental Indicators for Baseline Assessment

EJScreen evaluates 12 environmental indicators that range from estimates of human health risk to proxies for potential exposure such as proximity to hazardous waste sites. These indicators are presented without consideration of the socioeconomic/demographic indicators. The environmental indicators associated with the EJ Indexes exceeding the 80th percentile as highlighted in Table D-6, are presented in Table D-7. These values do not take into account any impact from the KMe Facility or Project.

Table D-7: Baseline Environmental Indicators of Interest for the Study Area			
Environmental Indicators of Interest	Environmental Indicator Value*	State Percentile	US Percentile
<i>Area: 30.19 square miles; Population: 1,142</i>			
2017 Air Toxics Cancer Risk (risk per million people)	54	92	95-100 th
Air Toxics Respiratory HI (unitless)	0.5	90	95-100 th
Diesel Particulate Matter (µg/m ³)	0.388	73	70-80 th
Lead Paint (% Pre-1960 Housing)	0.23	65	51
Particulate Matter 2.5 (µg/m ³)	9.29	58	71
RMP Facility Proximity (facility count/km distance)	0.75	61	68
Wastewater Discharge (toxicity-weighted concentration/meter distance)	0.0065	69	65
Notes: HI = hazard index RMP = Risk Management Program *These values do not take into account any impact from the KMe Facility or Project.			

2.11.2.4.1 2017 Air Toxics Cancer Risk

The air toxics cancer risk indicator provides a numerical estimate of the probability of “excess lifetime cancer” in terms of cases of cancer per million people. Excess lifetime cancer relates to the potential for developing cancer over the course of a lifetime, apart from the existing background cancer rate. The significance of the cancer risk indicator value is assessed through comparison of the estimated excess lifetime cancer risk to EPA’s acceptable range for cancer risk of 1 in one million to 100 in one million.⁴⁹ This range reflects a *de minimis* or negligible increased cancer risk level above background cancer risk, which is approximately 400,000 in one million, or 1 in 2.5 people, based on 2017-2019 data.⁵⁰ EPA’s risk assessment methodology applied in calculating cancer and noncancer risks incorporates multiple factors representing a reasonable maximum exposure and applies toxicity values for each chemical that are modified by uncertainty and sensitivity factors that account for and are protective of sensitive subpopulations.⁵¹ If estimated cancer risks are within or lower than this range, cancer risk is considered negligible.^{49,51} If cancer risks are greater than EPA’s acceptable risk range, then additional analysis is recommended. Typically, this includes refining data inputs and assumptions to reflect “site-specific” conditions.⁵¹

The air toxics cancer risk indicator value presented in EJScreen is based on EPA’s AirToxScreen 2017⁵² (Air Toxics Screening Assessment), which provides modeled health risks at the Census tract resolution level. The AirToxScreen cancer risk represents an upper-bound baseline risk level, for which it is conservatively assumed that someone is breathing the air toxics continuously over a 70-year lifetime. The health risks are based on modeling National Emissions Inventory and other emissions data sources for each Census tract. A Census tract is comprised of Census block groups and is oftentimes a larger geographic area than the 3.1-mile study area. Therefore, risks provided for the Census tract may reflect risks associated with emissions from facilities that are distant from the KMe Facility. In addition, EJScreen uses 2017 AirToxScreen information for any Census tract that intersects with the study area (i.e., Census tracts 22093040400 and 22093040500, shown as Census tracts “404” and “405” in Figure D-1), which can also result in ascribing air toxics cancer risks to the study area that are not necessarily

⁴⁹ This range is derived from the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300), which states that “acceptable exposure levels are generally concentration levels that represent an excess upper bound lifetime cancer risk to an individual of between 10^{-4} and 10^{-6} using information on the relationship between dose and response.” For reference, the nomenclature used by the EPA, 10^{-4} and 10^{-6} , is equivalent to the terms ‘1 in one million to 100 in one million.’

⁵⁰ National Cancer Institute, Surveillance, Epidemiology, and End Results Program <https://seer.cancer.gov/statfacts/html/all.html>, accessed October 28, 2022.

⁵¹ EPA. 1989. Risk assessment guidance for Superfund Volume I, Human health evaluation manual (Part A), Interim Final. EPA/540/1-89/002.

⁵² EPA. 2022. 2017 AirToxScreen Mapping Tool. Available at: <https://www.epa.gov/AirToxScreen/2017-airtoxscreen-assessment-results>, accessed October 27, 2022.

representative. For example, only a small portion of tract 404 is included in the study area, but these results nevertheless influence the total cancer risk estimate calculated in EJScreen.

The EJScreen air toxics cancer risk indicator score of 54 in one million is well within EPA's acceptable cancer risk range of 1 in one million to 100 in one million. The cancer risk estimate in EJScreen is from the 2017 AirToxScreen and represents the baseline risk level in the study area, which does not account for contribution from the KMe Facility. These baseline risks are largely attributable to emissions of formaldehyde (39%), ethylene oxide (35%), chloroprene (7%), and carbon tetrachloride (6%),⁵² with facilities emitting the greatest amounts of these chemicals located 16 to 20 miles from the KMe Facility (see facility locations in Figure D-1). While distant from the KMe Facility, the sources of these air toxics emissions are relevant because they influence the Census tracts in which the study area is located.

Results from 2018⁵³ and 2019⁵⁴ AirToxScreen are available for the Census tracts within which the study area lies (22093040400 and 22093040500), though these results have not yet been incorporated into the EJScreen tool. The KMe Facility lies within Census tract 22093040500, which also makes up the majority of the study area evaluated in EJScreen, with a small portion of Census tract 22093040400 making up the remainder of the study area (refer to Census tracts "404" and "405" in Figure D-1 for Census tract boundaries). 2018 and 2019 AirToxScreen results were reviewed to understand potential changes in baseline air toxics cancer risks that are incorporated in more recent versions of AirToxScreen but not yet reflected in EJScreen, which relies on the 2017 AirToxScreen results. 2018 and 2019 AirToxScreen results for the individual Census tracts within the study area must be reviewed because the environmental indicator value for the study area cannot be replicated outside of EJScreen.

With respect to Census tract 22093040500, where the KMe Facility is located and which makes up the majority of the study area, the 2018 results indicate that the total air toxics cancer risk remained similar to the 2017 results; although, the relative contributions from the air toxics changed, with an increase in ethylene oxide cancer risk contribution and decreases in carbon tetrachloride, chloroprene,

⁵³ EPA. 2022. 2018 AirToxScreen Mapping Tool. Available at: <https://www.epa.gov/AirToxScreen/2018-airtoxscreen>, accessed October 27, 2022. The 2018 AirToxScreen used the 2017 National Emissions Inventory (NEI) as a starting point and updated these data for 2018 from comments provided by state, local and tribal agencies during the AirToxScreen review.

⁵⁴ EPA. 2022. 2019 AirToxScreen Mapping Tool. Available at: <https://www.epa.gov/AirToxScreen/2019-airtoxscreen>, accessed January 20, 2023. The 2019 AirToxScreen used the 2017 National Emissions Inventory (NEI) as a starting point and updated these data for 2019 from comments provided by state, local and tribal agencies during the AirToxScreen review.

and formaldehyde cancer risk contributions (see Table D-8). The 2019 air toxics cancer risks, the most recent available, are substantially lower (26%) than those reported in EJScreen, reported at 39 in one million. From 2018 to 2019, air toxics contributions show a decrease in chloroprene and ethylene oxide risk contributions and an increase in carbon tetrachloride and formaldehyde risk contributions (see Table D-8). Air toxics cancer risks also decreased substantially (26%) between 2017 and 2019 in Census tract 22093040400, a small portion of which comprises the remainder of the study area evaluated in EJScreen. While distant from the KMe Facility (see Figure D-1), the sources of these air toxics emissions are relevant because they influence the Census tracts in which the study area is located.

The KMe Facility does not and will not contribute to emissions of ethylene oxide, chloroprene, or carbon tetrachloride, but will emit up to 0.47 ton per year of formaldehyde. The cancer risk from the KMe facility's formaldehyde emissions (0.021 in one million) is nearly two orders of magnitude less than the lower end of EPA's acceptable cancer risk range (1 in one million). Facility-specific emission rates and related cancer risk contributions are presented in Section 2.11.3.1.1.

Table D-8: Baseline Cancer Risk Reported in AirToxScreen 2017-2019 in Vicinity of KMe Facility					
Year	Cancer Risk (per million people)	Cancer Risk Contribution by Chemical (%) ^a			
		Ethylene Oxide	Chloroprene	Carbon Tetrachloride	Formaldehyde
Census Tract 22093040500 ^b					
2017	53	35	7	6	39
2018	54	47	3	4	34
2019	39	30	1	8	47
Census Tract 22093040400 ^c					
2017	57	35	9	5	37
2018	60	49	4	4	31
2019	42	32	2	7	44
Notes					
a. KMe Facility does not and will not contribute to existing emissions of ethylene oxide, chloroprene, or carbon tetrachloride.					
b. The cancer risk estimates are based on Census Tract 22309040500, where the KMe Facility is located.					
c. The cancer risk estimates are based on Census Tract 22309040400, a small portion of which is included in the KMe Facility 3.1-mile study area.					

2.11.2.4.2 Air Toxics Respiratory HI

The EJ Index for air toxics respiratory HI is a measure of estimated noncancer health impacts specific to the respiratory system. The environmental indicator for this EJ Index is an HI value of 0.5 (90th percentile in state and 95-100th percentile in US). EPA uses a risk management threshold HI of 1 to assess potential noncancer health impacts, wherein HIs less than 1 indicate exposures are below levels of concern. The HI of 0.5 reported for the 3.1-mile study area is substantially below EPA's threshold of 1, which indicates no potential for adverse noncancer health impacts.

The air toxics noncancer HI indicator value presented in EJScreen is based on EPA's AirToxScreen 2017.^{52,55} As with the cancer risk estimate provided in AirToxScreen, the noncancer HI value provided in EJScreen is associated with all Census tracts within which the study area lies (i.e., Census tracts "404" and "405", as shown in Figure D-2) and may reflect noncancer hazards associated with emissions from facilities that are distant from the KMe Facility and may not accurately reflect hazards in the vicinity of the facility.

The 2017 AirToxScreen HI value of 0.5 represents an upper-bound baseline hazard level and is largely attributable to emissions of formaldehyde (35%), acetaldehyde (26%), acrolein (20%), and DPM (7.6%),⁵² with facilities emitting the greatest amounts of these chemicals located 16 to 20 miles from the KMe Facility (see facility locations in Figure D-2). Formaldehyde, acetaldehyde, and DPM are associated with cancer risk, but are also evaluated for noncancer health impacts. Acrolein is not a carcinogen. While distant from the KMe Facility, the sources of these air toxics emissions are relevant because they influence the Census tracts in which the study area is located. Compared to 2017 HI values, the 2018 and 2019 AirToxScreen results for Census tracts 22093040500 and 22093040400 have trended downward and remained well below EPA's risk management threshold HI of 1, each with HIs of 0.4 (2018) and 0.3 (2019). These values, which are a fraction of EPA's threshold HI of 1, demonstrate that exposure is well below noncancer health impact levels of concern. For both Census tracts (see Table D-9), relative contributions of acrolein and DPM to the HI have decreased between 2017 and 2019, but relative contributions of acetaldehyde and formaldehyde to the HI have increased. While distant from the KMe Facility (see Figure D-2), the sources of these air toxics emissions are relevant because they influence the Census tracts in which the study area is located.

⁵⁵ Although EJScreen currently only uses results from 2017 AirToxScreen, results from more recent versions of AirToxScreen (i.e., 2018 AirToxScreen and 2019 AirToxScreen) which use the 2017 NEI data as a starting point but were updated for 2018 or 2019 based on comments provided by agencies during the AirToxScreen review are also publicly available for individual Census tracts and are referenced in this document.

Table D-9: Baseline Air Toxic Respiratory HI Reported in AirToxScreen 2017-2019 in Vicinity of KMe Facility					
Year	Hazard Index	Air Toxic Respiratory HI Contribution by Chemical (%) ^a			
		Acetaldehyde	Acrolein	DPM	Formaldehyde
Census Tract 22093040500 ^b					
2017	0.5	26	20	8	35
2018	0.4	27	12	10	37
2019	0.3	30	10	7	42
Census Tract 22093040400 ^c					
2017	0.5	26	20	8	35
2018	0.4	27	12	10	37
2019	0.3	29	10	7	41
Notes					
a. KMe Facility does not and will not contribute to existing emissions of acrolein.					
b. The air toxic respiratory HIs are based on Census Tract 22093040500, where the KMe Facility is located.					
c. The air toxic respiratory HIs are based on Census Tract 22093040400, a small portion of which is included in the KMe Facility 3.1-mile study area.					
DPM = diesel particulate matter					
HI = hazard index					

The KMe Facility does not and will not contribute to existing emissions of acrolein. Facility-specific emissions and associated impacts to air toxic respiratory risks are discussed further in Section 2.11.3.1.2.

2.11.2.4.3 DPM

The EJ index for DPM (86th percentile in state and 90th percentile in US) is based on an estimated DPM air concentration of 0.388 µg/m³. This estimated air concentration is greater than the state (0.297 µg/m³) and US (0.294 µg/m³) average concentrations. This value is derived from 2017 AirToxScreen and reflects commercial marine vessel emissions; on-road, heavy duty diesel vehicle emissions; locomotive emissions; and other sources. When evaluated in the absence of the demographic index, this environmental indicator is ranked at or below the 80th percentile for both the state (73rd percentile) and US (70-80th percentile) (Table D-7). 2017, 2018, and 2019 AirToxScreen data show that the ambient air concentrations of DPM were 0.39 µg/m³, 0.43 µg/m³ and 0.26 µg/m³, respectively, in the Census tract 22093040500 where the KMe Facility is located, which reflects fluctuations in ambient concentrations, and a substantial reduction in predicted DPM air concentrations between 2017 and 2019. Emissions of DPM from the KMe Facility

are due to emergency engines only and modeled off-property concentrations resulting from these emissions represent less than two percent of the baseline DPM concentration of $0.388 \mu\text{g}/\text{m}^3$ reported in EJScreen. Facility-specific DPM emissions are discussed further in Section 2.11.3.1.3.

2.11.2.4.4 Lead Paint

The EJ Index for lead-based paint (80th percentile in state and 81st percentile in US) is based on the percent of homes within the study area that were constructed prior to 1960, a time preceding the removal of lead from paint. Lead-based paint is of concern in communities with older homes because chipped and worn paint contributes to lead in house dust. Dust on home indoor surfaces, such as floors and toys, may be contacted by young children who then incidentally ingest the dust, including lead paint chips in house dust, through skin-to-mouth contact. There is a well-established relationship between elevated lead exposure and developmental health effects in children. The Louisiana Department of Health (LDH) lists the Lead-Based Paint Hazard Control Grant from Housing and Urban Development (HUD) as providing no cost lead abatement services to qualifying applicants.⁵⁶ LDEQ's website also lists references for controlling and addressing lead in residential buildings.⁵⁷ These programs serve to reduce potential lead exposures in older homes.

The environmental indicator value for this index is 23%, which means that the lead in house dust may be a concern in 23% of homes within the study area, and is comparable to the fraction of older homes (pre-1960) reported for the state (20%) and US (27%). When evaluated in the absence of the demographic index, this environmental indicator is ranked below the 80th percentile for both the state and US. The KMe facility does not emit lead or use lead-based paints, as discussed in Section 2.11.3.1.4.

2.11.2.4.5 Particulate Matter (PM_{2.5})

The EJ index for PM_{2.5} (83rd percentile in state and 89th percentile in US) is based on an estimated PM_{2.5} air concentration of $9.3 \mu\text{g}/\text{m}^3$. When evaluated in the absence of the demographic index, this environmental indicator is ranked below the 80th percentile. The annual PM_{2.5} concentration of $9.3 \mu\text{g}/\text{m}^3$ provided in the EJScreen tool for the 3.1-mile study area is derived from a 2018 analysis using the tool's downscaler model. EPA's model uses monitored data and community-scale model data to develop a relationship between observed concentrations from monitors and modeled concentrations to predict concentrations in unmonitored regions.

⁵⁶ Louisiana Department of Health (LDH). 2022. Lead Abatement Services. Available at: <https://ldh.la.gov/page/3163>, accessed February 17, 2023.

⁵⁷ LDEQ. 2022. Lead-Based Paint. Available at: <https://deq.louisiana.gov/page/lead-based-paint>, accessed February 17, 2023.

To assess how well EJScreen predicts air concentrations, monitoring data from the State and Local Air Monitoring Station (SLAMS) site nearest the KMe Facility (Geismar, AQSID 22-047-0005) were reviewed and contrasted with the EJScreen prediction for this location. The Geismar station is located approximately 20 miles northwest of the facility and had an annual PM_{2.5} concentration of 8.9 µg/m³ in 2018. The 2018 EJScreen downscaler model concentration for the location of the monitor is 10.1 µg/m³. This comparison indicates the downscaler model is overpredicting PM_{2.5} concentrations by approximately 13%. This suggests that the PM_{2.5} concentrations for the KMe study area reported in EJScreen may be similarly overpredicted.

In addition, review of air monitoring data for the Geismar station indicate that PM_{2.5} concentrations between years 2010 and 2022⁵⁸ are generally decreasing, as shown in Figure D-3. The current design value for the Geismar monitor is 7.9 µg/m³ based upon the three-year 2019 to 2021 average, which is substantially lower than the 2018-based EJScreen concentration of 10.1 µg/m³ for this location. Given that EJScreen relies on a 2018 analysis and area PM_{2.5} concentrations are trending downward, it is possible that the EJScreen tool may further overestimate current PM_{2.5} concentrations for the study area.

To understand the facility-specific PM_{2.5} impacts, PM_{2.5} concentrations were estimated using air dispersion modeling. A maximum off-property concentration of 0.11 µg/m³ was predicted; this concentration is roughly one percent of the baseline PM_{2.5} concentration predicted in EJScreen, as discussed further in Section 2.11.3.1.5.

2.11.2.4.6 RMP Facility Proximity

The EJ Index for proximity to facilities with RMPs (79th percentile in state and 87th percentile in US) is based on a total count of facilities within 5 km (or nearest facility beyond 5 km) of the study area, each divided by distance. The environmental indicator value for this index is 0.75 facilities per kilometer. This indicator is below the average indicator values calculated for the state (0.96) and US (0.77), and when evaluated in the absence of the demographic index, this environmental indicator is ranked below the 80th percentile for the state and US. In a query of EPA's Facility Registry Service (FRS)⁵⁹ database, no RMP facilities were found within 5 km of the KMe Facility. The nearest RMP facility, a Program Level 3 facility, is located 6.67 km from KMe.

The RMP Facility Proximity EJ Index is included in EJScreen because these facilities represent a *potential* for accidental releases, explosions, or fires that could impact

⁵⁸ As noted in Figure D-3, data for 2022 are not full-year values and only include data collected between the first three quarters (January 1-September 30) of the year.

⁵⁹ <https://www.epa.gov/frs/frs-query>, accessed February 17, 2023.

surrounding communities. Importantly, EPA has found a reduction in the frequency of accidents at RMP facilities since the RMP Rule became effective in 1996.⁴⁸ Moreover, recently, EPA proposed revisions to its RMP rules, some of which are intended to “advance fair treatment of those populations by reducing the disproportionate damages that RMP-reportable accidents might otherwise inflict on those populations,” where the ‘populations’ are those that are historically underserved and overburdened populations living in close proximity to RMP facilities.⁶⁰ Once final, EPA’s regulatory actions should, therefore, reduce impacts on overburdened communities. The KMe facility is required to maintain an RMP and has a robust process safety management (PSM) program in place, including a comprehensive emergency response plan, as described in Section 2.10. Facility-specific RMP considerations are discussed in Section 2.11.3.1.6.

2.11.2.4.7 Wastewater Discharge

The EJ Index for wastewater discharge ranked in the 80th percentile or greater; however, the environmental indicator for wastewater discharge evaluated in the absence of the demographic index did not result in an elevated percentile. This indicator takes into account the proximity of the average resident in the study area to a stream or river reach receiving Louisiana Pollutant Discharge Elimination System (LPDES) loadings reported to the Toxic Release Inventory (TRI). This discharge information is used in EPA’s Risk Screening Environmental Indicators (RSEI)⁶¹ model which combines information on chemical concentrations, fate and transport factors, weighted toxicity values, and other factors to allow users to perform comparative analyses of specific facilities, industries, or geographies. EJScreen relies on RSEI modeled outputs to generate a toxicity-weighted stream concentration for segments within 500 meters of the study area, divided by distance between the study area and stream segment.

The environmental indicator value of wastewater discharge in the study area is 0.0065, which is two to three orders of magnitude lower than the state average value (0.37) and the US average (12). Despite the very low environmental indicator value for the study area relative to the state and US comparison populations, the percentiles for this environmental indicator in the study area range between the 65th to 69th percentiles among all comparison populations, and the EJ Indexes for wastewater discharge are even higher and greater than the 80th percentile threshold (87th percentile in state and 90th percentile in US, see Table D-7).

In an email from EPA responding to questions about the EJScreen wastewater indicator posed by LDEQ for an analysis associated with a permitting action for a

⁶⁰ EPA. 2022. Regulatory Impact Analysis, Safer Communities by Chemical Accident Prevention, Proposed Rule. April 19, 2022. <https://www.regulations.gov/document/EPA-HQ-OLEM-2022-0174-0003>, accessed February 17, 2023.

⁶¹ EPA 2022 Risk-Screening Environmental Indicators (RSEI) Model. <https://www.epa.gov/rsei>, accessed October 28, 2022.

facility owned by Entergy Louisiana, EPA explained that the high percentiles of this EJ Index and the underlying environmental indicator are due to:

- 1) a 3 km cutoff around stream segments for processing, which results in a large number of block group values being set to zero (for Louisiana, 29% of block groups have a wastewater discharge indicator of zero), and
- 2) the data having a logarithmic distribution, with most values being very small, so even a very low environmental indicator value for wastewater discharge ends up being high on the distribution curve.⁶²

Given the very low environmental indicator value for wastewater discharge relative to state and US averages, the high percentiles for this EJ Index are not accurate representations of the baseline wastewater discharge condition in the study area surrounding the KMe Facility. Instead, the very low environmental indicator value for wastewater discharge evidences that the baseline wastewater discharge condition in the study area does not pose an environmental justice concern for the communities surrounding the KMe Facility. This is discussed further in Section 2.11.3.1.7.

2.11.2.5 Socioeconomic/Demographic Indicators

EJScreen evaluates seven socioeconomic/demographic indicators that represent the social vulnerability characteristics of a population that does not have equitable access to environmental protections afforded to other populations. These factors are listed in the EJScreen standard report (Attachment D-1). EJScreen calculated a demographic index of 68% for the study area, as compared to the state of Louisiana average of 41% and the US average of 35%. The demographic index is at the 81st percentile when compared to the rest of the state. In addition to the demographic index, three out of the seven socioeconomic/demographic indicators ranked at or greater than the 80th percentile in the state or US comparison populations as listed below:

- People of color (80th percentile in state and 83rd percentile in US)
- Low income (74th percentile in state and 86th percentile in US)

⁶² 2022. LDEQ. Basis of Decision, Entergy Louisiana, Michoud Electric Generating Plant and New Orleans Power Station, Permit No. LA0004324. <https://edms.deq.louisiana.gov/app/doc/view?doc=12303187>, accessed October 31, 2022. In August 4, 2020 email from EPA, questions raised regarding low wastewater treatment metric resulting in elevated EJ Index, "The numbers look odd for 2 reasons. First, the data has a logarithmic distribution, with most values being very small, so this example ends up being high on the distribution curve even though it is a fairly small number. This characteristic is then reinforced because there is a 3 km cutoff around stream segments for the processing. This results in a large number of block group values being set to Zero. For Louisiana, 29% of block groups have a Wastewater Discharge Indicator of Zero."

- Less than high school education (70th percentile in state and 80th percentile in US)

The influence of the KMe Facility on community socioeconomics, through investments in the economy, education, and outreach, are summarized in Section 2.11.3.2 and discussed in Sections 3.1 and 3.2 of the EAS. Examples of how the KMe Facility is making a positive impact on socioeconomic indicators include additional local employment opportunities and providing scholarships and services to schools in the area.

2.11.3 Assessment of Project Impacts

EJScreen provides a screening-level assessment of baseline characteristics for a given area based on environmental and socioeconomic/demographic indicators. As noted above, there are seven EJ Indexes ranked in the 80th percentile or greater for the study area defined as the area encompassed within a 3.1-mile mile radius of KMe facility.

The KMe Facility started operation in 2020 and, as a result, the environmental data sets used in the EJScreen analysis do not account for the KMe Facility emissions or other factors. Therefore, while the EAS and this environmental justice assessment are focused on assessing the potential impacts of the proposed Project, the following assesses the potential impact of the entire KMe Facility post Project.

2.11.3.1 Impacts Pertaining to Elevated EJ Indexes

EJ Indexes are greater than the 80th percentile threshold when compared with the state and/or US populations for air toxics cancer risk, air toxics respiratory HI, DPM, lead paint, PM_{2.5}, RMP facility proximity, and wastewater discharge. Potential impacts of the KMe Facility related to these indexes are discussed in the following sections.

2.11.3.1.1 Air Toxics Cancer Risk

The EJ Index for air toxics cancer risk (91st percentile in state and 95th percentile in US) for the 3.1-mile study area, based on an estimated cancer risk of 54 in one million, exceeds the 80th percentile when comparing to both the state and the US.

To understand the KMe Facility impacts in the context of baseline risks, cancer risks were calculated based on total facility-wide emissions post Project and air dispersion modeling techniques described in the AQIA of this application with modeling inputs as shown in Tables 1 through 5 of Attachment D-2. The modeled off-property air concentrations were used to estimate potential cancer risks for the study area, conservatively assuming that someone is continuously breathing the evaluated pollutants at the modeled concentrations. Annual average air concentrations within the study area were estimated for carcinogenic air toxics

associated with KMe Facility operations: aldehydes, benzene, cadmium, dichlorobenzene, ethylbenzene, formaldehyde, naphthalene, and nickel, in addition to DPM which contains carcinogenic compounds. As shown in Table D-10, the maximum off-property annual average concentrations of carcinogenic air toxics predicted by air modeling are all well below the LAAS, which are established at concentrations protective of daily exposure over a lifetime.⁶³

Based on EPA methodology for modeling health risks, the potential cancer risk associated with KMe Facility total emissions ranges from 0.02 to 2 excess lifetime cancer cases in one million at the current residence with the highest modeled air toxics concentrations (Table D-11). This estimated cancer risk is near or below the lower threshold of EPA's acceptable cancer risk range of 1 to 100 in one million excess lifetime cancer cases.

In this analysis, a cancer risk range rather than a single cancer risk estimate is presented due to uncertainty in estimating DPM carcinogenic potency.⁶⁴ The impact of this uncertainty is significant because DPM is the largest contributor from the KMe Facility to total cancer risk. In EPA's toxicity assessment for DPM, EPA concluded that DPM is carcinogenic but that the available human and animal studies supporting this assessment are inadequate to allow for quantifying the carcinogenic potency for use in risk assessment.⁶⁴ California EPA has nevertheless proposed a quantitative estimate of carcinogenic potency for DPM that is used to derive the EPA Regional Screening Levels (RSLs) and is used to estimate DPM cancer risk in the EJScreen tool. The California EPA estimate of DPM toxicity was used to represent the "midpoint" of estimated cancer risks for DPM presented in Table D-11 and depicted in Figure D-4. The lower and upper ends of the cancer risk range are based on order-of-magnitude toxicity estimates previously proposed, but later withdrawn, by EPA.⁶⁴

The maximum KMe Facility air toxics residential cancer risk is approximately 0.04% to 4% of the 2017 cancer risk of 54 in one million predicted by EJScreen for the 3.1-mile study area, and the combined "baseline" and KMe Facility total air toxics cancer risk is 54 to 56 in one million people. Thus, the cumulative cancer risk for the residential area with highest predicted cancer risk within the study area may be unchanged, or modestly increased above the 2017 baseline reported in EJScreen after the addition of the cancer risk based on KMe Facility emissions, indicating that the cancer risks associated with KMe Facility emissions have little to no impact. When more recent AirToxScreen results are considered, i.e., 2019 cancer risk of 39 in one million for Census tract 22093040500 where the KMe facility and a majority of the study area are located (see Table D-8), the maximum residential cumulative

⁶³ Louisiana Register, Vol 17, pg. 1204, Dec 20, 1991.

⁶⁴ EPA. 2003. Integrated Risk Information System (IRIS) Chemical Assessment Summary, Diesel Engine Exhaust https://iris.epa.gov/ChemicalLanding/&substance_nmbr=642, accessed February 17, 2023.

cancer risks for the study area are lower, ranging from 39 to 41 in one million. Regardless of which AirToxScreen cancer risk estimate is considered, the maximum predicted total cancer risks for nearby residential areas is well within EPA's acceptable cancer risk range of 1 to 100 in one million.

In summary, air toxics cancer risk reported in EJScreen for the study area, 54 in one million, may be unchanged or increase slightly to 56 in one million people with consideration of emissions from the KMe Facility, which result in a facility-specific estimated cancer risk range of 0.02 to 2 in one million. The predicted cancer risks are primarily attributable to DPM emissions from six emergency engines and firewater pumps, which are essential to safe operation of the facility. These risks are well within EPA's risk management range of 1 to 100 in one million people, indicating that cumulative risks for the study area are below levels of concern. Furthermore, predicted air concentrations are below the LAAS, which are protective of daily exposure over a lifetime, and recent EPA AirToxScreen results for 2019 indicate that air toxics cancer risks for this area are lower than that reported in EJScreen, indicating cumulative risks presented here provide a conservative estimate of total air toxics cancer risk.

Table D-10: Comparison of Maximum Off-Property Carcinogenic Air Toxic Annual Average Concentrations to Louisiana Ambient Air Standards			
Chemical	Maximum Annual Average Air Concentration (µg/m³)	Louisiana Ambient Air Standard - Annual Average (µg/m³)	Louisiana Ambient Air Standard - 8 Hour Average (µg/m³)
Acetaldehyde	0.00085	46	NA
Other Aldehydes	0.0028	46	NA
Arsenic	<0.00001	0.02	NA
Benzene	0.00039	12	NA
Cobalt	<0.00001	NA	NA
1,4-Dichlorobenzene	0.00001	NA	1,430
DPM	0.0065	NA	NA
Ethylbenzene	0.00019	NA	10,300
Formaldehyde	0.0054	7.7	NA
Naphthalene	0.00002	NA	1,190
Nickel	0.00002	0.21	NA
Notes: NA = not available µg/m ³ = microgram per cubic meter LDEQ = Louisiana Department of Environmental Quality (LDEQ 2013)			
References: LDEQ. 2013. Title 33 Environmental Quality. Table 51.2. Louisiana Toxic Air Pollutant Ambient Air Standards. May.			

Table D-11: Estimated Facility Cancer Risks at Maximally Exposed Current Residential Location	
Chemical	Cancer Risk^a
DPM	1.6E-07 (midpoint of potential cancer risk range; ideally presented as 2E-08 to 2E-06) ^b
Formaldehyde	2.1E-08
Acetaldehyde	1.1E-09
Other Aldehydes	6.2E-10
Benzene	3.1E-10
Ethylbenzene	2.5E-11
1,4-Dichlorobenzene	NC
Arsenic	NC
Cadmium	NC
Chromium VI	NC
Cobalt	NC
Naphthalene	NC
Nickel	NC
Total Cancer Risk	2E-07 (i.e., 0.2 in one million) (midpoint of 2E-08 to 2E-06 estimated cancer risk)
Notes: a. Cancer risks presented for the residence with the highest predicted risk, UTM: 708807, 3319335. b. The DPM cancer risk presented here is based on a toxicity estimate proposed by California EPA (3E-04 per $\mu\text{g}/\text{m}^3$) and has not been formally adopted for use in baseline risk assessment by EPA. EPA has determined that the existing literature is lacking and does not support quantitative dose-response evaluation of DPM carcinogenic potency. ⁶⁴ Due to uncertainty in quantifying DPM potency, risks are better represented as a range using an analysis initially presented and then withdrawn by EPA (10^{-3} to 10^{-5} per $\mu\text{g}/\text{m}^3$). The use of this range underscores the lack of confidence expressed by EPA in assessing the carcinogenic potency of this chemical mixture. NC: risks not calculated due to extremely low (i.e., $<0.00001 \mu\text{g}/\text{m}^3$) predicted air concentration.	

2.11.3.1.2 Air Toxics Respiratory HI

The EJ Index for noncarcinogenic air toxics (90th percentile in state and 94th percentile in US) is based on estimated air toxics noncancer HI of 0.5. As shown in Table D-12, the maximum off-property annual average concentrations predicted by

air modeling of the KMe Facility non-carcinogenic air toxic emissions are all well below LAAS, which are established at concentrations that are protective of daily exposure over a lifetime.

Maximum air concentrations were modeled based on proposed Facility emission limits and used to calculate a Facility-specific noncancer HI, presented in Table D-13. The maximum estimated HI for a current residence is 0.04, which is well below the EPA's risk management threshold of 1. Hydrogen sulfide is the primary contributor to this HI, followed by ammonia and DPM. When adding the HI estimated for the Facility to the HI predicted by EJScreen for the 3.1-mile radius study area, the maximum cumulative HI is 0.54, which represents little to no change relative to the baseline level reported in EJScreen. Additionally, the cumulative noncancer HI metric is well below EPA's risk management threshold of 1 for noncancer health hazards. The actual noncancer HI contribution from the KMe Facility is expected to be lower than that reported in Table D-13, as recent changes in wastewater treatment processes have improved solids management and are expected to have substantially reduced emissions of hydrogen sulfide. While the site anticipates that some hydrogen sulfide emissions will still be present, the predicted noncancer HI for the Facility would be as low as 0.0006 without the influence of hydrogen sulfide emissions. The noncancer HIs for the vicinity of the Facility are depicted in Figure D-5.

In summary, all modeled chemical concentrations are below LAAS, and when the HI of 0.04 estimated for the Facility is added to the HI of 0.5 predicted by EJScreen for the 3.1-mile radius area, the maximum cumulative HI is 0.54, which is well below EPA's risk management threshold of 1 for noncancer health hazards and represents a noncancer hazard of essentially zero. With recent changes to the wastewater treatment processes likely having resulted in a decrease in hydrogen sulfide emissions, the noncancer HI contribution from the Facility is likely reduced further thereby likely further reducing any potential noncancer hazard associated with air toxics emitted from the Facility.

Table D-12: Comparison of Maximum Off-Facility Annual Average Noncarcinogenic Air Toxics Concentrations to Louisiana Ambient Air Standards		
Chemical	Maximum Annual Average Air Concentration (µg/m³)	Louisiana Ambient Air Standard - 8 Hour Average (µg/m³)
Ammonia	1.2	640
Barium	0.00004	12
Hydrogen sulfide	1.7	330
Manganese	<0.00001	4.8
Mercury	<0.00001	1.2
Methanol	40	6,240
n-Hexane	0.0081	4,190
Toluene	0.00044	8,900
Notes: NA = not available µg/m ³ = microgram per cubic meter LDEQ = Louisiana Department of Environmental Quality (LDEQ 2013) References: LDEQ. 2013. Title 33 Environmental Quality. Table 51.2. Louisiana Toxic Air Pollutant Ambient Air Standards. May.		

Table D-13: Estimated Facility Respiratory HI	
Chemical	Maximum Residential Exposure Location
Hydrogen sulfide	0.037
Ammonia	0.00012
DPM	0.00010
Methanol	0.000068
Other Aldehydes	0.000056
Nickel	NC
Barium	0.000020
Formaldehyde	0.00017
2,2,4-trimethylpentane	0.0000015
Acetaldehyde	0.000056
n-Hexane	0.0000024
Benzene	0.0000013
Naphthalene	NC
Ethylbenzene	2.0E-08
Toluene	6.0E-09
Naphthalene	NC
Nickel	NC
Total Facility HI	0.04
Notes: a. Noncancer HI presented for the residence with the highest predicted risk, UTM: 708807, 3319335 HI = Hazard Index NC: HI not calculated due to extremely low (i.e., <0.00001 µg/m ³) predicted air concentration.	

2.11.3.1.3 DPM

The EJ index for DPM (86th percentile in state and 90th percentile in US) is based on an estimated DPM air concentration of 0.388 µg/m³. This air concentration is greater than the state (0.297 µg/m³) and US (0.294 µg/m³) average concentrations. Emissions of DPM from the KMe Facility are from six emergency engines and firewater pumps only, which are essential to safe operation of the facility.

Figure D-6 presents modeled DPM concentrations in the vicinity of the KMe Facility. The predicted maximum DPM Facility-specific fence line concentration is 0.0065 µg/m³, which is 1.7% of the baseline air concentration of 0.388 µg/m³. The concentration at the nearest residence is even lower, at 0.0005 µg/m³. The cumulative DPM concentration, the sum of EJScreen DPM air concentration and Facility-specific maximum modeled prediction, is 0.394 µg/m³. The cumulative DPM

concentration is even lower at the nearest residence, $0.389 \mu\text{g}/\text{m}^3$, and represents a very small increase above baseline conditions. DPM is a mixture of carcinogenic and noncarcinogenic compounds, which are accounted for in EJScreen's Air Toxics Cancer and Air Toxics Respiratory HI metrics. As discussed in Sections 2.11.3.1.1 and 2.11.3.1.2, cancer risk and noncancer HI attributable to all air toxics emitted from the Facility, including DPM, are below or near the lower risk management thresholds established by EPA.

2.11.3.1.4 Lead Paint

The EJ Index for lead-based paint (80th percentile in state and 81st percentile in US) is based on the percent of homes within the study area that were constructed prior to 1960, a time preceding the removal of lead in paint. Lead in house dust may be a concern in older homes within the study area; however, this environmental indicator will not be influenced by the KMe Facility. Planned updates to the KMe Facility will not use lead-based paint or coatings. In addition, the KMe Facility will not emit lead into air as part of operations; therefore, there are no anticipated impacts from the KMe Facility on this environmental indicator or EJ Index.

2.11.3.1.5 PM_{2.5}

The EJ Index for PM_{2.5} (83rd percentile in state and 89th percentile in US) is based on the annual average PM_{2.5} levels in the air identified through EPA modeling and monitoring efforts. The PM_{2.5} concentration of $9.29 \mu\text{g}/\text{m}^3$ provided in EJScreen for the 3.1-mile study area is greater than both the state and US averages reported in EJScreen (9.2 and $8.67 \mu\text{g}/\text{m}^3$, respectively). As noted in Section 2.11.2.4.5, these values are extremely conservative as the EJScreen downscaler model is shown to overestimate ambient PM_{2.5} levels and actual 2019 to 2021 design value for the closest ambient monitor is only $7.9 \mu\text{g}/\text{m}^3$.

Using estimated emissions information for the Facility, the maximum annual average PM_{2.5} concentrations were modeled (see Figure D-7). The first step in this process is to model project emissions (in this case, all emissions from the Facility (post Project) and compare the result to the SIL for each pollutant and averaging period. The SIL is a de minimis threshold or level below which air quality impacts from the new or modified facility are considered insignificant.⁶⁵

The SIL for annual PM_{2.5} is $0.2 \mu\text{g}/\text{m}^3$. Modeling of Facility emissions produced a maximum impact of $0.11 \mu\text{g}/\text{m}^3$, which is below the level of the SIL (see Table D-3). This result includes the contribution from the secondary formation of particulates, calculated according to EPA guidance.⁶⁶ As noted previously in Section 2.11.2.4.5, this maximum impact is roughly 1 percent of the baseline PM_{2.5}.

⁶⁵ "Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program," April 17, 2018.

⁶⁶ "Guidance on the Development of Modeled Emission Rates for Precursors (MERPS) as a Tier 1 Demonstration Tool for Ozone and PM_{2.5} under the PSD Permitting Program", April 30, 2019.

concentration predicted by EJScreen. Additionally, the 24-hour maximum predicted PM_{2.5} concentration is 1.01 µg/m³, which is below the 24-hour SIL of 1.2 µg/m³ (see Table D-3). Because conservatively modeled Facility impacts are projected to be below the SILs, the Facility will not contribute to a significant increase in annual PM_{2.5} concentrations in the area surrounding the Facility.

The present design value from the closest ambient monitor is 7.9 µg/m³, well below the level of the NAAQS, which was established to provide public health protection. The Facility will not cause or contribute to an exceedance of the NAAQS.

2.11.3.1.6 RMP Facility Proximity

The EJ Index for RMP Proximity (79th percentile in state and 87th percentile in US) is based on a count of facilities subject to RMP requirements within 5 km of the study area, divided by distance from the KMe Facility, yielding an environmental indicator value of 0.75 facilities per kilometer. Although this EJ Index is greater than the 80th percentile for the US comparison population, the environmental indicator for this index (0.75) is well below the indicator value calculated for the state (0.96) and just below the value calculated for the US (0.77) comparison populations. Furthermore, when evaluated in the absence of the demographic index, this environmental indicator is ranked below the 80th percentile.

As noted in Section 2.10, KMe is currently subject to EPA's RMP regulations (40 CFR Part 68) and the equivalent LDEQ program (LAC 33:III.Chapter 59).⁶⁷ KMe is currently a Program Level 1 facility under RMP (the lowest program level) because no public receptors are predicted to be impacted in the event of a worst-case release scenario. KMe maintains an Emergency Response Plan (ERP) that describes the planning and capabilities of the facility to provide emergency response services in the unlikely event of potential environmental releases and/or fire. Information regarding the ERP is routinely shared with the St. James Parish Emergency Preparedness Department, and KMe Facility personnel will contact and maintain communications with the St. James Local Emergency Planning Commission if and when there is a potential for direct impact to the public.

KMe will continue to comply with federal RMP requirements and the equivalent LDEQ program and will remain a Program Level 1 facility under RMP after the Project because the worst-case release scenario following the Project also would not impact public receptors. Also, note that, in 2022, amendments to the federal RMP regulations were proposed to include "several changes and amplifications to the accident prevention program requirements, enhancements to the emergency preparedness requirements, increased public availability of chemical hazard information, and several other changes to certain regulatory definitions or points of

⁶⁷ EPA. 2022. Risk Management Program (RMP) Rule Overview <https://www.epa.gov/rmp/risk-management-program-rmp-rule-overview>, accessed February 17, 2023.

clarification.”⁶⁸ With these changes, the EPA determined that there will be a reduction in “disproportionate damages that RMP-reportable accidents might otherwise inflict on those populations,” with “those populations” referring to historically underserved or overburdened populations living in the vicinity of RMP facilities. Once finalized, EPA’s regulatory actions should, therefore, reduce impacts on overburdened communities.

2.11.3.1.7 Wastewater Discharge

The EJ Index for wastewater discharge is 87th percentile in the state and 90th percentile in US. However, as explained above, the high percentiles for this EJ Index are not accurate representations of the baseline wastewater discharge condition in the study area surrounding the KMe Facility. Instead, the very low environmental indicator value for wastewater discharge (a value of 0.0065, which is nearly two orders of magnitude lower than the average indicator values reported for the state [0.37] and three orders of magnitude lower than that for the US [12]) signifies that the baseline wastewater discharge condition in the study area does not pose an environmental justice concern for communities surrounding the KMe Facility. Additionally, continued compliance with the facility’s LPDES permit will ensure that wastewater discharges do not result in adverse environmental effects.

The KMe Facility operates under the LPDES program for its wastewater discharges and raw water intake. Specifically, LPDES permit number LA0127367 includes provisions under the Clean Water Act (CWA) for both point source discharges to nearby waterways, as well as surface water intake requirements as governed by CWA Section 316(b). The permit includes discharge limits along with specific monitoring and reporting requirements and other provisions to protect receiving waterways, the Mississippi River and St. James Canal. The permit includes allowances for discharge of treated process wastewaters as well as industrial stormwater, hydrostatic test waters, sanitary system effluents, boiler and cooling tower blowdowns, demineralized regeneration wastewater, and return waters from the feed water treatment plant clarifier systems to the Mississippi River. The St. James Canal receives only stormwater and previously monitored hydrostatic test wastewater. The LPDES permit limits are established at concentrations that have been determined by LDEQ to maintain compliance with applicable water quality criteria for each receiving waterbody. For this reason, discharges within permit limits do not cause adverse environmental effects.

As a result of the Project, there will be an increase in the volume of wastewater flow sent to the KME Facility’s existing wastewater treatment facility as well as an increase in volume of boiler and cooling tower blowdown, demineralized

⁶⁸ EPA. 2022. Accidental Release Prevention Requirements: Risk Management Programs Under the Clean Air Act; Safer Communities by Chemical Accident Prevention (Proposed Rule). Docket (EPA-HQ-OLEM-2022-0174). August. Available at: <https://www.regulations.gov/document/EPA-HQ-OLEM-2022-0174-0003>, accessed February 17, 2023.

regeneration wastewater, and return waters from the feed water treatment plant clarifier systems, with a commensurate increase in the volume of effluent discharged to the Mississippi River. While a change in concentration of pollutants in the wastewater discharge is not anticipated, there will be an associated increase in pollutant loading (lb/day) from the final outfall that discharges to the Mississippi River due to the increase in discharge volume. Accordingly, Koch submitted a permit application to update the LPDES permit to authorize the increase in wastewater discharge volume and corresponding increase in pollutant loading. The LPDES permit limits will be established at concentrations determined by LDEQ to maintain compliance with applicable water quality criteria for each receiving waterbody, and the KMe Facility will be required to comply with monitoring requirements to ensure that discharges are within permit limits. For this reason, discharges will not cause adverse environmental effects and will remain protective of receiving water quality.

The very low environmental indicator value for wastewater discharge (a value of 0.0065, which is nearly two orders of magnitude lower than the average indicator values reported for the state [0.37] and three orders of magnitude lower than that for the US [12]) signifies that the baseline wastewater discharge condition in the study area does not pose an environmental justice concern for communities surrounding the KMe Facility. Additionally, continued compliance with the facility's LPDES permit will ensure that wastewater discharges do not result in adverse environmental effects.

2.11.3.2 Beneficial Impacts

The optimized KMe Facility will provide significant beneficial impacts to the community, influencing social structures and economics, as detailed in Sections 3.1 and 3.2 below. Social benefits will be realized through investments by Koch in the areas of education, community enrichment, entrepreneurship, and environment. Long-term economic benefits to the community will be gained through job creation and labor income during Project construction and continued operations. As discussed previously, these benefits directly and positively impact two of the three demographic categories that are highlighted by EJScreen: education level and income.

2.11.4 Meaningful Involvement with Community

As noted in Section 1.1.3.2 of this EAS, Koch utilizes a variety of different venues and practices to foster regular meaningful engagement and involvement with the community on an ongoing basis. Examples of such engagement/involvement include joint training with local emergency services personnel, employee outreach through volunteer activities, KMe's participation with the St. James Citizens Advisory Panel and the focus group meetings described below. Examples of key

community engagement activities leading up to the filing of this permit application are further discussed below.

The KMe Facility hosted the St. James Citizens Advisory Panel (CAP) meeting in April 2022, which was attended by industry representatives and community members. KMe provided an overview and a tour of the facility and received strong, positive feedback. In mid-August 2022, KMe held a separate joint meeting with emergency agency personnel including the Parish President along with sheriff, fire department and emergency planning representatives to provide information about the KMe Facility and a tour of the site.

In June and July 2022, Koch hosted meetings with two small focus groups made up of residents of St. James Parish and the 5th District. The members of these focus groups were chosen by an outside firm who solicited input from the parish president, a local councilmember, school board members, and other local leaders. The objective of these focus groups was to engage with the community to learn more about what residents value within the St. James Parish community, what most concerns them about the community, and what opportunities they see for the community into the future. The June 2022 meeting focused on general industry in the area, and the July 2022 meeting focused more specifically around operations at the KMe Facility. Feedback from these focus groups included the following:

- Environment and Health: community residents desire more information from industry on impacts from emissions and help understanding EPA and LDEQ website information related to spills and permit exceedances; comments from the June meeting included “not knowing what they are breathing,” “seems like a lot of people dying from cancer,” “seems like a lot of spills and permit exceedances,” “balancing staying here with potential health risks”
- Employment: residents would like for industry to better publicize job openings and foster more local hiring and educational support to enable local hiring
- Communication: include all media venues (online newsletters, mailings, website, social media), initiate recurring KMe CAP meetings/open houses
- Community Involvement: more engagement with High Schools, publicize community giving, looking to partner with industry for support of youth and other local resources (e.g., fire department), many were unaware of KMe community giving programs
- Community Resources: lack of recreational and other resources for youth in the community, industry pays taxes to the parish, but the community does not see the benefits
- KMe specific: increased communication on environmental and health matters and safety incidents as well as community involvement activities,

transparency in communication, jobs, and follow-through on the focus group meetings

As a follow-up to the information received through the focus group meetings, on August 30, 2022, Koch Methanol hosted a Community Outreach Meeting at the Westbank Reception Hall in Vacherie, Louisiana. Invitations were communicated via newspaper advertisements, postcards (over 570 residents; entire 5th District), email and telephone, and local community residents along with local emergency response personnel and community leaders were invited to attend. The purpose of the meeting was to provide the community the opportunity to connect with personnel from the KMe Facility; to learn about Koch, the KMe Facility and its operations, including its hiring practices, job opportunities, community engagement, safety practices, emergency response capabilities and environmental performance in the areas of air emissions, wastewater discharges, and waste management; and to inform the community of Koch's plans to submit this permit application to authorize the KMe Optimization Project and other changes to the permit. Feedback regarding the KMe Facility, its operations and the plan to submit this permit application was solicited so that Koch could better understand and respond to community questions and concerns and communicate Koch perspective where not well understood. Pertinent feedback received along with Koch's actions to address this feedback include the following:

- The community highly values the ability to directly engage with industry on an ongoing basis. Continued involvement in the community that allows the community to provide feedback outside of permit actions is appreciated. Koch is exploring holding additional community engagement meetings and is currently in the process of selecting board members for a community advisory board (CAB) to foster regular and sustained engagement between the KMe Facility and the community and so that community feedback can be received on a routine and ongoing basis. The first CAB meeting is scheduled for March 2023. A reconvening of the original focus group members from the July 2022 meetings occurred on January 17, 2023. Although only a few of the original focus group members attended, the discussion regarding initiation of a CAB was very well received. Koch also communicated the filing of this permit application with community members and leaders, and made this application easily accessible to the community by posting it on the Koch website, along with other timely company news articles.
- The community values the support Koch provides to the community (e.g., support after Hurricane Ida, donating school resources), including increased opportunities for scholarships. As noted in this EAS, Koch is committed to investing in a variety of community enrichment opportunities; and, by further optimizing the KMe Facility operations, the proposed Project will allow Koch to continue those investments.

- *Transparency regarding operations and emissions is highly valued.* During the meeting, Koch personnel shared estimates of total authorized air emissions under the current permit compared to the levels that are being requested with this permit application. Information regarding modeled off-site pollutant concentration levels was also communicated. Additionally, Mobile Area Monitoring Lab (MAML) air quality data from recent, nearby LDEQ monitoring was provided during the meeting and was very much appreciated by the community.⁶⁹ In an effort to provide ongoing transparency, Koch is evaluating options for “fence line” monitoring at the site with the full intention to install such monitoring. Additionally, as explained in this permit application, Koch has voluntarily performed a PSD review for this permit application, which includes a demonstration that all emissions units authorized by the permit meet BACT and that emissions of PSD-regulated pollutants will not cause or contribute to an exceedance of any NAAQS.
- *One commenter was concerned that the “fruits of these focus groups would not be listened to.”* The CAP noted above provides a forum for continuing dialogue and challenge between industry and the community. In addition, as noted earlier, KMe is exploring holding additional community engagement meetings as well as establishing an ongoing CAB between the KMe Facility and the community so engagement can occur, and feedback can be received on a routine and ongoing basis. The CAP is an industry/community forum for the St. James area whereas the CAB will be a KMe/community-focused forum. Additionally, Koch is evaluating options for “fence line” monitoring at the site with the full intention to install such monitoring.

2.11.5 Conclusions

This environmental justice analysis was performed to ensure that any adverse environmental effects of the proposed Project, including any adverse environmental effects on environmental justice communities, have been identified and avoided to the maximum extent possible. Among the 12 EJ Indexes calculated by EPA’s EJScreen tool for the study area surrounding the KMe Facility, seven ranked at or equal to the 80th percentile threshold used by EPA and LDEQ to assess the need for further evaluation: 2017 air toxics cancer risk, air toxics respiratory HI, DPM, lead paint, PM_{2.5}, RMP facility proximity, and wastewater discharge. The remaining five EJ Indexes ranked below the 80th percentile threshold. Based on the EJScreen report, additional analysis of each of the seven EJ Indexes ranked at or equal to the 80th percentile threshold was performed to further evaluate potential facility-specific

⁶⁹ LDEQ’s Air Assessment and Planning Division won a competitive EPA air-monitoring grant announced in November that will provide funding to add two temporarily located community (TLC) monitors, including one in St. James Parish.
(<https://deq.louisiana.gov/assets/docs/DiscoverDEQ/2022/DiscoverDEQNewsletter-Issue131-December2022.pdf>, accessed Feb. 14, 2023.)

impacts. This analysis of environmental indicators indicates that the KMe Facility will not cause adverse impacts and, therefore, will not result in disproportionate impacts and is based on review of data relied upon in EJScreen, facility-specific air modeling, and other facility characteristics as follows:

- 2017 Air Toxics Cancer Risk and Respiratory HI: Risks from overall KMe Facility emissions are below or well within EPA's acceptable risk management ranges.
 - EJScreen reports a cancer risk of 54 in one million for the study area, which is well within the 1 to 100 in one million risk management range established by EPA. KMe's maximum contribution is 0.02 to 2 additional cancer cases per million people, largely due to DPM emissions from the periodic use of emergency engines. This estimated cancer risk is near or below the lower threshold of EPA's acceptable cancer risk range of 1 to 100 in one million excess lifetime cancer cases. The maximum cumulative cancer risk of 54 to 56 in one million is also well within EPA's risk management range. Furthermore, recent EPA AirToxScreen results for 2019 indicate that air toxics cancer risks for this area are lower than that reported in EJScreen, indicating that the cumulative risks presented here provide a conservative estimate of total air toxics cancer risk.
 - EJScreen reports a respiratory HI (i.e., noncancer hazard) of 0.5, which is below EPA's risk management threshold of 1. KMe's maximum contribution for a current residence is an HI of 0.04, resulting in a cumulative HI of 0.54, which is below EPA's threshold of 1 and represents little to no change to the baseline level and a noncancer hazard of essentially zero. Additionally, with the implementation of recent changes to the KMe Facility's wastewater treatment processes and the likely reduction in hydrogen sulfide emissions, the noncancer HI contribution from the KMe Facility may be as low as 0.0006, which again, reflects a noncancer hazard of essentially zero.
- DPM: The predicted maximum DPM Facility-specific concentration at a current residence is $0.0005 \mu\text{g}/\text{m}^3$, which is 0.13% of the baseline air concentration of $0.388 \mu\text{g}/\text{m}^3$ reported in EJScreen. The maximum predicted DPM Facility-specific concentration at the fence line is $0.0065 \mu\text{g}/\text{m}^3$, which is 1.7% of the baseline air concentration reported in EJScreen. The cumulative DPM concentration, the sum of EJScreen DPM air concentration and Facility-specific modeled prediction, is $0.389 \mu\text{g}/\text{m}^3$ at the nearest residence and $0.394 \mu\text{g}/\text{m}^3$ at the fence line, both of which represent small increases above baseline conditions. DPM is a mixture of carcinogenic and noncarcinogenic compounds, which are accounted for in the air toxics modeled for the KMe

Facility. As noted above, air toxics health risks associated with the KMe Facility are well below EPA risk management ranges.

- Lead Paint: The majority of the KMe Facility was newly constructed starting in 2017 and did not require use of lead-based paint or coatings, and planned updates to the KMe Facility will not use lead-based paint or coatings. Furthermore, the facility will not emit lead into the air as part of operations. Therefore, there are no anticipated impacts from the KMe Facility on this environmental indicator or EJ Index.
- PM_{2.5}: Modeling of Facility emissions produced maximum annual average and 24-hour average impacts of 0.11 µg/m³ and 1.01 µg/m³, respectively, which are below the levels of the respective SILs. Because conservatively modeled Facility impacts are below the SILs, they are considered insignificant and demonstrate that emissions from the Facility will not cause or contribute to an exceedance of the NAAQS for PM_{2.5}, which have been established at concentrations that are protective of public health.
- RMP Proximity: KMe is currently a Program Level 1 facility under RMP because no public receptors are predicted to be impacted in the event of a worst-case release scenario. Additionally, KMe will continue to comply with federal RMP requirements and the equivalent LDEQ program and will remain a Program Level 1 facility under RMP after the Project because the worst-case release scenario following the Project also would not impact public receptors.
- Wastewater Discharge: The very low EJScreen indicator value for wastewater discharge (a value of 0.0065, which is nearly two orders of magnitude lower than the average indicator values reported for the state [0.37] and three orders of magnitude lower than that for the US [12]) signifies that the baseline wastewater discharge condition in the study area does not pose an environmental justice concern for communities surrounding the KMe Facility. Furthermore, KMe operates in compliance with LPDES permit limits established at concentrations that have been determined by LDEQ to maintain compliance with applicable water quality criteria for each receiving waterbody. Discharges within permit limits do not cause adverse environmental effects. Continued compliance with the facility's existing and future revised LPDES permit will ensure that wastewater discharges do not result in adverse environmental impacts.

While the KMe Facility operations following the Project will not result in adverse impacts on the surrounding community and, therefore, will not result in disproportionate impacts, beneficial social impacts will be realized through investments by Koch in the areas of education, community enrichment, entrepreneurship, and environment. In addition, economic benefits to the community will be gained through job creation and labor income during Project

construction and continued operations. Koch's investments are informed, in part, through engagement with the community which has included community outreach specific to this permit application. This engagement also has included joint training with local emergency services personnel, employee outreach through volunteer activities, KMe's participation with the St. James Citizens Advisory Panel, and hosting two focus group meetings and a subsequent follow up meeting along with a Community Outreach Meeting. Future engagement with local advisory groups (e.g., CAP or CAB) will continue to be a priority, informing KMe's long-term community outreach efforts.

In conclusion, this analysis demonstrates that the proposed Project will not result in adverse impacts either directly or cumulatively considering existing conditions surrounding the KMe Facility. Accordingly, it also demonstrates that the proposed Project will not cause disproportionate impacts (adverse impacts borne disproportionately on the base of race, color, or national origin).

3. SOCIAL AND ECONOMIC BENEFITS

Does a cost benefit analysis of the environmental impact costs balance against the social and economic benefits of the proposed project demonstrate that the latter outweighs the former?

Yes. As noted in Section 2 above, environmental impact costs associated with the proposed Project will largely be avoided, and where the potential for environmental impact costs do exist, those impact costs have been minimized to the greatest extent feasible. Moreover, the social and economic benefits of the proposed optimization of the KMe Facility are significant and outweigh any remaining environmental impact costs. Specifically, the optimization Project strengthens the long-term viability of the Facility (including employment viability) such that the benefits from the original plant (as described below) will continue to be generated and, in many cases, increased. Benefits specifically attributable to the Project include additional property tax base from the capital investment, additional sales and use taxes for the parish and state, additional construction jobs, and an addition of up to 5 new permanent jobs.

3.1 Social Benefits

Social benefits resulting from the investment to build the KMe Facility in St. James Parish began early in the development with the agreement to buy the existing St. James Parish High School. Before the KMe Facility was planned, the St. James Parish School Board had decided to move the St. James High School to a new location; however, at the time funds were only available to buy the land and build a new football stadium at the new location. The developers of the project agreed to buy the high school for approximately \$10 million, and this provided enough funds to allow the parish to design the new high school and partially fund its construction. Construction of the new high school was completed in 2018.

Koch believes that strong communities are good for business. The company's core philosophy is anchored in a belief that for a business to survive and prosper, it must develop and use its capabilities to create sustainable value for both its customers and society. Working directly with local organizations is a key focus, and Koch is investing locally in the following four key areas:

Education: Supporting programs that give students and future workers the skills necessary for today's workplace. This includes parish school initiatives, local scholarships, and STEAM programs, including:

- River Parishes Community College Scholarships (3 annually including both high school students and adult learners)

- Science, Technology, Engineering, Arts and Mathematics (STEAM) Camp (supported for two years pre-COVID; school has not reinstituted at this time)
- Support of Wildcat Productions which is a graphic design and video production certification curriculum for college and career bound high school students
- College and Career Center Initiatives financial support (e.g., students working with contractors designing and building the field press box)
- St. James High School Academic Champions in Education (ACE) Banquet (program starting in early high school years through graduation)
- St. James Parish Ag Day (educational support for students to learn via a classroom takeaway lesson including farm to table understanding of fast food)

Community Enrichment: Working with organizations that support community needs and allow for employee engagement through volunteering with various organizations, including:

- Hurricane Ida relief efforts⁷⁰
- Food and toy drives
- Festival of the Bonfires (financial and volunteer)
- Veteran's Day Celebration (financial and volunteer)
- Emergency Preparedness services (donation for fire truck equipment & communication equipment upgrades)
- Food Bank
- St. James Arc, the community-based organization that advocates for and with people with intellectual and development disabilities (IDD) and serves them and their families

Entrepreneurship: Promoting entrepreneurial development while fostering economic and critical thinking skills, especially focused on initiatives that align with KII's Principled Based Management™ philosophy, including:

- Junior Achievement (financial education and work readiness) providing both financial and volunteer support; includes developing student's social and interviewing skills for both St. James High School and Lutchter High School

⁷⁰ <https://newsdirect.com/news/out-of-the-storm-koch-employees-resilient-spirit-helps-hurricane-stricken-neighbors-236704107>, accessed November 1, 2022.

Environment: Assist organizations that foster environmental responsibility and provide environmental learning opportunities, including those that promote environmental stewardship, including:

- St. James 4-H (including additional support for tree planting in celebration of Arbor Day at the new St. James High School that included live oak as well as magnolia trees to honor the old Magnolia High School which was an all-Black high school in St. James Parish that closed during desegregation),⁷¹ and
- Pursuing Wildlife Habitat Council Conservation Certification at the KMe Facility (financial and volunteer); process has been initiated.

The Project that is the subject of this application will further optimize the existing KMe Facility and thereby contribute to the ongoing viability of the facility thus enabling Koch to continue these and other similar initiatives.

3.2 Economic Benefits

Capital expenditures to construct the KMe Facility were approximately \$1.85 Billion. Now that initial construction of the KMe Facility is complete, operations and maintenance (O&M) supports approximately 135 jobs directly, \$46 million annually in Gross State Product, and \$3 million in state and local taxes per year. On a net present value basis, over approximately 30 years the facility will contribute approximately \$1 billion in labor income to the Louisiana economy and \$166 million in state and local tax impacts, including property taxes paid by the facility.⁷²

Economists recognize that petrochemical jobs are some of the highest quality jobs in the United States as cited from the U.S. Department of Labor Bureau of Labor Statistics (May 2020).⁷³

In addition to the direct economic impacts created in the form of new jobs at the KMe Facility, operation of the facility is resulting in positive indirect economic impacts such as spending in the local and state economy for ongoing operations and maintenance materials and services, income tax payments from facility workers, and increased development in local services and related businesses, including the creation of additional indirect jobs. Indirect economic effects are referred to as multiplier or ripple effects. The KMe Facility, supporting

⁷¹ https://www.theadvocate.com/baton_rouge/news/environment/st-james-high-moved-to-make-way-for-chemical-plant-new-oaks-magnolias-echo-old/article_91512fde-9b57-11ed-94c3-87620df85d58.html, accessed February 17, 2023.

⁷² The economic impacts of Koch Methanol St. James – M1, Dave E. Dismukes, Ph.D., Gregory B. Upton, Jr., Ph.D., Center for Energy Studies, Louisiana State University, October 2021.

⁷³ United States Department of Labor Occupational Employment Statistics, Occupational Employment and Wages, May 2020, <http://www.bls.gov/oes/current/oes518091.htm>, accessed February 16, 2023.

approximately 135 direct jobs to operate the facility results in a total economic impact of 300 new permanent jobs created.⁷²

The construction of the KMe Facility spanned from 1st Quarter 2017 to commercial production in 3rd Quarter 2021 and is estimated to have supported 2,500 jobs, \$611 million in labor income, \$1 billion in Gross State Product, and \$72 million in state and local taxes.

Although the KMe Facility is located in St. James Parish, the initial construction phase generated economic impacts across the state. Estimates suggest:

- \$50+ million in labor income across three parishes
- \$10-\$50 million in labor income across an additional ten parishes
- \$5-10 million in labor income across an additional seven parishes

As noted earlier, the Project represented in this application strengthens the Facility's long-term viability (including employment viability) such that the benefits from the original plant (as described above) will continue to be generated. Additionally, it is currently estimated that this Project will result in an additional \$50 million in capital expenditures resulting in an additional annual tax revenue; an additional \$100 million in non-capital expenditures, including labor, over the engineering, design and construction period (providing approximately 50-100 temporary jobs); associated sales and use tax revenue; and an addition of up to 5 new permanent jobs.

4. ALTERNATIVE PROJECTS

Are there alternative projects that would offer more protection to the environment than the proposed project without unduly curtailing non-environmental benefits?

No. There is no alternative project that would achieve the same goal as the proposed Project at the KMe Facility. The KMe Facility produces commercial grade methanol for sale to domestic and international customers. The facility is sized and situated to make an economically viable contribution to anticipated market demands for the product, with the flexibility to ship via truck, rail and barge to North American customers as well as to export product via oceangoing vessels to international customers. The KMe Facility licensed and installed Lurgi MegaMethanol® technology is a highly efficient process that results in reduced consumption of natural gas feedstock as compared to conventional methanol production technologies. This along with the air emissions controls that the facility utilizes results in lower emissions of GHG, NO_x, CO, SO₂, PM and other pollutants per unit of methanol produced as compared to conventional methanol production technologies.

The proposed Project has been conceived and designed specifically to address opportunities for improved utilization and efficiency and increase capacity at the existing KMe Facility. The Project leverages the existing asset and infrastructure and will be constructed within the existing facility footprint. Building a greenfield facility or a new production train to achieve the same amount of additional methanol production would be highly inefficient relative to utilizing the KMe Facility's existing infrastructure (i.e., already invested in utility/base support such as steam system, flare, control rooms, water supply, electrical systems, etc.). Additionally, Koch does not own any other methanol production facilities where this Project could be executed. Accordingly, Koch is aware of no alternative projects that could achieve the Project goals with a lesser environmental impact.

The following sections discuss market supply and demand data that support the need for the KMe Optimization Project and future production increases along with alternative options that were evaluated for the ethane vaporizer portion of the proposed Project.

4.1 Market Supply and Demand

Global methanol demand is forecast to grow up to 6% compound annual growth rate (CAGR) over the next ten years.⁷⁴ Energy related demands create a growing

⁷⁴ <https://www.globenewswire.com/en/news-release/2022/07/06/2475166/0/en/Demand-for-methanol-is-projected-to-register-a-CAGR-of-6-through-2032-Persistence-Market-Research.html>, accessed October 31, 2022.

market for methanol supported by clean energy policies and commercialization of methanol as a lower emission fuel (e.g., marine fuel).⁷⁵ Energy related applications for methanol (e.g., fuel) are a growing sector of global methanol demand.⁷⁶

Methanol to olefins (MTO) represents a stable demand for methanol, as historical MTO operating rates have been resilient through different methanol/olefin price cycles. High oil prices and a forecasted slowdown in olefin capacity additions should support MTO affordability leading to stable demand. Via the MTO process, methanol is an alternative feedstock to produce light olefins (ethylene and propylene), which are then used to produce various everyday products used in packaging, textiles, plastic parts/containers and auto components. MTO applications make up approximately 17% of the global methanol demand.

Traditional chemical applications of methanol have seen steady growth. Demand growth is linked to global economic growth. The International Monetary Fund (IMF) World Economic Outlook forecasts approximately 3-4% annual GDP growth post COVID-19 recovery. Traditional chemical applications for methanol make up approximately 56% of the global methanol demand.⁷⁷

4.2 Alternative Processes Considered for Project Scope Items

Given that this Project is intended to increase the efficiency and capacity of an existing facility, alternatives are limited in scope. Any expansion projects beyond the current scope would require additional reactor capacity and infrastructure, thereby significantly increasing project cost, footprint and impacts. Notwithstanding this limitation, alternatives were considered for one of the primary Project scope items, namely injecting ethane into the natural gas feed to increase the carbon to hydrogen ratio. To accomplish this at the optimum temperature, liquid ethane needs to be vaporized into the natural gas feed. The following three technologies were evaluated to accomplish the vaporization:

- Shell and tube exchanger using low pressure steam (65# sat'd) with an estimated capital cost of \$55,000
- Electric heater (5KV) with an estimated capital cost of \$550,000
- Fired heater (Fuel gas) with an estimated capital cost of \$250,000

The shell and tube exchanger option was selected as the technology for heating the ethane feed, as it was the most efficient and effective from an energy standpoint due to the fact that it would utilize excess steam or, worst case, require some additional firing of the existing boiler. Even if additional boiler firing is required, the

⁷⁵ <https://eibip.eu/publication/methanol-fuel/>, accessed October 31, 2022.

⁷⁶ <https://www.methanol.org/wp-content/uploads/2020/03/Future-Fuel-Strategies-Methanol-Automotive-Fuel-Primer.pdf>, accessed October 31, 2022.

⁷⁷ Chemical Market Analytics by OPIS, 2022 Edition: Spring 2022 Update

shell and tube exchanger option was determined to be significantly more energy efficient than the other two options. The electric heater was deemed to be economically unfavorable. Furthermore, it would result in additional electrical demand and increased emissions at the source of the third-party utility company. The fired heater was eliminated due to its cost compared to the shell/tube exchanger as well as its production of air emissions.

5. ALTERNATIVE SITES

Are there alternative sites that would offer more protection to the environment than the proposed project site without unduly curtailing non-environmental benefits?

No. As the Project involves modifications to an existing facility, a traditional alternative sites analysis as would be conducted for a “greenfield” facility is not relevant for this case. Because the proposed Project has been conceived and designed specifically to address increased design production rate and thereby further optimize the existing KMe Facility, the Project could not be conducted at any alternative sites, particularly because Koch does not own or operate any other methanol production facilities.

Furthermore, the KMe Facility site is located in close proximity to an existing ethane supply line, thereby making it ideally situated for the ethane feed gas project scope item. Additionally, the KMe Facility is newly constructed and is equipped with some of the most stringent air emissions controls as further explained in the BACT analysis in Part 4 of the November 2022 Application and Part 3 of the Addendum. The facility is located in an area designated attainment for all national NAAQS, thereby avoiding emissions increases in a nonattainment area, and the Air Quality Impacts Analysis demonstrates the Project will not cause or contribute to an exceedance of the NAAQS or LAAS. In addition, the Project will be constructed at an already developed site that is zoned for heavy industrial activity and located in an industrial zone⁷⁸, and it will be implemented without impacting any known archaeological sites.

The KMe Facility was constructed in close proximity to required infrastructure (e.g., natural gas pipeline, rail, and marine terminal), which minimized environmental impacts associated with construction. The facility was built on a site developed for agriculture, reducing potential impacts to wetlands as compared to selecting a site characterized by previously undisturbed marsh or bottomland forested areas. The facility is not located adjacent to or in the vicinity of any estuarine bodies. As discussed in Section 2.9, no threatened or endangered species will be impacted by the Project. Additionally, the KMe facility is over 100 kilometers away from the Breton Sound Class I Wildlife Management Area. Wildlife populations present near the facility are not substantial in terms of numbers, as the majority of the area has been cultivated for farmland.

Finally, as discussed above, the KMe Facility has brought significant economic and social benefits to the local community. The facility is located between the Baton Rouge and New Orleans metropolitan areas, with the I-10 interstate highway and

⁷⁸ <https://www.stjamesla.com/DocumentCenter/View/690/Land-Use-Map-PDF>, accessed October 31, 2022.

major state highways providing easy access for workers. Additionally, Louisiana, and St. James Parish in particular, provides a positive business climate, including collaborative efforts by state and local officials to support Koch in achieving the project goals, including Louisiana's workforce development programs and outreach by Louisiana Economic Development. In sum, there are no alternative sites that would offer more protection to the environment than the site of the existing KMe Facility without unduly curtailing non-environmental benefits.

6. MITIGATING MEASURES

Are there mitigating measures which would offer more protection to the environment than the facility as proposed without unduly curtailing non-environmental benefits?

No. There are no additional mitigating measures which would offer more protection to the environment than the Project as proposed without unduly curtailing the Project's non-environmental benefits. The KMe Facility was constructed and is operated in a manner that ensures the potential and real adverse environmental effects are avoided to the maximum extent possible.

As discussed in detail under Section 2 above, the KMe Facility was designed and constructed with state-of-the-art pollution abatement equipment to meet stringent control standards. Once the proposed Project is implemented, environmental impacts will continue to be minimized by meeting or exceeding MACT and NSPS standards for emissions of NO_x, CO, VOC, and methanol, as well as BACT for NO_x, CO, PM, PM₁₀, PM_{2.5}, VOC, and GHG. As noted earlier, Koch has voluntarily completed a BACT analysis demonstrating that BACT level (and in some cases beyond BACT level) controls will be applied to all KMe Facility emissions units authorized by the permit thereby minimizing air emissions beyond what is required under applicable air permitting rules.

The KMe Facility was also designed to minimize methanol wastewater streams sent to wastewater treatment through the incorporation of recycling and reprocessing. Additionally, as discussed in detail in Section 2 above, the wastewater treatment plant is designed and operated to meet the stringent federal and state wastewater discharge requirements of the LPDES permit, which incorporates Technology Based Effluent Limits (TBELs). The proposed Project will not affect any permitted discharges to the St. James Canal.

Meeting environmental standards for waste management will also assure environmental impacts are minimized. The KMe Facility is a Small Quantity Generator (SQG), as the facility produces less than 2,200 lb/month of hazardous waste. Koch also generates industrial solid wastes. Solid and hazardous waste minimization practices are implemented facility-wide through a variety of best management practices, from generation minimization to reuse where possible. The proposed Project is not anticipated to generate any new wastes, change the facility's generator status from SQG, or require any updates to current waste management practices. Wastes generated during construction of the Project will be managed in accordance with applicable regulations.

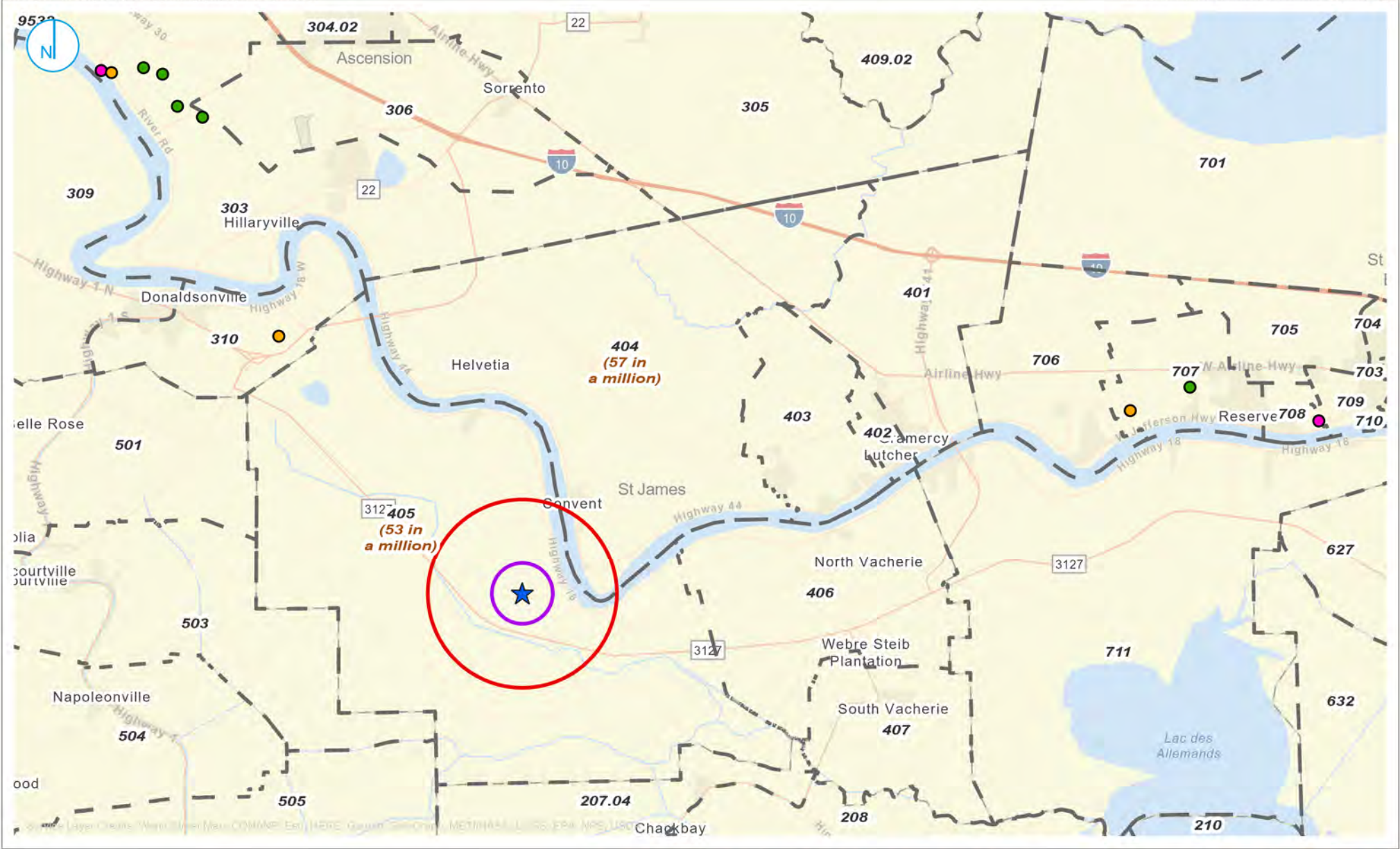
Koch is committed to design and construct the proposed Project and to continue operating the KMe Facility so as to minimize environmental impacts to the greatest

extent practical, taking into consideration economic and energy costs. Beyond the regulatory and permitting requirements, Koch intends to continue driving stewardship at the site. This includes:

- a. Further consideration of CCS opportunities for control of GHG emissions from the SMR and Boiler as CCS technology evolves and economic circumstances change, including potentially utilizing onsite or nearby sequestration
- b. Periodic communication with LDEQ on progress of CCS considerations
- c. Koch has invested in and has recently commissioned a steam condensing electrical generation turbine to leverage excess process steam (otherwise released to atmosphere) to reduce grid electricity consumption by 30-50% and is working to optimize up to 90% under normal operation
- d. Continued community outreach (including initiation of a Community Advisory Board) to foster further discussions with members of the community, such as updates on local area monitoring performed by LDEQ
- e. Koch is working with 3rd party suppliers to reduce trips resulting in loss of O₂ as well as adding an additional methane line at the site – these projects will mitigate flaring (from O₂ production trips or from primary supplier upsets) which will lead to the reduction of emissions associated with flaring
- f. Koch recently invested in a Dissolved Air Flotation (DAF) unit to replace its Lamella Clarifier to further improve water quality by reducing suspended solids in the plant's effluent. Additionally, installation of a DAF has resulted in improved solids handling which should also have reduced hydrogen sulfide emissions.
- g. Koch is evaluating options for installing "fence line" monitoring at the site with the full intention to install such monitoring

Finally, the non-environmental social and economic benefits of the KMe Facility are substantial, with an initial capital investment in the local and state economy of approximately \$1.85 billion and approximately 135 direct new permanent jobs created to operate the facility (resulting in a total increase of approximately 300 permanent jobs when indirect jobs are considered), \$46 million in Gross State Product generated each year, and greater than \$3 million in state and local taxes annually. The Project will include an additional investment of approximately \$150 million (\$50 million in equipment and \$100 million in non-capital expenditures, including labor, providing approximately 50-100 temporary jobs), will provide additional property tax revenue as well as additional sales and use tax benefits, and will generate up to 5 new permanent jobs. As noted earlier, the Project strengthens the Facility's long-term viability (including employment viability) such that the benefits from the facility will continue.

FIGURES



- LEGEND**
 - ★ Koch Methanol Facility
 - 1-Mile Radius Study Area
 - 3.1-Mile Radius Study Area
 - 2020 Census Tract (Cancer Risk)
- Major Emitters (2017 AirToxScreen Facilities)**
 - Chloroprene
 - Ethylene Oxide
 - Formaldehyde

0 0.5 1 2 3 Miles

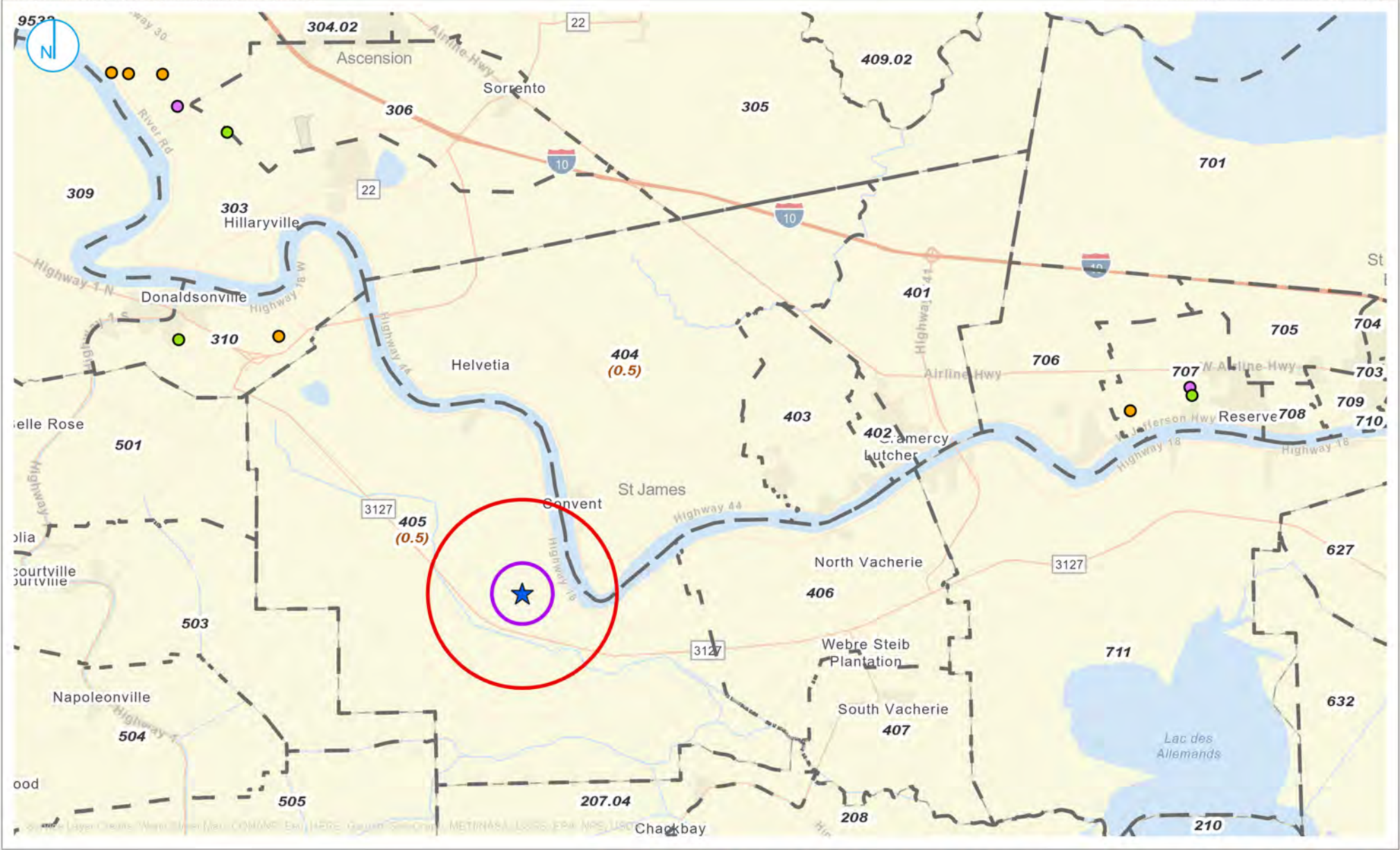
**EJSCREEN STUDY AREAS AND NEARBY
MAJOR SOURCES EMITTING CANCER
RISK DRIVING AIR TOXIC CHEMICALS**

Koch Methanol

FIGURE D-1

RAMBOLL US CONSULTING, INC.
A RAMBOLL COMPANY

RAMBOLL



LEGEND

★ Koch Methanol Facility

○ 1-Mile Radius Study Area

□ 3.1-Mile Radius Study Area

▬ 2020 Census Tract (Respiratory HI)

Major Emitters (2017 AirToxScreen Facilities)

● Acetaldehyde

● Diesel PM

● Formaldehyde

0 0.5 1 2 3

Miles

**EJSCREEN STUDY AREAS AND NEARBY
MAJOR SOURCES EMITTING
RESPIRATORY HI DRIVING AIR TOXIC
CHEMICALS**

Koch Methanol



**PM_{2.5} ANNUAL AVERAGE CONCENTRATIONS AT GEISMAR MONITORING STATION
NEAR KOCH METHANOL**

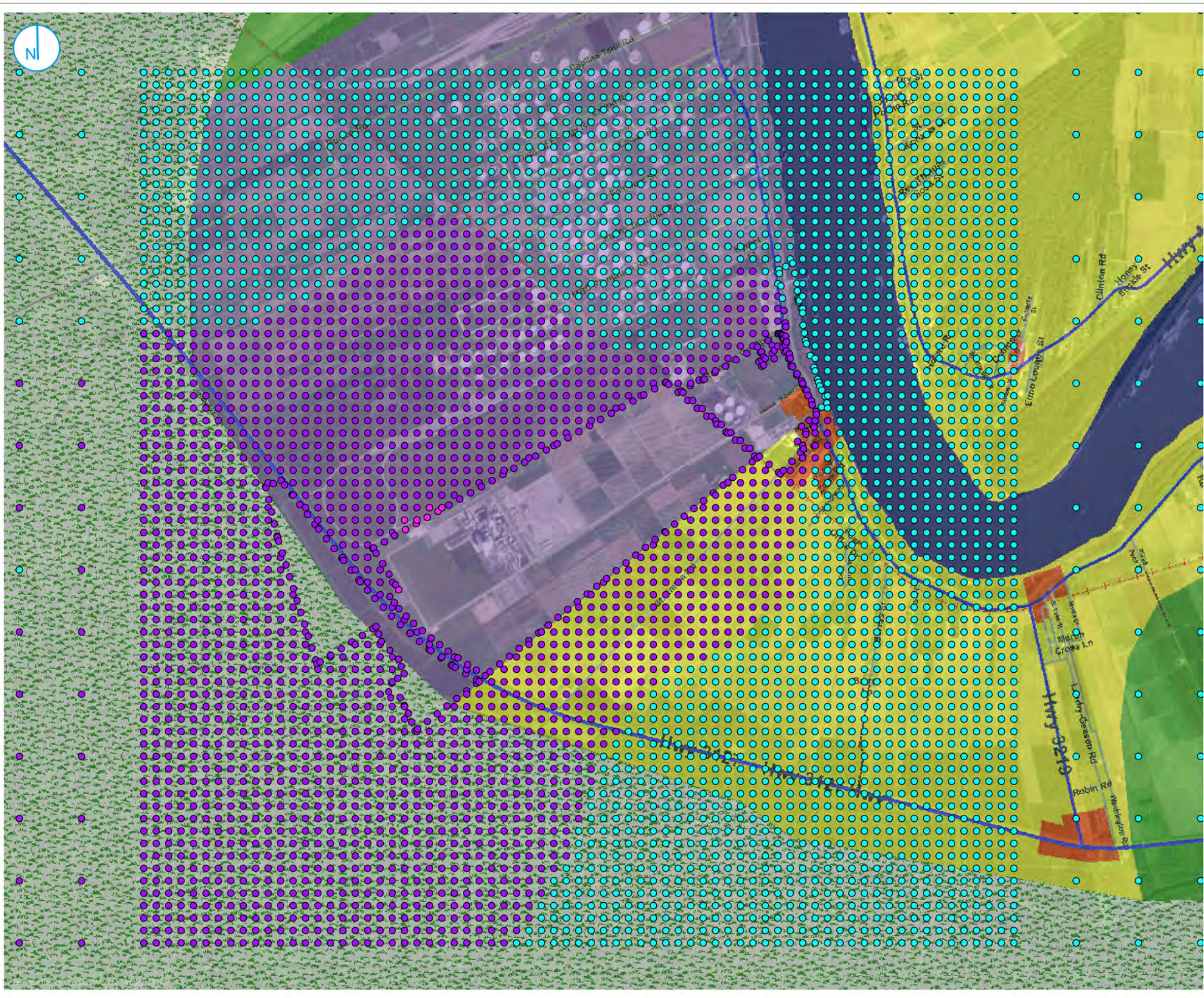
FIGURE D-3

RAMBOLL US CONSULTING, INC.
A RAMBOLL COMPANY

*Note: 2022 values are not full-year values but values through the first three quarters of the year (January 1 - September 30). Value is therefore provisional.

Koch Methanol

RAMBOLL



LEGEND

Cancer Risk

- > 1 in one million and <= 2 in one million
- > 0.1 in one million and <= 1 in one million
- >= 0.006 in one million and <= 0.1 in one million

Land Use

- Commercial / Residential Mixed
- Commercial
- Industrial
- Agriculture
- Residential Growth
- Existing Residential / Future Industrial
- Water
- Wetlands

0 0.5 1 Miles

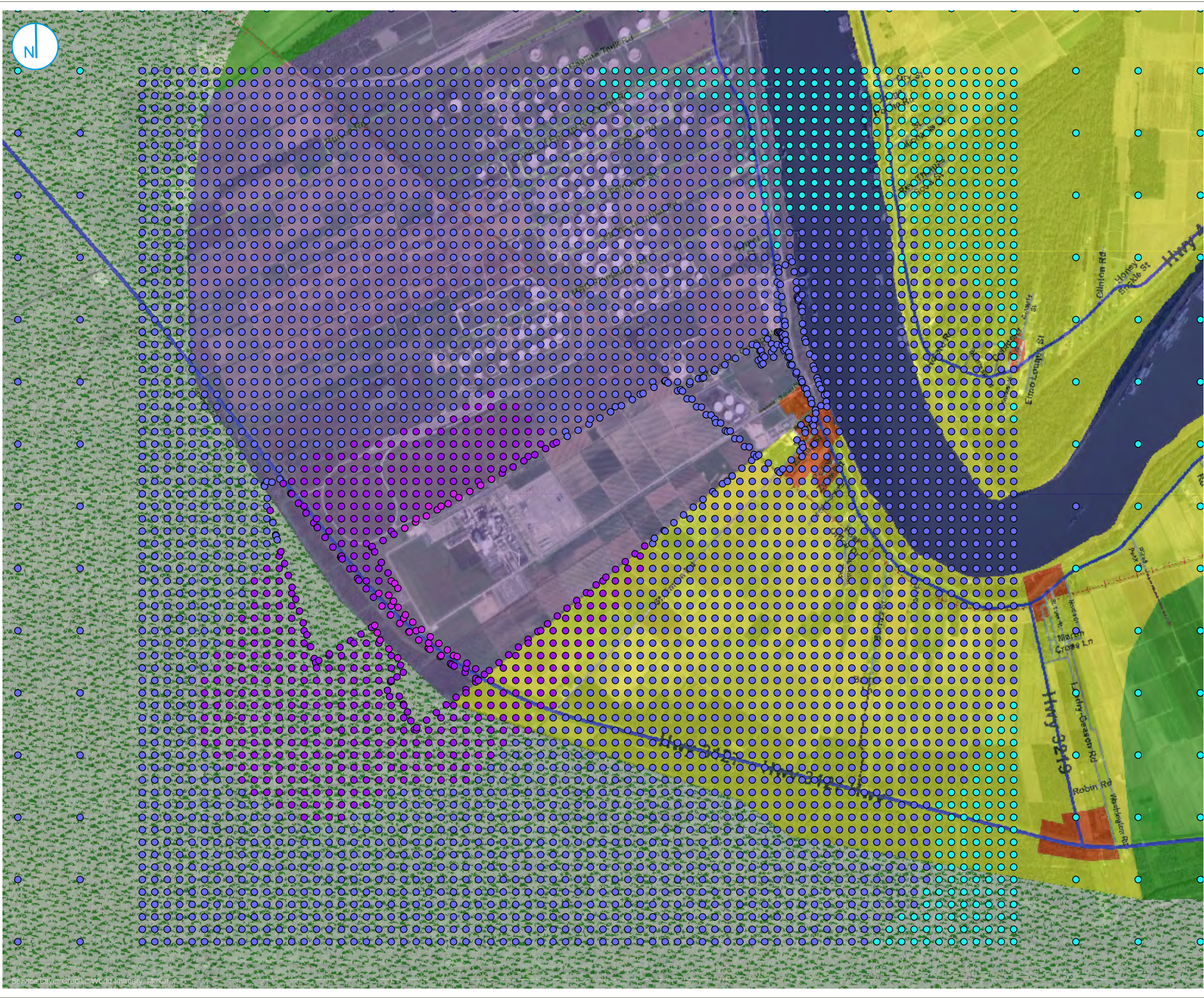
FACILITY AIR TOXIC RESIDENTIAL
CANCER RISK ESTIMATES

Koch Methanol

FIGURE D-4

RAMBOLL US CONSULTING, INC.
A RAMBOLL COMPANY





LEGEND

Chronic HI

- > 0.5 and <= 0.8
- > 0.1 and <= 0.5
- > 0.01 and <= 0.1
- >= 0.001 and <= 0.01

Land Use

- Commercial / Residential Mixed
- Commercial
- Industrial
- Agriculture
- Residential Growth
- Existing Residential / Future Industrial
- Water
- Wetlands

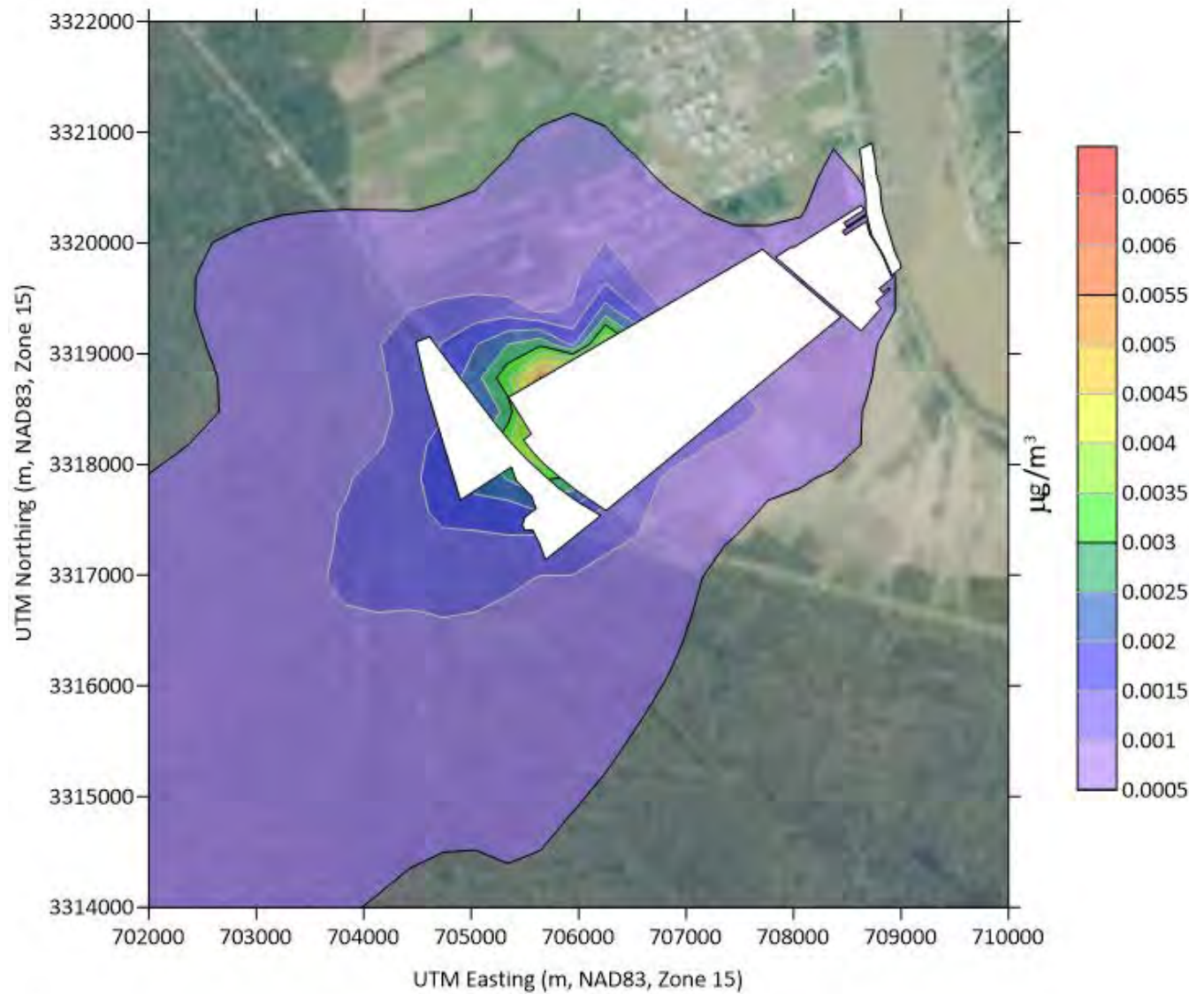
* HI = Hazard Index



FACILITY AIR TOXIC RESIDENTIAL
RESPIRATORY HI ESTIMATES

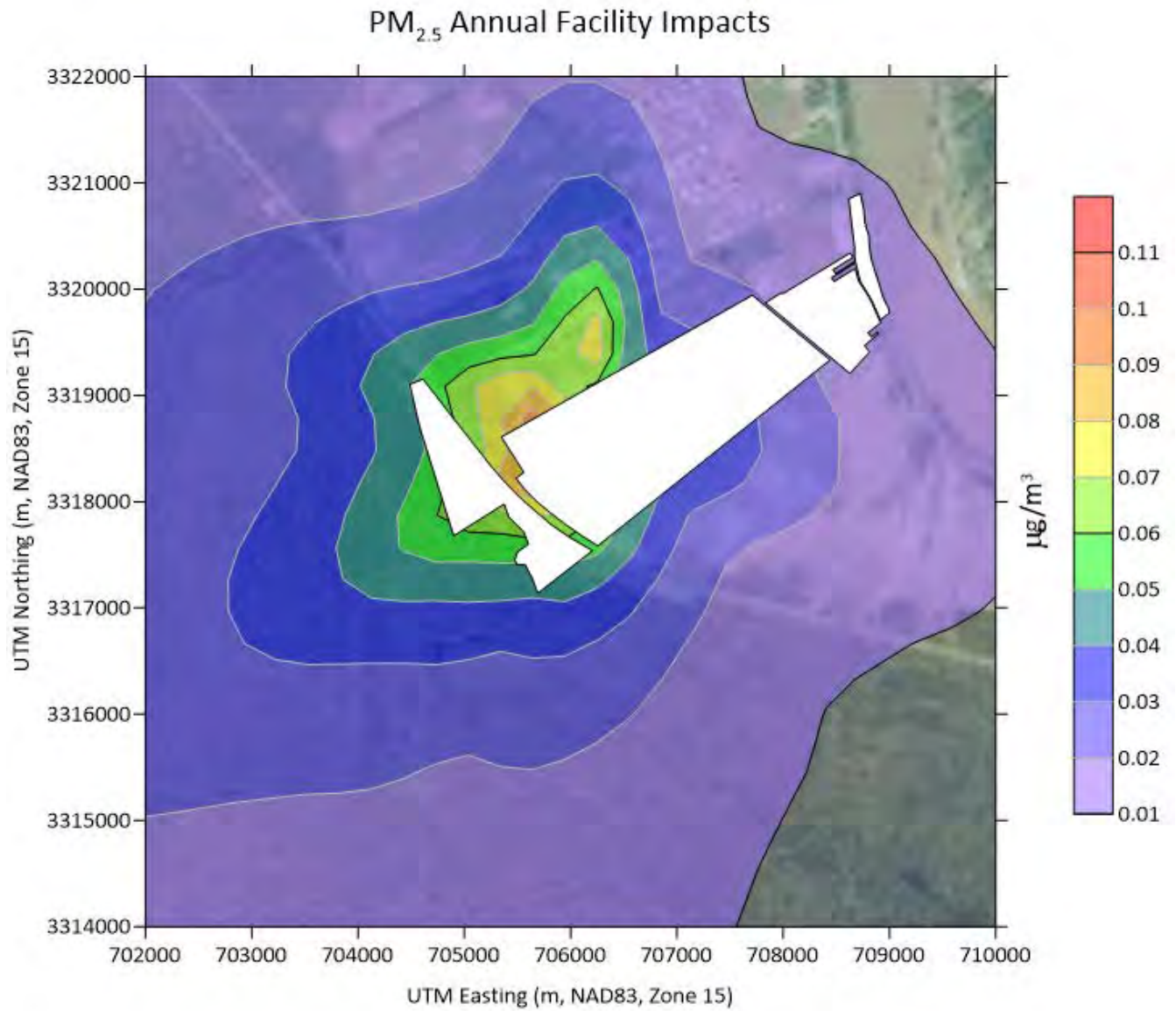
Koch Methanol

FIGURE D-5



AERMOD-PREDICTED FACILITY ANNUAL DPM CONCENTRATIONS

FIGURE D-6



AERMOD-PREDICTED FACILITY ANNUAL PM2.5

FIGURE D-7

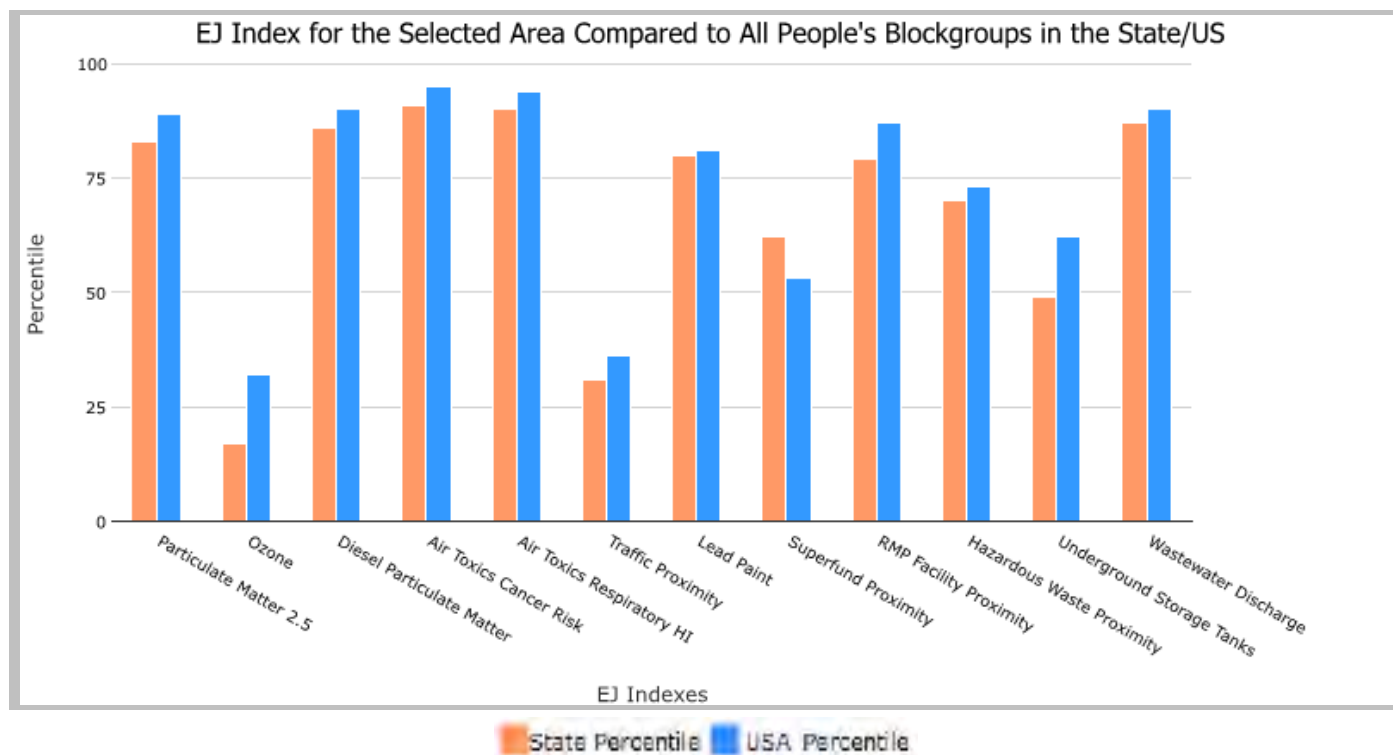
ATTACHMENT D-1
EJSCREEN REPORTS

3.1 miles Ring Centered at 29.984221,-90.850335, LOUISIANA, EPA Region 6

Approximate Population: 1,142

Input Area (sq. miles): 30.18

Selected Variables	State Percentile	USA Percentile
Environmental Justice Indexes		
EJ Index for Particulate Matter 2.5	83	89
EJ Index for Ozone	17	32
EJ Index for Diesel Particulate Matter*	86	90
EJ Index for Air Toxics Cancer Risk*	91	95
EJ Index for Air Toxics Respiratory HI*	90	94
EJ Index for Traffic Proximity	31	36
EJ Index for Lead Paint	80	81
EJ Index for Superfund Proximity	62	53
EJ Index for RMP Facility Proximity	79	87
EJ Index for Hazardous Waste Proximity	70	73
EJ Index for Underground Storage Tanks	49	62
EJ Index for Wastewater Discharge	87	90

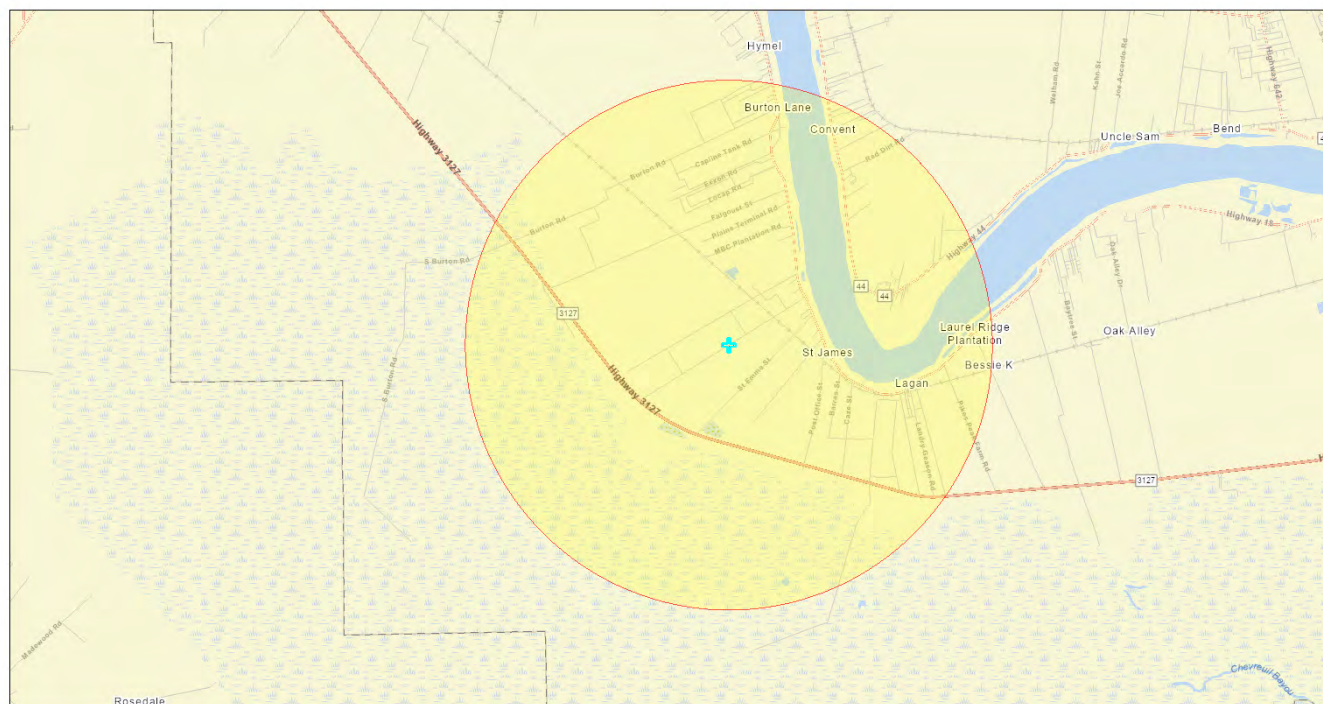


This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

3.1 miles Ring Centered at 29.984221,-90.850335, LOUISIANA, EPA Region 6

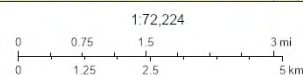
Approximate Population: 1,142

Input Area (sq. miles): 30.18



March 1, 2023

Search Result (point)



CONANP, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA

Sites reporting to EPA

Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0

EJScreen Report (Version 2.1)



3.1 miles Ring Centered at 29.984221,-90.850335, LOUISIANA, EPA Region 6

Approximate Population: 1,142

Input Area (sq. miles): 30.18

Selected Variables	Value	State Avg.	%ile in State	USA Avg.	%ile in USA
Pollution and Sources					
Particulate Matter 2.5 ($\mu\text{g}/\text{m}^3$)	9.29	9.2	58	8.67	71
Ozone (ppb)	34.6	37	5	42.5	9
Diesel Particulate Matter* ($\mu\text{g}/\text{m}^3$)	0.388	0.297	73	0.294	70-80th
Air Toxics Cancer Risk* (lifetime risk per million)	54	40	92	28	95-100th
Air Toxics Respiratory HI*	0.5	0.45	90	0.36	95-100th
Traffic Proximity (daily traffic count/distance to road)	31	640	20	760	18
Lead Paint (% Pre-1960 Housing)	0.23	0.2	65	0.27	51
Superfund Proximity (site count/km distance)	0.02	0.076	30	0.13	18
RMP Facility Proximity (facility count/km distance)	0.75	0.96	61	0.77	68
Hazardous Waste Proximity (facility count/km distance)	0.46	1.4	45	2.2	43
Underground Storage Tanks (count/km ²)	0.081	2.2	23	3.9	27
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.0065	0.37	69	12	65
Socioeconomic Indicators					
Demographic Index	68%	41%	81	35%	88
People of Color	79%	42%	80	40%	83
Low Income	57%	38%	74	30%	86
Unemployment Rate	8%	7%	69	5%	76
Limited English Speaking Households	0%	2%	0	5%	0
Less Than High School Education	20%	14%	70	12%	80
Under Age 5	6%	7%	58	6%	60
Over Age 64	16%	15%	57	16%	51

*Diesel particulate matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: <https://www.epa.gov/haps/air-toxics-data-update>.

For additional information, see: www.epa.gov/environmentaljustice

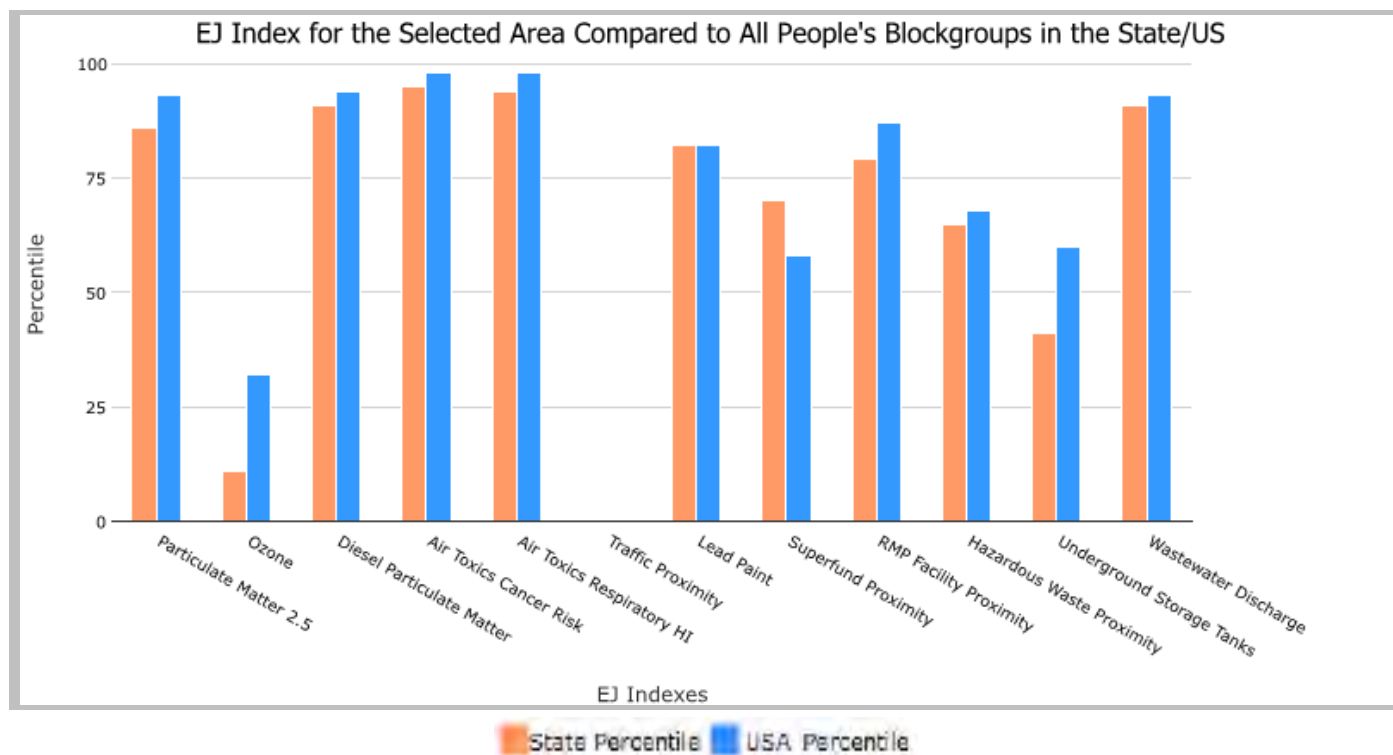
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1 mile Ring Centered at 29.984221,-90.850335, LOUISIANA, EPA Region 6

Approximate Population: 41

Input Area (sq. miles): 3.14

Selected Variables	State Percentile	USA Percentile
Environmental Justice Indexes		
EJ Index for Particulate Matter 2.5	86	93
EJ Index for Ozone	11	32
EJ Index for Diesel Particulate Matter*	91	94
EJ Index for Air Toxics Cancer Risk*	95	98
EJ Index for Air Toxics Respiratory HI*	94	98
EJ Index for Traffic Proximity	N/A	N/A
EJ Index for Lead Paint	82	82
EJ Index for Superfund Proximity	70	58
EJ Index for RMP Facility Proximity	79	87
EJ Index for Hazardous Waste Proximity	65	68
EJ Index for Underground Storage Tanks	41	60
EJ Index for Wastewater Discharge	91	93

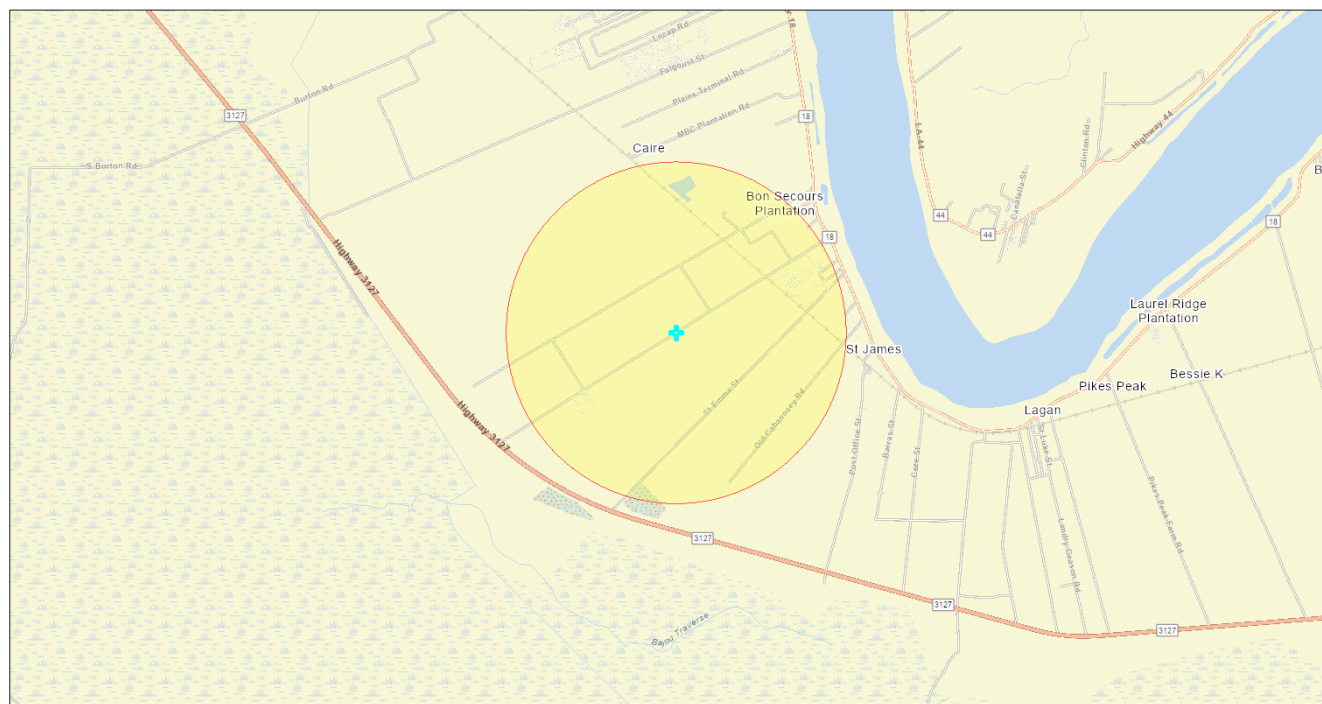


This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

1 mile Ring Centered at 29.984221,-90.850335, LOUISIANA, EPA Region 6

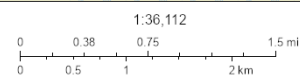
Approximate Population: 41

Input Area (sq. miles): 3.14



March 1, 2023

✚ Search Result (point)



CONANP, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0

EJScreen Report (Version 2.1)



1 mile Ring Centered at 29.984221,-90.850335, LOUISIANA, EPA Region 6

Approximate Population: 41

Input Area (sq. miles): 3.14

Selected Variables	Value	State Avg.	%ile in State	USA Avg.	%ile in USA
Pollution and Sources					
Particulate Matter 2.5 ($\mu\text{g}/\text{m}^3$)	9.24	9.2	55	8.67	69
Ozone (ppb)	34	37	3	42.5	8
Diesel Particulate Matter* ($\mu\text{g}/\text{m}^3$)	0.387	0.297	73	0.294	70-80th
Air Toxics Cancer Risk* (lifetime risk per million)	50	40	89	28	95-100th
Air Toxics Respiratory HI*	0.5	0.45	90	0.36	95-100th
Traffic Proximity (daily traffic count/distance to road)	N/A	640	N/A	760	N/A
Lead Paint (% Pre-1960 Housing)	0.16	0.2	54	0.27	42
Superfund Proximity (site count/km distance)	0.021	0.076	32	0.13	19
RMP Facility Proximity (facility count/km distance)	0.46	0.96	52	0.77	57
Hazardous Waste Proximity (facility count/km distance)	0.18	1.4	31	2.2	29
Underground Storage Tanks (count/km ²)	0.0066	2.2	14	3.9	0
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.007	0.37	70	12	66
Socioeconomic Indicators					
Demographic Index	78%	41%	90	35%	94
People of Color	86%	42%	85	40%	87
Low Income	70%	38%	87	30%	93
Unemployment Rate	2%	7%	36	5%	30
Limited English Speaking Households	0%	2%	0	5%	0
Less Than High School Education	14%	14%	55	12%	68
Under Age 5	0%	7%	0	6%	0
Over Age 64	28%	15%	85	16%	85

*Diesel particulate matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: <https://www.epa.gov/haps/air-toxics-data-update>.

For additional information, see: www.epa.gov/environmentaljustice

EJScreen is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJScreen documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJScreen outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.

ATTACHMENT D-2
EJ MODELING INPUT TABLES

Table 1. Point Source Parameters in EJ Modeling							
Source	AERMOD ID	Location		Stack Parameters			
		UTM-x (m)	UTM-y (m)	Height (ft)	Temperature (F)	Velocity (ft/s)	Diameter (ft)
Steam Methane Reformer	M1_SMR	706279.00	3318808.00	213.25	336.00	78.93	10.66
Auxiliary Boiler	M1_BLR	706241.00	3318778.00	213.25	300.00	44.59	8.26
Process Condensate Stripper Vent	M1_PCV	706349.30	3318742.00	93.83	248	1.09	5.25
Flare	M1_FL_LT	705987.00	3318635.00	185.00	1832	65.60	4.45
Emergency Generator	M1_EGEN	706247.00	3318690.00	12.01	918	182.55	1.35
Fire Pump 1	M1_FP1	706440.00	3318692.00	12.01	918	173.85	0.49
Fire Pump 2	M1_FP2	706458.00	3318702.00	12.01	918	173.85	0.49
Fire Pump 3	M1_FP3	706468.00	3318707.00	12.01	918	173.85	0.49
Cooling Tower Cell 1	M1_CT_1	706192.00	3318720.00	46.00	68	22.13	34.38
Cooling Tower Cell 2	M1_CT_2	706198.00	3318709.00	46.00	68	22.13	34.38
Cooling Tower Cell 3	M1_CT_3	706205.00	3318697.00	46.00	68	22.13	34.38
Cooling Tower Cell 4	M1_CT_4	706211.00	3318687.00	46.00	68	22.13	34.38
Cooling Tower Cell 5	M1_CT_5	706217.00	3318675.00	46.00	68	22.13	34.38
Cooling Tower Cell 6	M1_CT_6	706224.00	3318664.00	46.00	68	22.13	34.38
Cooling Tower Cell 7	M1_CT_7	706230.00	3318653.00	46.00	68	22.13	34.38
Cooling Tower Cell 8	M1_CT_8	706236.00	3318642.00	46.00	68	22.13	34.38
Cooling Tower Cell 9	M1_CT_9	706243.00	3318632.00	46.00	68	22.13	34.38
Cooling Tower Cell 10	M1_CT_10	706248.00	3318620.00	46.00	68	22.13	34.38
Cooling Tower Cell 11	M1_CT_11	706233.00	3318610.00	46.00	68	22.13	34.38
Ammonia Tank	M1_TKNH3	706589.00	3318651.00	8.01	ambient	0.003	3.28
Methanol Scrubber	M1_D4001	706247.00	3318914.00	66.01	ambient	0.003	3.28
Admin Building Generator	M1ADGEN	708673.52	3319560.32	11.98	1175	264.51	0.04
Gasoline Tank	M1GASTK	706807.00	3318474.00	3.28	ambient	0.003	3.28
Generac 1	T1_EGEN1	708465.00	3319620.00	13.75	987	324.96	1.12
Generac 2	T1_EGEN2	708457.00	3319615.00	13.75	987	324.96	1.12
Vapor Combustion Unit	VCU	705814.20	3318792.60	45.00	1320	20.00	8.00
Trap Vents	TRAP	706341.82	3318718.17	9.84	212	0.003	0.06

Table 2. Polygon Area Source Parameters in EJ Modeling					
Source	AERMOD ID	Location		Release Parameters	
		UTM-x (m)	UTM-y (m)	Height (ft)	Number of Corners
M1 Area Fugitives	M1_FUG	706233.23	3318596.83	15.00	8
T1 Area Fugitives	T1_FUG	708143.78	3319773.28	15.00	8

Table 3. Volume Source Parameters in EJ Modeling						
Source	AERMOD ID	Location		Release Parameters		
		UTM-x (m)	UTM-y (m)	Height (ft)	Initial Horiz. Dim. (ft)	Initial Vert. Dim. (ft)
Waste Water Treatment Plant Fugitives	WWTP	706488.00	3318658.00	15.00	155.64	13.94

Table 4. Circle Area Source Parameters in EJ Modeling					
Source	AERMOD ID	Location		Release Parameters	
		UTM-x (m)	UTM-y (m)	Height (ft)	Radius (ft)
Above ground storage vessel	TK26202A	708202.90	3319662.60	50	110
Above ground storage vessel	TK26202B	708298.30	3319717.80	50	110
Above ground storage vessel	TK26202C	708156.80	3319729.10	50	110
Above ground storage vessel	TK26202D	708236.30	3319761.60	50	110

Table 5. Annual Emission Rates for EJ Modeling														
Source	AERMOD ID	Emission Rates (tpy)												Aldehyde
		Methanol	Ammonia	H2S	Acetaldehyde	Benzene	Dichlorobenzene	Ethylbenzene	Formaldehyde	Hexane	Naphthalene	Toluene	224-Trimethylpentane	
Steam Methane Reformer	M1_SMR	17.44	91.98	0.00	0.00	0.01	6.17E-03	0.00	0.39	9.25	3.13E-03	0.02	0.00	0.00
Auxiliary Boiler	M1_BLR	1.76	21.46	0.00	0.00	1.42E-03	8.76E-04	0.00	0.05	1.22	4.13E-04	2.30E-03	0.00	0.00
Process Condensate Stripper Vent	M1_PCV	0.00	2.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Flare	M1_FL_LT	8.22	0.00	0.00	0.00	8.05E-04	4.60E-04	0.00	0.03	0.69	2.34E-04	1.30E-03	0.00	0.00
Emergency Generator	M1_EGEN	0.00	0.00	0.00	3.21E-05	9.87E-04	0.00	0.00	1.00E-04	0.00	1.65E-04	3.57E-04	0.00	0.00
Fire Pump 1	M1_FP1	0.00	0.00	0.00	1.61E-04	1.96E-04	0.00	0.00	2.48E-04	0.00	1.78E-05	8.59E-05	0.00	0.02
Fire Pump 2	M1_FP2	0.00	0.00	0.00	1.61E-04	1.96E-04	0.00	0.00	2.48E-04	0.00	1.78E-05	8.59E-05	0.00	0.02
Fire Pump 3	M1_FP3	0.00	0.00	0.00	6.71E-05	8.16E-05	0.00	0.00	1.03E-04	0.00	7.42E-06	3.58E-05	0.00	6.00E-03
Cooling Tower Cell 1	M1_CT_1	3.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 2	M1_CT_2	3.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 3	M1_CT_3	3.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 4	M1_CT_4	3.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 5	M1_CT_5	3.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 6	M1_CT_6	3.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 7	M1_CT_7	3.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 8	M1_CT_8	3.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 9	M1_CT_9	3.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 10	M1_CT_10	3.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 11	M1_CT_11	3.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ammonia Tank	M1_TKNH3	0.00	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Methanol Scrubber	M1_D4001	10.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Admin Building Generator	M1ADGEN	1.99E-04	0.00	0.00	6.65E-04	3.50E-05	0.00	3.16E-06	4.20E-03	8.83E-05	5.92E-06	3.24E-05	1.99E-05	0.00
Gasoline Tank	M1GASTK	0.00	0.00	0.00	0.00	1.21E-03	0.00	6.60E-04	0.00	6.14E-04	0.00	1.42E-03	2.34E-03	0.00
Generac 1	T1_EGEN1	0.00	0.00	0.00	2.58E-05	7.94E-04	0.00	0.00	8.07E-05	0.00	1.33E-04	2.87E-04	0.00	0.00
Generac 2	T1_EGEN2	0.00	0.00	0.00	2.58E-05	7.94E-04	0.00	0.00	8.07E-05	0.00	1.33E-04	2.87E-04	0.00	0.00
Vapor Combustion Unit	VCU	15.93	0.00	0.00	0.00	1.72E-04	9.84E-05	0.00	6.15E-03	0.15	5.00E-05	2.79E-04	0.00	0.00
Trap Vents	TRAP	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
M1 Area Fugitives	M1_FUG	27.26	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Waste Water Treatment Plant Fugitives	M1_WWTP	0.33	3.29	9.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
T1 Area Fugitives	T1_FUG	11.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Above ground storage vessel	TK26202A	2.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Above ground storage vessel	TK26202B	2.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Above ground storage vessel	TK26202C	2.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Above ground storage vessel	TK26202D	2.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

[illegible][illegible]

Attachment 4

April 2025 Drone Photos of Project Area & Pre-Project
Images

Attachment 4

April 2025 Drone Photos of Project Area & Pre-Project Images (Google Earth)

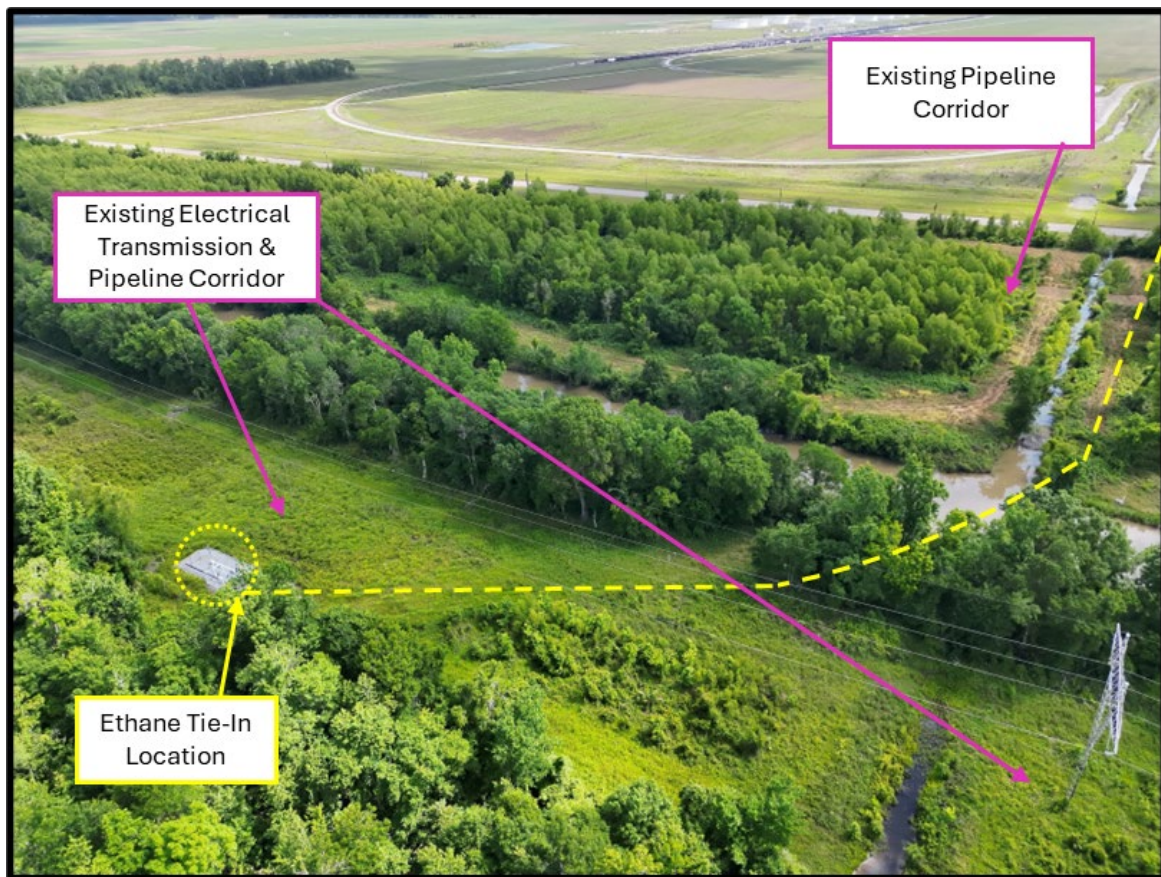


Image 1 – Pipeline Connection in Existing Corridors

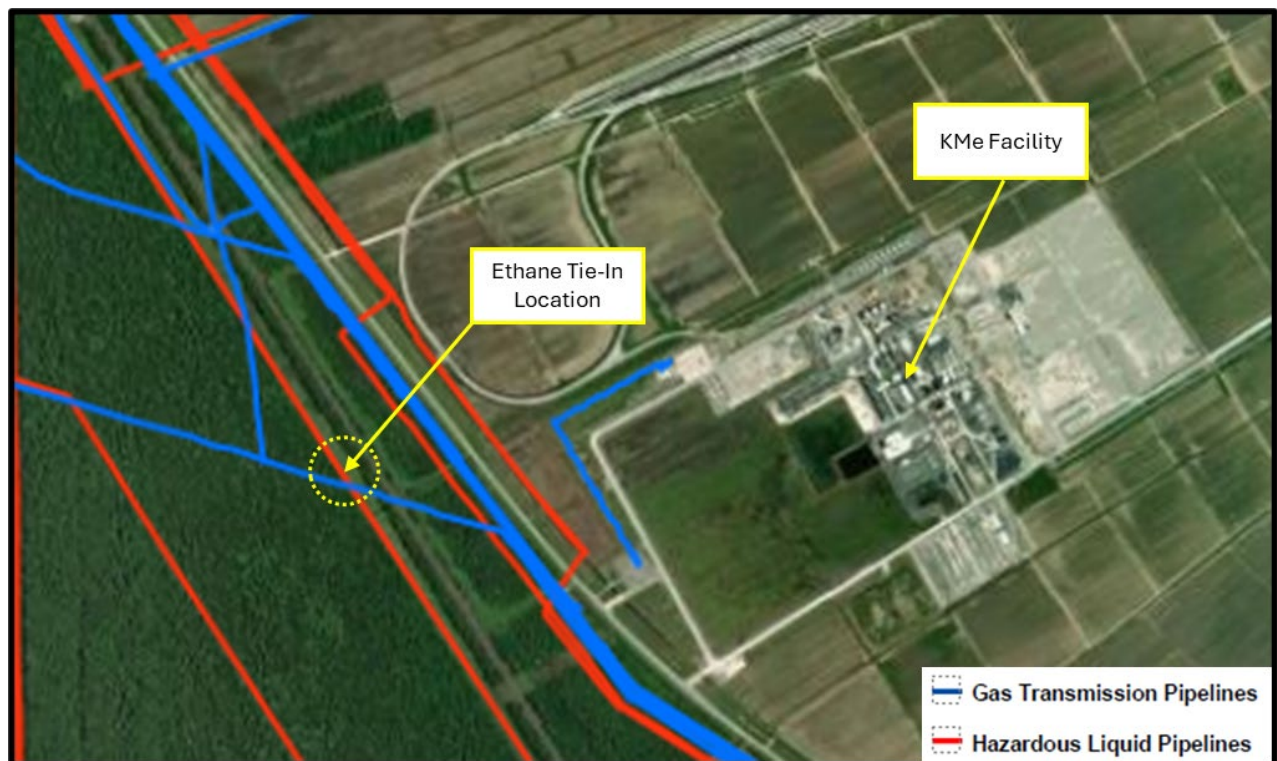


Image 2 - Existing Pipelines in Surrounding Area



***Image 3 – Tie-In Location to Existing Ethane Pipeline in Existing Right of Way Corridors
(Google Earth Image)***

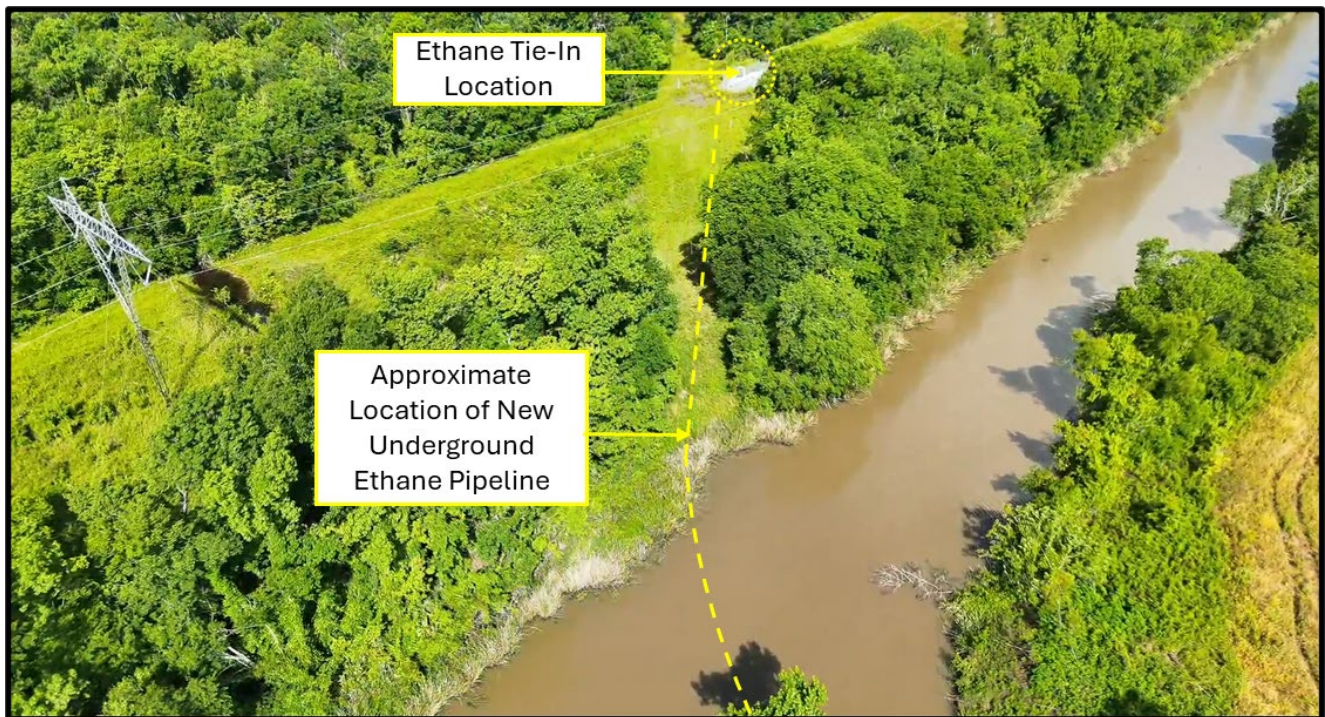


Image 4 – Drone Footage Post-Project (April 2025) Showing Restored Vegetation



Image 5 – Drone Footage Post-Project (April 2025) Showing Restored Vegetation



Image 6 – Pre-Project View of Project Area with Existing Vegetation in Corridors

Attachment 5

Community Support & Project Investment

KOCH METHANOL ST. JAMES COMMUNITY SUPPORT

Koch Methanol St. James believes that strong communities are good for business. The company's core philosophy is anchored in a belief that for a business to survive and prosper, it must develop and use its capabilities to create sustainable value for both its customers and society.

Working directly with local organizations is a key focus, and the company invests in four key areas:

EDUCATION: Support programs that give students and future workers the skills necessary for today's workplace. This includes Parish school initiatives, local scholarships, and STEAM programs, including:

- River Parishes Community College Scholarships
- Wildcat Productions
- St. James High School A.C.E. Banquet
- Parish Wide School Grants
- Nicholls University
- Lego STEM Camp

COMMUNITY ENRICHMENT: Work with organizations that support community needs and allow for employee engagement through volunteering and financial support, including:

- St. James Senior Centers
- Drivers' License Restoration Clinic
- 5th District Summer Camp
- Food and Toy Drives
- Bonfire Festival
- Veteran's Celebration
- Emergency Preparedness Services/Fire Department
- River Road African American Museum
- Local Food Bank
- St. James ARC

ENTREPRENEURSHIP: Promote entrepreneurial development while fostering economic and critical thinking skills, especially focused on initiatives that align with our company's Principle Based Management® philosophy, including:

- Junior Achievement
- Bayou Region Incubator

ENVIRONMENT: Assist organizations that foster environmental responsibility and provide environmental learning opportunities, including those that promote environmental stewardship, including:

- St. James 4H Club
- Keep St. James Parish Beautiful
- Fast Food Farm
- Ducks Unlimited

For more information or to submit questions, please
email: kochmethanolinfo@kochind.com
or mail to: Koch Methanol St. James Questions
P. O. Box 510, Vacherie, LA 70086



KOCH METHANOL ST. JAMES PROJECT INVESTMENT

Koch Methanol St. James provides employment and tax benefits to St. James Parish and the surrounding communities – and these projects will support the long-term operation and growth of jobs and tax revenue.

WORKFORCE:

- Koch Methanol St. James is the 12th largest employer in St. James Parish.
- Currently support approximately **114 full-time jobs** at the facility and indirectly supporting local businesses every day. These projects help retain existing jobs.
- As a result of these projects, **2 additional full-time jobs** were created and have already been implemented at the site.
- The site also supports contractor jobs everyday and through the construction of these projects. Approximately **400 temporary jobs** supported the Projects.
- Koch Methanol St. James posts open roles to our Careers Website, KochCareers.com, and through other avenues with the community (i.e., facebook, community meetings, etc.).

TAX REVENUE:

- Koch Methanol St. James is expected to pay **\$165 Million to the Parish** in property taxes over the next 20 years.
- Specifically for these projects, the investment will result in an **additional \$10 Million to the Parish** in property taxes over the next 20 years.
- Additional tax revenue of over **\$250,000/year** will be generated for St. James Parish by sales and use tax; and other local taxes.

THIS PROJECT INVESTMENT GROWS THE WORKFORCE AND TAX REVENUE FOR ST. JAMES PARISH AS WELL AS SUSTAINING CURRENT JOBS AND SUPPORT IN THE PARISH.

For more information or to submit questions, please
email: kochmethanolinfo@kochind.com
or mail to: Koch Methanol St. James Questions
P. O. Box 510, Vacherie, LA 70086



Attachment 6

Air Permit No. 2560-00295-V6, PSD-LA-851 Statement of
Basis

**LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF ENVIRONMENTAL SERVICES**

STATEMENT OF BASIS¹

PROPOSED PART 70 OPERATING PERMIT 2560-00295-V6

**KOCH METHANOL FACILITY
KOCH METHANOL ST. JAMES, LLC
ST. JAMES, ST. JAMES PARISH, LOUISIANA
Agency Interest (AI) No. 194165
Activity No. PER20220006 & PER20220007**

I. APPLICANT

The applicant is: Koch Methanol St. James, LLC
5181 Wildcat St.
St. James, LA 70086

Facility: Koch Methanol Facility

SIC Code: 2869

Location: 5181 Wildcat St.,
St. James, LA 70086

II. PERMITTING AUTHORITY

The permitting authority is: Louisiana Department of Environmental Quality
Office of Environmental Services
P.O. Box 4313
Baton Rouge, Louisiana 70821-4313

III. CONTACT INFORMATION

Additional information may be obtained from:

Mr. Anthony Randall
P.O. Box 4313
Baton Rouge, Louisiana 70821-4313
Phone: (225) 219-3181

IV. FACILITY BACKGROUND AND CURRENT PERMIT STATUS

Koch Methanol St. James LLC (Koch) operates the Koch Methanol Plant (KMe Plant) and the adjacent Koch Methanol Terminal (KMe Terminal), collectively known as the KMe Facility, located in St. James, St. James Parish, Louisiana. The KMe Plant and the KMe Terminal constitute a single major stationary source under the Title V Operating Permits

¹ 40 CFR 70.7(a)(5) and LAC 33:III.531.A.4 require the permitting authority to “provide a statement that sets forth the legal and factual basis for the proposed permit conditions of any permit issued to a Part 70 source, including references to the applicable statutory or regulatory provisions.”

STATEMENT OF BASIS

**KOCH METHANOL FACILITY
KOCH METHANOL ST. JAMES, LLC
ST. JAMES, ST. JAMES PARISH, LOUISIANA
Agency Interest (AI) No. 194165
Activity No. PER20220006 & PER20220007
Proposed Permit No. 2560-00295-V6**

Program. The KMe Plant was previously permitted under Title V Permit No. 2560-00295-V5, issued on February 23, 2023, and the KMe Terminal was previously permitted under Title V Permit No. 3169-V3, issued on August 11, 2022.

V. PROPOSED PERMIT/PROJECT INFORMATION

A permit application and Emission Inventory Questionnaire (EIQ) dated November 2, 2022, were received requesting a permit modification. The application was deemed administratively complete in accordance with LAC 33:III.519.A on November 3, 2022.

Pursuant to LAC 33:III.519.A.4, a notice of the completeness determination was published in The News Examiner-Enterprise, Litcher, Louisiana, on November 24, 2022.

Additional information dated February 1, 2023, February 8, 2023, March 20, 2023, March 22, 2023, March 28, 2023, May 2, 2023, and June 19, 2023 was also received.

Process Description

Koch requested to increase the KMe Plant's design production rate to approximately 6,200 metric tons per day (MTPD) of refined methanol. Methanol is produced using the licensed Lurgi MegaMethanol® technology. The methanol production process consists of three main steps: synthesis gas (syngas) production, crude methanol synthesis, and methanol distillation.

The Lurgi MegaMethanol® process is an advanced, highly efficient technology for converting natural gas to methanol. The technology's main processing features include oxygen-blown natural gas reforming in combination with steam reforming, two-step methanol synthesis in water and gas-cooled reactors, and the capability to recycle hydrogen to adjust synthesis gas composition.

Syngas Production

Syngas production by the combined reforming method starts with desulfurization and pre-reforming of natural gas feedstock. After pre-reforming, the natural gas feedstock is split into two branches, with one branch of the gas stream routed to the steam methane reformer (SMR) unit. The SMR uses a catalyst in the presence of steam to reform methane into a raw syngas stream, composed primarily of hydrogen, carbon monoxide, and carbon dioxide. The SMR contains two independent fuel/burner systems comprised of the SMR furnace and auxiliary burner firing in the SMR exhaust duct. The SMR auxiliary burners provide additional heat to the SMR exhaust stream, similar to duct burners, to facilitate heat recovery.

STATEMENT OF BASIS

**KOCH METHANOL FACILITY
KOCH METHANOL ST. JAMES, LLC
ST. JAMES, ST. JAMES PARISH, LOUISIANA
Agency Interest (AI) No. 194165
Activity No. PER20220006 & PER20220007
Proposed Permit No. 2560-00295-V6**

The other branch of the pre-reformed natural gas stream bypasses the SMR and is mixed with the raw syngas exiting the SMR unit. The combined stream is then routed to the secondary reforming process, the Autothermal Reformer (ATR), where oxygen is introduced as the reforming agent. The syngas stream leaving the secondary reforming process contains water as a by-product of the reforming process. Heat is recovered from this stream through various process heaters, and the water is knocked out as process condensate. This condensate contains traces of dissolved gases and ammonia, which are stripped off in the Process Condensate Stripper and sent to the SMR unit for destruction. The dry syngas is then routed to the methanol synthesis unit.

Methanol Synthesis

The methanol synthesis process utilizes two synthesis steps in series: twin water-cooled reactors followed by a gas-cooled reactor. The isothermal, water-cooled reactors use a highly reactive catalyst to partially convert the syngas to methanol. The heat of reaction from this process is drawn off by water cooling and is recovered to produce steam (which can be used to generate electricity via a condensing turbine, depending on the energy balance within the facility). The partially converted process gas stream is routed to the gas-cooled methanol reactor, where it is further reacted while passing over a catalyst bed.

The crude methanol is cooled and condensed, and a purge gas stream is separated before the liquid crude methanol is routed to the methanol distillation unit. Hydrogen can be separated from the purge gas; the hydrogen-rich stream contains minor amounts of non-reactive components in the form of nitrogen and any remaining methane. This stream is used for pre-reformer and synthesis loop catalyst reduction and can also be recycled to methanol synthesis and for desulfurization. The remaining purge gas is combusted as fuel gas in the SMR and Boiler. The crude methanol is routed to the methanol distillation unit.

Methanol Distillation

The crude methanol contains impurities together with unconverted reactants and traces of dissolved gases from the methanol synthesis stage. The stream is degassed in an expansion vessel, which rids the crude methanol stream of much of the dissolved N₂, CO₂, CO, H₂, and methane. This expansion gas stream is combusted in the SMR as fuel. Volatile light ends and the remainder of the dissolved gases are removed in the pre-run column, which separates them into an overhead vapor stream. The overhead vapor stream, called distillation off gas, is combusted as fuel in the SMR. The less volatile,

STATEMENT OF BASIS

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KOCH METHANOL ST. JAMES, LLC
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Activity No. PER20220006 & PER20220007
Proposed Permit No. 2560-00295-V6**

higher boiling components are further separated in two methanol columns in series. The first of the methanol columns operates at high pressure, while the second operates at atmospheric pressure. The overhead stream from the high-pressure column is used to heat the bottoms of the atmospheric pressure column. The overhead streams from both columns are condensed and refluxed back to their respective columns, with some portion of each split off as the product methanol. Product grade methanol exiting the distillation process is sent to TK-04002A/B storage tanks prior to further storage and distribution at the KMe Terminal. An additional storage tank containing raw methanol (TK-04001) is used to reprocess methanol that does not meet product specifications and to process other methanol-containing streams. A chiller/scrubber system controls emissions from the raw methanol storage tank and two product grade storage tanks. Methanol from the scrubber water is recovered by pumping the scrubber water to the expansion vessel or directly to the raw methanol tank for reprocessing.

KMe Terminal

The purpose of the KMe Terminal is to store and transfer methanol product. The facility consists of four internal floating roof methanol product tanks (TK-26-202A, TK-26-202B, TK-26-202C, and TK-26-202D); methanol truck and rail loading operations; and infrastructure for transferring methanol to and from marine loading operations at the St. James Terminal, which is located adjacent to the site and owned and operated by Plains Marketing LP.

Permit Modifications

KMe Facility Consolidation

With this permit modification, Koch requested to incorporate all permitted KMe Terminal sources from Permit No. 3169-V3 (AI 213599) into the KMe Plant's Title V permit in order to consolidate the KMe Terminal and the KMe Plant into a single Title V permit for the KMe Facility. Some sources previously permitted in the KMe Terminal Title V permit shared a TEMPO ID with the permitted KMe Plant sources. Koch requested that all of the KMe Terminal sources be assigned new TEMPO IDs. Koch also requested that "Fugitive Emissions – Tanks and Terminals" from the KMe Terminal's Title V permit be combined with "Fugitive Emissions – Process Units" under one fugitive emissions source for the KMe Facility.

KMe Optimization Project

STATEMENT OF BASIS

**KOCH METHANOL FACILITY
KOCH METHANOL ST. JAMES, LLC
ST. JAMES, ST. JAMES PARISH, LOUISIANA
Agency Interest (AI) No. 194165
Activity No. PER20220006 & PER20220007
Proposed Permit No. 2560-00295-V6**

The KMe Optimization Project (“the Project”) consists of a number of activities, including a raw material feed upgrade, improvements to plant cooling capability, and other equipment upgrades with the collective primary goal of increasing utilization of existing assets and methanol production. The Project is intended to achieve a 25% increase in the KMe Facility’s design production rate from approximately 4,950 MTPD to 6,200 MTPD of refined methanol.

The raw material feed upgrade includes constructing ethane gas piping, a vaporizer, and associated equipment to inject ethane into the process natural gas feed to the SMR (EQT0001). Ethane will be brought into the facility from an existing third-party ethane gas pipeline. Piping, a metering skid, and associated piping components will be constructed, owned, and operated by the third party. KMe will connect to the third-party metering skid at a point of demarcation within the KMe Facility’s property. A shell and tube exchanger using low pressure steam, owned and operated by KMe, will be used to vaporize the ethane prior to injection into the process natural gas feed line to the SMR.

To meet the additional cooling needs anticipated for the Project, KMe plans to make upgrades to existing fin fan coolers as well as the existing cooling tower (EQT0007). This work may involve upgrades to or replacement of the fin fans for improved cooling capability at increased production rates. The cooling tower upgrades are anticipated to include addition of a new cooling tower cell and new or upgraded pumps for increased cooling tower circulation rates above current capability.

A modification to the Flare (EQT0003) design may occur as a result of the Project. The flare will either remain a non-assisted flare or may be modified to incorporate a steam-assisted design.

Other equipment upgrades, such as changes to or addition of piping fugitive components (FUG0001) for process safety valve upgrades, improved process monitoring, or new or changed piping configurations or process flows may be made as part of the Project. Zoloscanner technology utilizing advanced combustion monitoring may be installed on the SMR. Additionally, process equipment such as heat exchangers or burners may be replaced, physically modified, or added to accommodate the increased production rates.

SMR, Boiler, PCS Vent CAP (EPN SMR BLR PCS CAP, GRP0002)

The SMR, Boiler, PCS Vent CAP accounts for the average hourly and the annual emissions from the Steam Methane Reformer (Emission Point Number (EPN) SMR, EQT0001); Auxiliary Boiler (EPN BLR, EQT0002); and Process Condensate Stripper Vent (EPN

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PCSVENT, RLP0024). Koch requested to make the following changes to the SMR, Boiler, PCS Vent CAP:

- Increase the annual average and maximum firing rates of the SMR, which includes the combined firing of the SMR primary burners and auxiliary burners, to 1,725 MMBtu/hr and 1,794 MMBtu/hr, respectively;
- Increase the boiler's maximum firing rate from 997 MMBtu/hr to 1,100 MMBtu/hr;
- Revise the NO_x, CO, and VOC emission limits to represent the increased SMR and boiler firing rates and to account for emission control catalyst end-of-run performance at the higher firing rates, taking into account the results of a stack test performed near start-of-run (i.e., close to the date when the SCR and VOC/CO emission control catalysts were newly installed) for the SMR and boiler;
- Increase the maximum hourly and annual permitted ammonia emissions for the SMR and maximum hourly ammonia emissions for the boiler to account for additional ammonia injection which may be needed to meet the required NO_x limits at the end of the SCR catalyst run;
- Revise the methanol emission limits for the SMR and boiler based on an anticipated methanol mass flow rate considering the process stream methanol content and 99.9% destruction efficiency;
- Increase emission limits for the Process Condensate Stripper Vent to account for the increase in facility-wide methanol production; and
- Revise average hourly emission rates for the SMR, Boiler, PCS Vent CAP (EPN SMR BLR PCS CAP, GRP0002) to be based on 8,760 hours/year.

Other equipment emission limit changes resulting from the Project and/or updated calculations:

- Revise the emission limits for the Plant Flare (EPN FLR, EQT0003) to account for the increase in the flare load as well as increased supplemental natural gas that would be required to meet the net heating value requirements under the applicable regulations in the event a steam-assisted flare design is needed;

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- Revise the Cooling Water Tower (EPN CWT, EQT0007) emissions basis, including the circulating rate, the drift factor, the total dissolved solids (TDS) concentration, and the VOC calculation methodology, and add CO and GHG emissions;
- Combine the fugitive emissions from both of the permits into a single emission source, Fugitive Emissions – KMe Facility (EPN FUG, FUG0001);
- Revise the fugitive emissions to account for added fugitive components related to ethane gas piping, equipment associated with that work, and other piping changes associated with the Project;
- Revise emissions for the Methanol Scrubber (EPN D-04001, EMS0001). The Methanol Scrubber controls emissions from the Raw Methanol Tank (EPN TK-04001, EQT0008) and two (2) Pure Methanol Intermediate Tanks (EPN TK-04002A, EQT0013 and EPN TK-04002B, EQT0017). Emission limit increases are due to the increase in facility-wide methanol production; updates to the tanks' physical parameters to reflect as-built design; the use of updated AP-42 Section 7.1 "Organic Liquid Storage Tanks" (June 2020) emission factors, equations, and algorithms; and updated calculations for the Raw Methanol Tank (EPN TK-04001, EQT0008) to account for emissions from a methanol stream that is currently routed to the tank from an expansion vessel;
- Increase the throughput of the Ammonia Tank (EPN TK-NH3, EQT0014) to 440,000 gal/yr of aqueous ammonia. The additional ammonia is required for the SCR to handle the increase in SMR and Auxiliary Boiler firing rates. Emissions were also updated due to the updated AP-42 Section 7.1 emission factors;
- Update the emissions for Wastewater Treatment (EPN WWT, FUG0002) to reflect a 25% increase in wastewater flow associated with the production rate increase;
- Increase emission limits of Condensate Trap Vents (EPN CTVENT, RLP0025) to account for the increase in facility-wide methanol production;
- Revise the emissions limits for the Methanol Transfer and Product Tank CAP (EPN MTPCAP, GRP0001). This emission cap accounts for emissions from the four (4) internal floating roof methanol product tanks (EPNs TK-26-202A, TK-26-202B, TK-26-202C, and TK-26-202D), including tank cleanings and tank landings, as well as emissions from truck and railcar loading operations (EPN RT LOAD). A Vapor

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Control Unit (VCU) is used to control VOC emissions from railcar and truck loading operations.

Due to the increase in facility-wide methanol production, the emission limits for the emissions sources and activities included in the MTPCAP will increase as a result of an increase in methanol throughput through the tanks, trucks, and railcars. Additionally, the tanks' physical parameters were updated to reflect as-built design; emissions calculations were revised to utilize the updated AP- 42 Section 7.1, "Organic Liquid Storage Tanks" (June 2020) emission factors, equations, and algorithms; the VCU's enrichment gas average flow rate was adjusted to account for both current operations and increased production; and the NO_x emission factor was updated to reflect the vendor guarantee;

- Update the emissions for the General Condition XVII Activity for the Portable Thermal Oxidizer (GCXVII-15), which controls emissions during tank cleanings, to account for the cleaning of the internal floating roof tanks located at the KMe Terminal;
- Update the emissions for the General Condition XVII Activity for Railcar Cleanings (GCXVII-31) to account for an increase in methanol being loaded out via railcars;
- Update the maximum hourly emissions for the Admin Building Generator (EQT 0026) to account for condensable PM₁₀/PM_{2.5} emissions;
- Update the emission calculations for all natural gas combustion sources to include speciation of inorganic and organic toxic air pollutants to supplement the prior speciated emission calculations; and
- Revise the average hourly emission rates calculation methodology for the Methanol Transfer and Product Tank Cap (EPN MTPCAP, GRP0003).

Specific Requirement (SR) Additions and Revisions

- Add a requirement to develop and implement a fence line monitoring program for VOC and/or methanol;
- Remove the phrase "(Evaporative Loss from the Cleaning of Storage Tanks)" from the compliance demonstration method SR (formerly SR No. 28 in Permit No. 2560-

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00295-V5) for the common requirement group Raw Methanol Tank, Pure Methanol Intermediate Tanks, and Methanol Scrubber (EPN TNKS/SCRBBR, CRG0004);

- Add CO to the compliance demonstration method for NO_x SR (formerly SR No. 71 in Permit No. 2560-00295-V5) for the Steam Methane Reformer (EPN SMR, EQT0001). This addition will add the following two sentences to the requirements: “The CO CEMS shall comply with the Performance Specification 4A of 40 CFR 60, Appendix B, and be evaluated in accordance with Procedure 1 of 40 CFR 60, Appendix F,” and “CO emissions shall be calculated monthly based on the lb CO/MMBtu as determined by the CEMS and actual operating rates of the SMR”;
- Revise the VOC, PM₁₀, and PM_{2.5} compliance demonstration method SR (formerly SR No. 72 in Permit No. 2560-00295-V5) for the Steam Methane Reformer (EPN SMR, EQT0001) to specify that PM₁₀, PM_{2.5}, and VOC shall be calculated monthly based on the actual operating rates of the SMR during the calendar month and the emission factors derived from the performance test;
- Remove references to CO from the compliance demonstration SR (formerly SR No. 73 in Permit No. 2560-00295-V5) for the Steam Methane Reformer (EPN SMR, EQT0001) since KMe will be using a CEMS for compliance demonstration;
- Remove references to CO from the compliance demonstration SR (formerly SR No. 125 in Permit No. 2560-00295-V5) for Auxiliary Boiler (EPN BLR, EQT0002) since KMe will be using a CEMS for compliance demonstration. Also, add the following sentence “PM₁₀ and PM_{2.5} shall be calculated monthly based on the actual operating rates of the Auxiliary Boiler during the calendar month and the emission factor derived from the performance test;”
- Remove references to CO from the compliance demonstration SR (formerly SR No. 126 in Permit No. 2560-00295-V5) for Auxiliary Boiler (EPN BLR, EQT0002) since KMe will be using a CEMS for compliance demonstration;
- Add a SR for compliance demonstration for CO to the Auxiliary Boiler (EPN BLR, EQT0002). This requirement states: “Compliance demonstration for CO: The permittee shall monitor and record CO emissions using a Continuous Emissions Monitoring System (CEMS) calibrated, operated, and maintained according to the manufacturer’s specifications. The CO CEMS shall comply with the Performance Specification 4A of 40 CFR 60, Appendix B, and be evaluated in accordance with Procedure 1 of 40 CFR 60, Appendix F. CO emissions shall be calculated

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monthly based on the lb CO/MMBTU as determined by the CEMS and actual operating rates of the boiler to determine compliance with lb/hr and TPY emission limits. Measurements missed due to periods of monitor breakdown, out-of-control operations (producing inaccurate data), repair, maintenance, or calibration shall be estimated using engineering judgement;"

- Revise the SR for 40 CFR 60.665(b)(3) for Flare (EPN FLR, EQT0003) (formerly SR No. 134 in Permit No. 2560-00295-V5) to correct the reference citation in the SR from 40 CFR 60.705(c) to 40 CFR 60.705(b)(3);
- Revise the compliance demonstration requirement for Plant Emergency Generator (EPN EGEN, EQT0004) (formerly SR No. 169 in Permit No. 2560-00295-V5) by specifying that the requirement is for actual non-emergency operating hours. Also, add the following sentence: "Emissions during emergency use must be reported pursuant to LAC 33:III.919, but shall not be counted against permit limits for purposes of determining compliance";
- Revise the compliance demonstration requirements for Firewater Pump Engine No. 1, Firewater Pump Engine No. 2, Firewater Pump Engine No. 3, and Admin Building Emergency Generator (EPN FWP-01, FWP-02, FWP-03, and EGEN2; EQT0005, EQT0006, EQT0022, and EQT0026) (formerly SR Nos. 171, 173, 185, and 204 in Permit No. 2560-00295-V5) by specifying that the requirement is for actual non-emergency operating hours; and
- Revise the compliance demonstration requirements for the Methanol Transfer and Product Tank Cap (EPN MTPCAP; GRP0003) to add the following sentence: "The combustion emissions from the vapor combustion unit will be calculated as follows: VOC (from pilot and enrichment gas), PM₁₀, and PM_{2.5} will be calculated using AP-42 Section 1.4-2, July 1998; CO will be calculated using AP-42 Section 1.4-1, July 1998; and NO_x will be calculated using the vendor-provided guarantee of 0.25 lb/MMBTU. Heating values shall be based on process knowledge for the full combustion stream."

Miscellaneous Revisions

- Remove the initial notification requirement [40 CFR 63.6645(f)] from Firewater Pump No. 1 (EPN FWP-01, EQT0005) and Firewater Pump No. 2 (EPN FWP-02, EQT0006), as the initial notification requirements have already been fulfilled;

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- Remove the specific requirements for compliance demonstration from the two Generac SD 2000 sources (EPN E.GEN 01, EQT0033 and EPN E.GEN 02, EQT0034), as these requirements are redundant to the compliance demonstration requirement listed under CRG0007; and
- Incorporate the following specific requirement revisions for the Flare (EQT0003):
 - Add the applicable recordkeeping requirements under 40 CFR 60.18 and 40 CFR 63.11;
 - Add the 40 CFR 60 Subpart RRR alternative monitoring requirement for flares (i.e., requirements to monitor the vent streams per 40 CFR 60.703(b)(2) of 40 CFR 60 Subpart RRR instead of complying with the monitoring requirements under 40 CFR 60 Subpart NNN); and
 - Remove the specific requirement for 40 CFR 60.705(b), as the flare recordkeeping requirement is already included in the specific requirement for 40 CFR 60.705(b)(3).
- Incorporate five existing sulfuric acid tanks that were previously included as GCVXII activities into the permit as point sources and limit their annual emissions under a proposed CAP of 0.037 tpy with no proposed changes in each tank's potential to emit.

VI. ATTAINMENT STATUS OF PARISH

<u>Pollutant</u>	<u>Attainment Status</u>	<u>Designation</u>
PM _{2.5}	Attainment	N/A
PM ₁₀	Attainment	N/A
SO ₂	Attainment	N/A
NO ₂	Attainment	N/A
CO	Attainment	N/A
Ozone ²	Attainment	N/A
Lead	Attainment	N/A

VII. PERMITTED AIR EMISSIONS

Sources of air emissions are listed on the "Inventories" page of the proposed permit.

Permitted emissions of criteria pollutants from the facility, in tons per year (TPY), are as follows:

² VOC and NO_x are regulated as surrogates.

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Pollutant	Before Emissions:			After	Change
	Permit No. 2560-00295-V5	Permit No. 3169-V3	Total		
PM ₁₀	49.92	0.41	50.33	76.30	+25.97
PM _{2.5}	48.46	0.41	48.87	75.32	+26.45
SO ₂	4.65	0.04	4.69	6.16	+1.47
NO _x	87.29	9.57	96.86	152.84	+55.98
CO	92.57	3.96	96.53	181.46	+84.93
VOC	63.55	24.81	88.36	166.34	+77.98
CO _{2e} *	-	-	-	1,401,096	+1,401,096

* Greenhouse gas emissions (CO_{2e}) were not required to be permitted previously. A facility CO_{2e} emissions total is provided for information only and does not constitute an emissions limit. Koch shall comply with a two-tier, facility-wide 12-month rolling average GHG intensity limit as BACT as described in the Preliminary Determination Summary and Specific Condition 8 of PSD Permit PSD-LA-851 and SR 424 of this Title V permit.

PM₁₀ and VOC compounds classified as LAC 33:III.Chapter 51-regulated toxic air pollutants (TAP) are speciated below. This list encompasses all Hazardous Air Pollutants (HAP) regulated pursuant to Section 112 of the Clean Air Act. Note, however, all TAPs are not HAPs (e.g., ammonia, hydrogen sulfide). Permitted emissions, in tons per year (TPY), are as follows:

LAC 33:III.Chapter 51 Toxic Air Pollutants (TAPs):					
Pollutant	Before Emissions:			After	Change
	Permit No. 2560-00295-V5	Permit No. 3169-V3	Total		
1,4-Dichlorobenzene	0.01	-	0.01	0.01	-
2,2,4-Trimethylpentane	0.01	-	0.01	0.01	-
Acetaldehyde	0.01	-	0.01	0.01	-
Ammonia	101.22	-	101.22	120.49	+19.27
Arsenic (and compounds)	-	-	-	0.001	+0.001
Barium (and compounds)	-	-	-	0.045	+0.045

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LAC 33:III.Chapter 51 Toxic Air Pollutants (TAPs):					
Pollutant	Before Emissions:			After	Change
	Permit No. 2560-00295- V5	Permit No. 3169-V3	Total		
Benzene	0.03	0.02	0.05	0.06	+0.01
Cadmium (and compounds)	-	-	-	0.014	+0.014
Chromium VI (and compounds)	-	-	-	0.015	+0.015
Cobalt compounds	-	-	-	0.01	+0.01
Copper (and compounds)	-	-	-	0.008	+0.008
Ethyl benzene	<0.01	-	<0.01	0.01	-
Formaldehyde	0.19	0.01	0.20	0.49	+0.29
Hydrogen Sulfide	9.13	-	9.13	9.13	-
Manganese (and compounds)	-	-	-	0.01	+0.01
Mercury (and compounds)	-	-	-	0.003	+0.003
Methanol	44.14	23.36	67.50	140.72	+73.22
Naphthalene	0.01	-	0.01	0.01	-
n-Hexane	4.45	0.25	4.70	11.32	+6.62
Nickel (and compounds)	-	-	-	0.021	+0.021
Sulfuric Acid*	-	-	-	0.04	+0.04
Toluene	0.02	-	0.02	0.04	+0.02
Zinc (and compounds)	-	-	-	0.30	+0.30
Total	159.23	23.64	182.87	282.767	+99.897

*Previously authorized under General Condition XVII Activity.

Koch Methanol Facility is a major source of criteria pollutants, a major source of HAPs, and a major source of TAPs.

Permitted limits for individual emissions units and groups of emissions units, if applicable, are set forth in the tables of the proposed permit entitled "Emission Rates for Criteria

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Pollutants” and “Emission Rates for TAP/HAP & Other Pollutants.” These tables are part of the permit.

Emissions calculations can be found in Appendix A of the permit application. The calculations address the manufacturer’s specifications, fuel composition (e.g., sulfur content), emissions factors, and other assumptions on which the emissions limitations are based and have been reviewed by the permit writer for accuracy.

General Condition XVII Activities

Very small emissions to the air resulting from routine operations that are predictable, expected, periodic, and quantifiable and that are submitted by the applicant and approved by the Air Permits Division are considered authorized discharges. These releases are not included in the permit totals because they are small and will have an insignificant impact on air quality. However, such emissions are considered when determining the facility’s potential to emit for evaluation of applicable requirements. Approved General Condition XVII activities are noted in Section VIII of the proposed permit.

Insignificant Activities

The emissions units or activities listed in Section IX of the proposed permit have been classified as insignificant pursuant to LAC 33:III.501.B.5. By such listing, the LDEQ exempts these sources or types of sources from the requirement to obtain a permit under LAC 33:III.Chapter 5. However, such emissions are considered when determining the facility’s potential to emit for evaluation of applicable requirements.

VIII. REGULATORY APPLICABILITY

Regulatory applicability is discussed in three sections of the proposed permit: Section X (Table 1), Section XI (Table 2), and Specific Requirements. Each is discussed in more detail below.

Section X (Table 1): Applicable Louisiana and Federal Air Quality Requirements

Section X (Table 1) summarizes all applicable federal and state regulations. In the matrix, a “1” represents a regulation applies to the emissions unit. A “1” is also used if the emissions unit is exempt from the emissions standards or control requirements of the regulation, but monitoring, recordkeeping, and/or reporting requirements apply.

A “2” is used to note that the regulation has requirements that would apply to the emissions unit, but the unit is exempt from these requirements due to meeting a specific criterion, such as it has not been constructed, modified, or reconstructed since the regulation has been effective. If the specific criterion changes, the emissions unit will have to comply at a future date. Each “2” entry is explained in Section XI (Table 2).

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A “3” signifies that the regulation applies to this general type of source (e.g., furnace, distillation column, boiler, fugitive emissions, etc.), but does not apply to the particular emissions unit. Each “3” entry is explained in Section XI (Table 2).

If blank, the regulation clearly does not apply to this type of emissions unit.

Section XI (Table 2): Explanation for Exemption Status or Non-Applicability of a Source

Section XI (Table 2) of the proposed permit provides explanation for either the exemption status or non-applicability of given federal or state regulation cited by 2 or 3 in the matrix presented in Section X (Table 1).

Specific Requirements

Applicable regulations, as well as any additional monitoring, recordkeeping, and reporting requirements necessary to demonstrate compliance with both the federal and state terms and conditions of the proposed permit, are provided in the “Specific Requirements” section. Any operating limitations (e.g., on hours of operation or throughput) are also set forth in this section. Associated with each Specific Requirement is a citation of the federal or state regulation upon which the authority to include that Specific Requirement is based.

1. Federal Regulations

40 CFR 60 – New Source Performance Standards (NSPS)

The following subparts are applicable at the Koch Methanol Facility: A, Db, VVa, NNN, RRR, IIII, and JJJJ. Applicable emission standards, monitoring, test methods and procedures, recordkeeping, and reporting requirements are summarized in the “Specific Requirements” section of the proposed permit.

40 CFR 61 – National Emission Standards for Hazardous Air Pollutants (NESHAP)

No NESHAP provisions are applicable to the Koch Methanol Facility.

40 CFR 63 – Maximum Achievable Control Technology (MACT)

The following subparts are applicable at the Koch Methanol Facility: A, F, G, H, ZZZZ, & DDDDD. Applicable emission standards, monitoring, test methods and procedures, recordkeeping, and reporting requirements are summarized in the “Specific Requirements” section of the proposed permit.

Clean Air Act §112(g) or §112(j) – Case-By-Case MACT Determinations

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A case-by-case MACT determination pursuant to §112(g) or §112(j) of the Clean Air Act was not required.

40 CFR 64 – Compliance Assurance Monitoring (CAM)

Per 40 CFR 64.2(a), CAM applies to each pollutant-specific emissions unit (PSEU) that 1) is subject to an emission limitation or standard, 2) uses a control devices to achieve compliance, and 3) has potential pre-control device emissions that are equal to or greater than 100 percent of the amount, in TPY, required for a source to be classified as a major source.

Koch Methanol Facility does not incorporate any CAM provisions.

Acid Rain Program

The Acid Rain Program, 40 CFR Part 72 – 78, applies to the fossil fuel-fired combustion devices listed in Tables 1-3 of 40 CFR 73.10 and other utility units, unless a unit is determined not to be an affected unit pursuant to 40 CFR 72.6(b). LDEQ has incorporated the Acid Rain Program by reference at LAC 33:III.505. Koch Methanol Facility is not subject to the Acid Rain Program.

2. SIP-Approved State Regulations

Applicable state regulations are also noted in Section X (Table 1) of the proposed permit. Some state regulations have been approved by the U.S. Environmental Protection Agency (EPA) as part of Louisiana’s State Implementation Plan (SIP). These regulations are referred to as “SIP-approved” and are enforceable by both LDEQ and EPA. All LAC 33:III.501.C.6 citations are federally enforceable unless otherwise noted.

3. State-Only Regulations

Individual chapters or sections of LAC 33:III noted by an asterisk in Section X (Table 1) are designated “state-only” pursuant to 40 CFR 70.6(b)(2). Terms and conditions of the proposed permit citing these chapters or sections are not SIP-approved and are not subject to the requirements of 40 CFR Part 70. These terms and conditions are enforceable by LDEQ, but not EPA. All conditions not designated as “state-only” are presumed to be federally enforceable.

State MACT (LAC 33:III.Chapter 51)

Koch Methanol Facility is a major source of LAC 33:III.Chapter 51 regulated TAP. The owner or operator of any major source that emits or is permitted to emit a Class I or Class II TAP at a rate equal to or greater than the Minimum Emission Rate (MER) listed for that pollutant in LAC 33:III.5112 shall control emissions of that TAP to a degree that constitutes Maximum Achievable Control Technology (MACT), except that compliance

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with an applicable federal standard promulgated by the U.S. EPA in 40 CFR Part 63 shall constitute compliance with MACT for emissions of toxic air pollutants. Applicable Part 63 standards are addressed in Section VIII.1 of this Statement of Basis. MACT is not required for Class III TAPs; however, the impact of all TAP emissions must be below their respective Ambient Air Standards (AAS).

MACT determinations were made pursuant to Chapter 51 for the following emissions units: UNF0001, EQT0001, EQT0002, EQT0003, EQT0007, EQT0008, EQT0013, EQT0014, EQT0017, EQT0018, EQT0028, EQT0029, EQT0030, EQT0031, EQT0032, EMS0001, FUG0001, and FUG0002. State MACT requirements are cited as LAC 33:III.5109.A in the proposed permit.

IX. NEW SOURCE REVIEW (NSR)

1. Prevention of Significant Deterioration (PSD)

Koch Methanol's proposed KMe Optimization Project will be performed at the KMe Facility, which is located in St. James Parish, which is currently designated by EPA as attainment or unclassifiable for all pollutants having National Ambient Air Quality Standards (NAAQS) (40 CFR 81.319). Therefore, Non-Attainment New Source Review (NNSR) regulations are not applicable to the project.

A "major stationary source" under the PSD regulations is defined as any source that emits or has the potential to emit over 250 tons per year (TPY) of at least one criteria pollutant or 100 TPY if the source belongs to one of the 28 specifically listed industrial source categories [40 CFR 52.21(b)(1)]. The major source threshold for the Koch Methanol Facility is 100 TPY.

For existing units, the increase in emissions from the project can be calculated as the post-project potential to emit (PTE) or the projected actual emissions (PAE) minus the baseline actual emissions (BAE). For a new emissions unit, the BAE for purposes of determining the emissions increase that will result from the initial construction and operation of such unit shall equal zero.

Although not required because the KMe Facility is not an existing major stationary source and because the changes proposed do not themselves constitute construction of a new major stationary source, Koch requested that PSD requirements be applied as if the facility has not yet been built and to all pollutants for which the post-project facility-wide potential to emit will exceed PSD Significant Emission Rates.

Emissions of PM₁₀, PM_{2.5}, NO_x, CO, VOC, and greenhouse gases are greater than their corresponding significant emission rates; therefore, PSD review is required for these pollutants.

Permitted emissions for the Koch Methanol Facility (for regulated NSR pollutants) are set forth in the table below. Amounts are listed in TPY.

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<u>Pollutant</u>	<u>Project Emission Accounting</u>	<u>Contemporaneous Changes</u>	<u>Net Emissions Increase</u>	<u>PSD de minimis</u>	<u>Review conducted?</u>
PM ₁₀	76.30	-	76.30	15	Yes
PM _{2.5}	75.32	-	75.32	10	Yes
SO ₂	6.16	-	6.16	40	No
NO _x	152.84	-	152.84	40	Yes
CO	181.46	-	181.46	100	Yes
VOC	166.34	-	166.34	40	Yes
CO ₂ e	1,401,096	-	1,401,096	75,000	Yes
H ₂ S	9.13	-	9.13	10	No

¹NO_x and VOC are precursors for ozone emissions.

BACT

Under current PSD regulations, an analysis of “top down” BACT is required for the control of each regulated pollutant emitted from a new or modified major stationary source in excess of the specified significant emission rates. The top down approach to the BACT process involves determining the most stringent control technique available for a similar or identical source. If it can be shown that this level of control is infeasible based on technical, environmental, energy, and/or cost considerations, then it is rejected and the next most stringent level of control is determined and similarly evaluated. This process continues until a control level is arrived at which cannot be eliminated for any technical, environmental, or economic reason. A technically feasible control strategy is one that has been demonstrated to function efficiently on identical or similar processes. Additionally, BACT shall not result in emissions of any pollutant which would exceed any applicable standard under 40 CFR Parts 60 and 61.

PM₁₀/PM_{2.5} BACT Analysis

PM₁₀/PM_{2.5} BACT for EQT0001, SMR – Steam Methane Reformer is determined to be the use of good combustion practices to limit PM₁₀/PM_{2.5} emissions to 0.00745 lb/MMBtu (3-hour average). Compliance with the limit will be determined with performance testing on a 5-year frequency using EPA Methods 5 or 201A and 202, or alternate method as approved by LDEQ.

PM₁₀/PM_{2.5} BACT for EQT0002, BLR – Auxiliary Boiler is determined to be the use of good combustion practices to limit PM₁₀/PM_{2.5} emissions to 0.00745 lb/MMBtu (3-hour average). Compliance with the limit will be determined with performance testing on a 5-year frequency using EPA Methods 5 or 201a and 202, or alternate method as approved by LDEQ.

PM₁₀/PM_{2.5} BACT for EQT0004, EGEN – Plant Emergency Generator; EQT0005, FWP-01 – Firewater Pump Engine No. 1; EQT0006, FWP-02 – Firewater Pump Engine No. 2; EQT0022, FWP-03 – Firewater Pump Engine No. 3; EQT0033, E. GEN 01 – Generac

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SD 2000; and EQT0034, E. GEN 02 – Generac SD 2000 is determined to be compliance with 40 CFR 60 Subpart IIII.

PM₁₀/PM_{2.5} BACT for EQT0026, EGEN2 – Admin Building Emergency Generator is determined to be compliance with 40 CFR 60 Subpart JJJJ.

PM₁₀/PM_{2.5} BACT for EQT0007, CWT – Cooling Water Tower is the use of drift eliminators with a drift rate of 0.0005%.

CO BACT Analysis

CO BACT for EQT0001, SMR – Steam Methane Reformer is determined to be the use of oxidation catalyst and good combustion practices to limit CO emissions to 0.0037 lb/MMBtu on a 12-month rolling average, for periods inclusive of normal operation as well as start-up, shutdown, and malfunction. Compliance with the limit will be determined utilizing a CO Continuous Emission Monitoring Systems (CEMS).

CO BACT for EQT0002, BLR – Auxiliary Boiler is determined to be the use of good combustion practices. The top-ranked control technology, oxidation catalyst, was determined to not be cost-effective. Nevertheless, the boiler is equipped with oxidation catalyst, which exceeds what is required to meet BACT. BACT and the use of oxidation catalyst will limit CO emissions to 0.0046 lb/MMBtu on a 12-month rolling average, for periods inclusive of normal operation as well as start-up, shutdown, and malfunction. Compliance with this limit will be determined utilizing a CO CEMS.

CO BACT for FUG0001, FUG – Fugitive Emissions – KMe Facility is determined to be a combination of equipment design and LDAR. Koch will implement a CO LDAR program for those components in CO service that are not subject to VVa and that contain >5% CO. The CO LDAR program will include relevant elements from Subpart VVa such as calendar-based leak monitoring, 5/15 day repair requirements, delay of repair (DOR), etc., and will be adjusted to appropriately accommodate requirements for CO. The CO LDAR plan must be submitted to LDEQ within 60 days of permit issuance. The CO LDAR program shall be implemented within 180 days following LDEQ's approval of the plan.

CO BACT for EQT0004, EGEN – Plant Emergency Generator; EQT0005, FWP-01 – Firewater Pump Engine No. 1; EQT0006, FWP-02 – Firewater Pump Engine No. 2; EQT0022, FWP-03 – Firewater Pump Engine No. 3; EQT0033 E. GEN 01 – Generac SD 2000; and EQT0034, E. GEN 02 – Generac SD 2000 is determined to be compliance with 40 CFR 60 Subpart IIII.

CO BACT for EQT0026, EGEN2 – Admin Building Emergency Generator is determined to be compliance with 40 CFR 60 Subpart JJJJ.

CO BACT for EQT0007, CWT – Cooling Water Tower is determined to be a direct contact design with exchanger monitoring and repair in accordance with the HON (40

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CFR 63, Subpart F).

CO BACT for RLP0024, PSCVENT – Process Condensate Stripper Vent and RLP0025, CTVENT – Condensate Trap Vents is determined to be no further controls.

NO_x BACT Analysis

NO_x BACT for EQT0001, SMR – Steam Methane Reformer is determined to be the use of the SCR with an emission limit of 0.01 lb/MMBtu on a 12-month rolling average, for periods inclusive of normal operation as well as start-up, shutdown, and malfunction. This limit is within the range of emission limits in the RBLC from recent BACT determinations, is justified based on the unique characteristics of auxiliary burner design, and balances the emissions of NO_x, ammonia, and PM_{2.5} due to SCR control. Compliance with this BACT emission limit will be determined by utilizing a NO_x continuous emissions monitoring system (CEMS).

NO_x BACT for EQT0002, BLR – Auxiliary Boiler is determined to be the use of the SCR with an emission limit of 0.01 lb/MMBtu on a 12-month rolling average, for periods inclusive of normal operation as well as start-up, shutdown, and malfunction. This limit is within the range of emission limits in the RBLC from recent BACT determinations, is justified based on the unique characteristics of auxiliary burner design, and balances the emissions of NO_x, ammonia, and PM_{2.5} due to SCR control. Compliance with this BACT emission limit will be determined by utilizing a NO_x CEMS.

NO_x BACT for EQT0004, EGEN – Plant Emergency Generator; EQT0005, FWP-01 – Firewater Pump Engine No. 1; EQT0006, FWP-02 – Firewater Pump Engine No. 2; EQT0022, FWP-03 – Firewater Pump Engine No. 3; EQT0033 E. GEN 01 – Generac SD 2000; and EQT0034, E. GEN 02 – Generac SD 2000 is determined to be compliance with 40 CFR 60 Subpart IIII.

NO_x BACT for EQT0026, EGEN2 – Admin Building Emergency Generator is determined to be compliance with 40 CFR 60 Subpart JJJJ.

VOC BACT Analysis

VOC BACT for EQT0001, SMR – Steam Methane Reformer is determined to be the use of good combustion practices. The top-ranked control technology, oxidation catalyst, was determined to not be cost-effective. Nevertheless, the SMR is equipped with oxidation catalyst, which exceeds what is required to meet BACT. BACT and the use of oxidation catalyst will limit VOC emissions to 0.00374 lb/MMBtu on a 3-hour average. This is consistent with the emission limit range from recent BACT determinations in the RBLC for steam methane reformers and is justified based on the additional VOC generated by the auxiliary burners. Compliance with this limit will be determined with a performance test every 5 years using Method 25a, or alternate method with prior approval from LDEQ.

VOC BACT for EQT0002, BLR – Auxiliary Boiler is determined to be the use of good combustion practices. The top-ranked control technology, oxidation catalyst, was

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determined not to be cost-effective. Nevertheless, the boiler is equipped with oxidation catalyst, which exceeds what is required to meet BACT. BACT and the use of oxidation catalyst will limit VOC emissions to 0.0016 lb/MMBtu on a 3-hour average. This limit is consistent with the emission limit range from recent BACT determinations in the RBLC for auxiliary boilers and substantially lower than the most common emission limit. Compliance with this limit will be determined with a performance test every 5 years using Method 25a, or alternate method with prior approval from LDEQ.

VOC BACT for process vents is to vent to EQT0003, FLR – Flare. The flare will be designed and operated in accordance with 40 CFR 60.18 and 40 CFR 63.11, General Control Device and Work Practice Requirements to achieve 98% control of VOC emissions routed to it. Both 40 CFR 60.18 and 40 CFR 63.11 include operating specifications (exit velocity, heat content, etc.) and monitoring requirements, as well as a requirements that the flare be operated with a flame present at all times.

VOC BACT for EQT0028, RT LOAD – Methanol Railcar and Tank Truck Loading Operations is determined to be routing displaced vapors to a vapor control unit capable of achieving 98% reduction of VOC emissions. VOC emissions will also be limited to 18.54 lb/hr. This mass emission limit is based on achieving 99% control of the uncontrolled methanol loading emissions, which has been previously demonstrated and exceeds what is required to meet BACT. Compliance with the VOC limit will be determined with a performance test every 5 years using Method 25a, or other approved method as approved by LDEQ.

VOC BACT for FUG0002, WWT - Wastewater Treatment plant is determined to be compliance with applicable NESHAP requirements (i.e., 40 CFR 63 Subpart G).

VOC BACT for FUG0001, FUG – Fugitive Emissions – KMe Facility is determined to be a combination of equipment design and LDAR pursuant to 40 CFR 60, Subpart VVa and 40 CFR 63, Subpart H.

VOC BACT for EQT0004, EGEN – Plant Emergency Generator; EQT0005, FWP-01 – Firewater Pump Engine No. 1; EQT0006, FWP-02 – Firewater Pump Engine No. 2; EQT0022, FWP-03 – Firewater Pump Engine No. 3; EQT0033 E. GEN 01 – Generac SD 2000; and EQT0034, E. GEN 02 – Generac SD 2000 is determined to compliance with 40 CFR 60 Subpart IIII.

VOC BACT for EQT0026, EGEN2 – Admin Building Emergency Generator is determined to be compliance with 40 CFR 60 Subpart JJJJ.

VOC BACT for EQT0007, CWT – Cooling Water Tower is determined to be Direct Contact Design with Exchanger Monitoring and Repair in accordance with HON (40 CFR 63, Subpart F).

VOC BACT for EQT0008, TK-04001 – Raw Methanol Tank; EQT0013, TK-04002A – Pure Methanol Intermediate Tank; and, EQT0017, TK-04002B – Pure Methanol

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Intermediate Tank is determined to be routing displaced vapors from the fixed roof tanks to a vapor collection system and a chiller and scrubber system with 98% efficiency. The BACT will limit VOC emissions to 10.07 TPY, 12 month rolling average, based on achieving 98% control of the Methanol Storage Tank emissions. This control efficiency and emission limit is consistent with recent BACT determinations in the RBLC. Compliance with the VOC limit will be demonstrated by calculating emissions monthly using the calculation methodology utilized in the application, using actual throughput and average daily temperature of the methanol stored each calendar month, and demonstrating the control efficiency of the scrubber by complying with the requirements in 40 CFR 63.120(d)(1)-(7), as applicable.

VOC BACT for EQT0018, F-03007 –Slop Vessel is determined to be routing displaced vapors from the fixed roof tank to a vapor collection system and flare with 98% VOC control efficiency. The flare will be designed and operated in accordance with 40 CFR 60.18 and 40 CFR 63.11, General Control Device and Work Practice Requirements to achieve 98% control of VOC emissions routed to it. This control efficiency and emission limit are consistent with recent BACT determinations in the RBLC. Both 40 CFR 60.18 and 40 CFR 63.11 include operating specifications (exit velocity, heat content, etc.) and monitoring requirements, as well as a requirement that the flare be operated with a flame present at all times.

VOC BACT for EQT0027, GASTANK – Gasoline Storage Tank is determined to be the use of a fixed roof with submerged fill, based on a review of the RBLC.

VOC BACT for EQT0029, TK-26-202A – Methanol Product Tank 2301; EQT0030, TK-26-202B – Methanol Product Tank 2302; EQT0031, TK-26-202C – Methanol Product Tank 2303; EQT0032, TK-26-202D – Methanol Product Tank 2304 is determined to be the use of an internal floating roof.

CO₂e BACT Analysis

CO₂e BACT for EQT0001, SMR – Steam Methane Reformer and EQT0002, BLR – Auxiliary Boiler is determined to be the use of energy efficiency measures and combusting only clean fuels.

A two-tier, facility-wide, 12-month rolling average GHG intensity limit reflective of energy efficient operation and low carbon gaseous fuel firing in the boiler and SMR will serve as the BACT emission limitation. A 0.56 MT CO₂e/MT MeOH limit is based on facility-wide potential to emit (1,400,440 ST/yr converted to metric tons) divided by the maximum post project targeted production capacity (annualized 6200 MT MeOH/day). This limit will apply when operating in the upper half of the facility's operating range. A 0.68 MT CO₂e/MT MeOH limit is based on the facility-wide GHG PTE divided by the midpoint MeOH production rate (annualized 5100 MT MeOH/day based on a projected operating range of 4000 to 6200 MT/day). This second limit will apply when operating below the midpoint of the operating range.

Compliance with the two-tier, facility-wide, 12-month rolling average GHG intensity

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limit will be determined per prescribed methods and recordkeeping noted in 40 CFR Part 98. By the end of each month following each 12-month rolling average period, Koch will determine the applicable daily tier values and the 12-month rolling average of the applicable daily tier values and compare to the actual site-wide GHG intensity during the corresponding 12-month timeframe. Koch will calculate the site-wide GHG intensity as the total CO₂e emissions divided by the total MeOH production during the relevant 12-month timeframe. In the event that any global warming potentials listed in Table A-1 to Subpart A of 40 CFR 98 are revised, the CO₂e/MT MeOH daily tier values shall be revised accordingly without the need to revise this permit.

CO₂e BACT for FUG0001; FUG – Fugitive Emissions – KMe Facility is determined to be a combination of equipment design and LDAR pursuant to 40 CFR 60, Subpart VVa and 40 CFR 63, Subpart H. Koch will implement a Methane LDAR program for those components in methane service that are not subject to VVa and that contain >10% methane. The Methane LDAR program will include relevant elements from Subpart VVa such as calendar-based leak monitoring, 5/15 day repair requirements, delay of repair (DOR), etc., and will be adjusted to appropriately accommodate requirements for methane. The Methane LDAR plan is required to be submitted to LDEQ within 60 days of permit issuance. The Methane LDAR program will be implemented within 180 days following LDEQ approval of the Methane LDAR plan.

CO₂e BACT for EQT0007, CWT – Cooling Water Tower is determined to be direct contact design with exchanger monitoring and repair in accordance with HON (40 CFR 63, Subpart F).

CO₂e BACT for EQT0004, EGEN – Plant Emergency Generator; EQT0005, FWP-01 – Firewater Pump Engine No. 1; EQT0006, FWP-02 – Firewater Pump Engine No. 2; EQT0022, FWP-03 – Firewater Pump Engine No. 3; EQT0033 E. GEN 01 – Generac SD 2000; and EQT0034, E. GEN 02 – Generac SD 2000 is determined to be compliance with 40 CFR 60 Subpart IIII.

CO₂e BACT for EQT0026, EGEN2 – Admin Building Emergency Generator is determined to be compliance with 40 CFR 60 Subpart JJJJ.

A more thorough discussion of the BACT selection process can be found in PSD-LA-851. BACT and any other associated monitoring, recordkeeping, and reporting requirements necessary to determine compliance with the PSD permit are cited as “LAC 33:III.509” in the proposed Title V permit.

Air Quality Impact Analyses

Prevention of Significant Deterioration regulations require an analysis of existing air quality for those pollutants emitted in significant amounts from a proposed modified major stationary source. PM₁₀, PM_{2.5}, NO_x, and CO are pollutants of concern in this case.

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Modeling was conducted using AERMOD pursuant to the protocol approved by the Office of Environmental Assessment, Air Quality Assessment Division on September 19, 2022.

Dispersion Model(s) Used: AERMOD

Pollutant	Time Period	Calculated Maximum Ground Level Concentration ($\mu\text{g}/\text{m}^3$)	Significant Impact Level ($\mu\text{g}/\text{m}^3$)	National Ambient Air Quality Standard {NAAQS}
PM _{2.5} *	24 hour	1.01*	1.2	35 $\mu\text{g}/\text{m}^3$
	Annual	0.11*	0.2	12 $\mu\text{g}/\text{m}^3$
PM ₁₀	24 hour	1.32	5	150 $\mu\text{g}/\text{m}^3$
	Annual	0.16	1	50 $\mu\text{g}/\text{m}^3$
NO ₂	1 hour	182.4**	7.5	188 $\mu\text{g}/\text{m}^3$
	Annual	0.40	1	100 $\mu\text{g}/\text{m}^3$
CO	1 hour	1453.56	2000	40,000 $\mu\text{g}/\text{m}^3$
	8 hour	441.48	500	10,000 $\mu\text{g}/\text{m}^3$

*Includes secondary formation of PM_{2.5}

**This reflects the results of refined NAAQS modeling since results of the SIL analysis were above the SIL. Tier 3 (OLM) was used for 1-hour modeling.

Modeling of PM₁₀, PM_{2.5}, annual NO₂, and CO emissions from the KMe Facility indicates that the maximum offsite ground level concentrations of these pollutants will be below their respective PSD ambient significance levels and preconstruction monitoring levels. Therefore, pre-construction monitoring, refined NAAQS modeling, and increment consumption analyses were not required.

However, predicted concentrations of NO₂ exceed its 1-hour ambient significance level; consequently, refined NAAQS modeling and increment consumption analyses were required.

Refined Modeling

Pollutant	Averaging Period	Modeled Concentration ($\mu\text{g}/\text{m}^3$)	Background Concentration ($\mu\text{g}/\text{m}^3$)	Modeled + Background ($\mu\text{g}/\text{m}^3$)	NAAQS ($\mu\text{g}/\text{m}^3$)
NO ₂	1-hour	126.0	56.4	182.4	188

As shown above, refined modeling indicates compliance with the 1-hour NO₂ NAAQS. There is no PSD Increment associated with 1-hour NO₂; therefore, PSD increment analysis is not required for hourly NO₂ emissions.

See Table III – Air Quality Analysis Summary of the proposed PSD permit for more detailed modeling results.

2. Nonattainment New Source Review (NNSR)

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Koch Methanol Facility is located in an attainment area; therefore, NNSR does not apply.

3. Notification of Federal Land Manager

The Federal Land Manager (FLM) is responsible for evaluating a facility's projected impact on the Air Quality Related Values (AQRV) (e.g., visibility, sulfur and nitrogen deposition, any special considerations concerning sensitive resources, etc.³) and recommending that LDEQ either approve or disapprove the facility's permit application based on anticipated impacts. The FLM also may suggest changes or conditions on a permit. However, LDEQ makes the final decision on permit issuance. The FLM also advises reviewing agencies and permit applicants about other FLM concerns, identifies AQRV and assessment parameters for permit applicants, and makes ambient monitoring recommendations.

If LDEQ receives a PSD or NNSR permit application for a facility that "may affect" a Class I area, the FLM charged with direct responsibility for managing these lands is notified.

The meaning of the term "may affect" is interpreted by EPA policy to include all major sources or major modifications which propose to locate within 100 kilometers (km) of a Class I area. However, if a major source proposing to locate at a distance greater than 100 km is of such size that LDEQ or the FLM is concerned about potential impacts on a Class I area, LDEQ can ask the applicant to perform an analysis of the source's potential emissions impacts on the Class I area. This is because certain meteorological conditions, or the quantity or type of air emissions from large sources located further than 100 km, may cause adverse impacts. In order to determine whether a source located further than 100 km may affect a Class I area, LDEQ uses the Q/d approach. The KMe Facility is located 185 km from the nearest Class I area, the Breton National Wildlife Refuge.

Q/d refers to the ratio of the sum of the KMe Facility annual emissions (in tons) of PM₁₀, SO₂, NO_x, and H₂SO₄ to the distance (in kilometers) of the facility from the nearest boundary of the Class I area.

$$Q/d = \frac{PM_{10} (NEI) + SO_2 (NEI) + NO_x (NEI) + H_2SO_4 (NEI)}{\text{Class I km}}$$

Where:

PM ₁₀ (NEI)	=	net emissions increase of PM ₁₀
SO ₂ (NEI)	=	net emissions increase of SO ₂
NO _x (NEI)	=	net emissions increase of NO _x
H ₂ SO ₄ (NEI)	=	net emissions increase of H ₂ SO ₄
Class I km	=	distance to nearest Class I area (in kilometers)

If Q/d ≥ 10, LDEQ will formally notify the FLM in accordance with LAC 33:III.509.P.1.

³ See <http://www2.nature.nps.gov/air/Permits/ARIS/AQRV.cfm>.

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In this instance,

$$Q/d = \frac{76.30 \text{ tpy} + 6.16 \text{ tpy} + 152.84 \text{ tpy} + 0.037 \text{ tpy}}{185 \text{ km}} = 1.27$$

Therefore, LDEQ has formally determined that notifying the FLM is not required and that the KMe Facility will not adversely impact visibility in Breton National Wildlife Refuge, the nearest Class 1 area.

X. ADDITIONAL MONITORING AND TESTING REQUIREMENTS

In addition to the monitoring and testing requirements set forth by applicable state and federal regulations (see Section VIII of this Statement of Basis), a number of “LAC 33:III.507.H.1.a” and/or “LAC 33:III.501.C.6” conditions may appear in the “Specific Requirements” section of the proposed permit. These conditions have been added where no applicable regulation exists or where an applicable regulation does not contain sufficient monitoring, recordkeeping, and/or reporting provisions to ensure compliance. LAC 33:III.507.H.1.a provisions, which may include recordkeeping requirements, are intended to fulfill Part 70 periodic monitoring obligations under 40 CFR 70.6(a)(3)(i)(B).

XI. OPERATIONAL FLEXIBILITY

Emissions Caps

An emissions cap is a permitting mechanism to limit allowable emissions of two or more emissions units below their collective potential to emit (PTE). The proposed permit does not establish an emissions cap but does contain two previously established emission caps: GRP0002, SMR BLR PCS Vent CAP – SMR, BLR, PCS, Vent CAP and GRP0003, MTPCAP – Methanol Transfer and Product Tank Cap.

Alternative Operating Scenarios

LAC 33:III.507.G.5 allows the owner or operator to operate under any operating scenario incorporated in the permit. Any reasonably anticipated alternative operating scenarios may be identified by the owner or operator through a permit application and included in the permit. The proposed permit does not include an alternative operating scenario.

Streamlined Requirements

When applicable requirements overlap or conflict, the permitting authority may choose to include in the permit the requirement that is determined to be most stringent or protective as detailed in EPA’s “White Paper Number 2 for Improved Implementation of the Part 70 Operating Permits Program” (March 5, 1996). The overall objective is to determine the set of permit terms and conditions that will assure compliance with all applicable requirements for an emissions unit or group of emissions units so as to eliminate

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redundant or conflicting requirements. The proposed permit contains the following streamlined provisions.

ID	Description		Compliance with the Provisions of	Constitutes Compliance With
EQT 0008	TK-04001	Raw Methanol Tank	40 CFR 63 Subpart G	LAC 33:III.2103
EQT 0013	TK-04002A	Pure Methanol Intermediate	40 CFR 63 Subpart G	LAC 33:III.2103
EQT 0017	TK-04002B	Pure Methanol Intermediate	40 CFR 63 Subpart G	LAC 33:III.2103
EQT 0029	TK-26-202A	Methanol Product Tank 2301	40 CFR 63 Subpart G	LAC 33:III.2103
EQT 0030	TK-26-202B	Methanol Product Tank 2302	40 CFR 63 Subpart G	LAC 33:III.2103
EQT 0031	TK-26-202C	Methanol Product Tank 2303	40 CFR 63 Subpart G	LAC 33:III.2103
EQT 0032	TK-26-202D	Methanol Product Tank 2304	40 CFR 63 Subpart G	LAC 33:III.2103
EQT 0028	RT LOAD	Methanol Railcar and Tank Truck Loading Operations	40 CFR 63 Subpart G	LAC 33:III.2107

Louisiana Consolidated Fugitive Emission Program (LCFEP)

Koch Methanol Facility complies with a streamlined equipment leak monitoring program.

Compliance with the streamlined program shall constitute compliance with each of the fugitive emission monitoring programs being streamlined. Fugitive emissions are subject to the requirements of 40 CFR 63 Subpart H and 40 CFR 60 Subpart VVa. Among these regulations, 40 CFR 63 Subpart H establishes the most stringent leak detection and repair standards. Therefore, fugitive emissions shall be monitored as required by this program.

Unit or Plant Site	Programs Being Streamlined	Stream Applicability	Overall Most Stringent Program
Koch Methanol Facility	40 CFR 63 Subpart H – National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks	≥ 5% total organic HAPs	40 CFR 63 Subpart H
	40 CFR 60 Subparts VVa – Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006	≥ 10% VOC by weight	

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XII. PERMIT SHIELD

A permit shield, as described in 40 CFR 70.6(f) and LAC 33:III.507.I, provides an “enforcement shield” which protects the facility from enforcement action for violations of applicable federal requirements. It is intended to protect the facility from liability for violations if the permit does not accurately reflect an applicable federal or federally enforceable requirement.

Permit shields have been established for the streamlined requirements described in Section XII above. When an owner or operator complies with the streamlined requirement (i.e., 40 CFR 63 Subparts G), the facility will be considered to be in compliance with all of the applicable requirements subsumed under the streamlined requirement.

XIII. IMPACTS ON AMBIENT AIR

Modeling of PM₁₀, PM_{2.5}, NO_x, and CO is addressed in Section IX.1 of this Statement of Basis.

Modeling demonstrates that emissions from the Koch Methanol Facility will not violate National Ambient Air Quality Standards (NAAQS) for criteria pollutants and Louisiana Ambient Air Standards (AAS) for toxic air pollutants. Therefore, KMe Facility will not cause air quality impacts which could adversely affect human health or the environment.

Pollutant	Time Period	Calculated Maximum Ground Level Conc.	NAAQS or AAS
PM _{2.5}	24 hour	1.01 µg/m ³ *	35 µg/m ³
	Annual	0.11 µg/m ³ *	12 µg/m ³
PM ₁₀	24 hour	1.32 µg/m ³	150 µg/m ³
	Annual	0.16 µg/m ³	50 µg/m ³
NO ₂	1 hour	182.4 µg/m ³ **	188 µg/m ³
	Annual	0.40 µg/m ³	100 µg/m ³
CO	1 hour	1453.56 µg/m ³	40,000 µg/m ³
	8 hour	441.48 µg/m ³	10,000 µg/m ³
Ammonia*	8 hour	44.04 µg/m ³	640 µg/m ³
Methanol*	8 hour	72.02 µg/m ³	6240 µg/m ³

*Ambient air standard set forth in LAC 33:III.5112.

**This reflects the results of refined NAAQS modeling since results of the SIL analysis were above the SIL.

XIV. COMPLIANCE HISTORY AND CONSENT DECREES

The Koch Methanol Facility’s compliance history can be found in Section 14 of the permit application. It must be disclosed per LAC 33:III.517.E and 517.D.12, if

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applicable.

On February 7, 2023, U.S. EPA issued the Koch Methanol Facility a “Notice of Potential Violation and Opportunity to Confirm” alleging that the Facility had violated the RMP General Duty Clause. Koch Methanol is currently seeking to resolve that Notice. No other federal or state actions have been issued since the existing permits for the Koch Methanol Plant and Terminal were issued.

XV. REQUIREMENTS THAT HAVE BEEN SATISFIED

The following state and/or federal obligations have been satisfied and are therefore not included as Specific Requirements.

<u>Source ID</u>	<u>Citation</u>	<u>Description</u>
EQT0005	40 CFR 63.6645(f)	Initial notification requirement was fulfilled.
EQT0006	40 CFR 63.6645(f)	Initial notification requirement was fulfilled.

XVI. OTHER REQUIREMENTS

Executive Order No. BJ 2008-7 directs all state agencies to administer their regulatory practices, programs, contracts, grants, and all other functions vested in them in a manner consistent with Louisiana’s Comprehensive Master Plan for a Sustainable Coast and public interest to the maximum extent possible. If a proposed facility or modification is located in the Coastal Zone, LDEQ requires the applicant to document whether or not a Coastal Use Permit is required, and if so, whether it has been obtained. Coastal Use Permits are issued by the Coastal Management Division of the Louisiana Department of Natural Resources (LDNR).

The facility is located in the Coastal Zone; however, a Coastal Use Permit is not required because the proposed Project will not require onsite physical construction activities that could impact coastal resources.

XVII. ENVIRONMENTAL JUSTICE AND TITLE VI/CIVIL RIGHTS ISSUES

Environmental justice (EJ) is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial operations. Meaningful involvement means:

- people have an opportunity to participate in decisions about activities that may affect their environment and/or health;
- the public’s contribution can influence the permitting authority’s decision;
- community concerns will be considered in the decision making process; and

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- decision makers will seek out and facilitate the involvement of those potentially affected.⁴

EJScreen

EJScreen is an EJ mapping and screening tool developed by EPA that provides users with a nationally consistent dataset and approach for combining environmental and demographic indicators in the form of EJ indexes. An EJ index is a combination of environmental and demographic information; it combines demographic factors with a single environmental factor.⁵

EPA uses EJScreen to “screen for areas that may be candidates for additional consideration, analysis or outreach as EPA develops programs, policies and activities that may affect communities.”⁶ EPA cautions that EJScreen should *not* be used:

- as a means to identify or label an area as an “EJ community”;
- to quantify specific risk values for a selected area;
- to measure cumulative impacts of multiple environmental factors; or
- as the sole basis for agency decision-making or making a determination regarding the existence or absence of EJ concerns.⁷

EPA goes on to state that screening-level results:

- do not, by themselves, determine the existence or absence of environmental justice concerns in a given location;
- do not provide a risk assessment; and
- have other significant limitations.⁸

According to EPA, the EJ index is a product of the environmental indicator, the demographic index for the block group, and the population of the block group.⁹ The EJ index does not reflect the percentage of the population that is at less risk based on exposure to a given environmental factor.

EJScreen is a “living” website that is updated as newer information becomes available. Notice that the underlying data has been updated is not typically provided by EPA. Therefore, LDEQ notes that this analysis was performed on July 3, 2023, and the data reported herein was the current information utilized by EJScreen as of that date.

⁴ <https://www.epa.gov/environmentaljustice/learn-about-environmental-justice>

⁵ <https://www.epa.gov/EJScreen/environmental-justice-indexes-EJScreen>

⁶ <https://www.epa.gov/EJScreen/how-does-epa-use-EJScreen>

⁷ *Id.*

⁸ <https://www.epa.gov/EJScreen/purposes-and-uses-EJScreen>

⁹ <https://www.epa.gov/EJScreen/environmental-justice-indexes-EJScreen>

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LDEQ prepared an EJScreen Report (Version 2.2) for the area encompassed by a 3-mile ring with its centroid at the approximate center of the Koch Methanol Facility.¹⁰

Demographic Information

The EJScreen report includes a demographic index based on the average of the people of color population and the low income population. The demographic index for the evaluated area is 74 percent, which is higher than the state average demographic index of 41 percent. More specifically, the people of color population is greater than the state average (88 percent versus 43 percent), and the low income population is also greater than the state average (61 percent versus 40 percent).

According to EJScreen, 177 people live within 2 miles of the Koch Methanol Facility, a 12.56 square mile area (14.1 persons per square mile), and 739 people live within 3 miles of the Koch Methanol Facility, a 28.27 square mile area (26.1 persons per square mile).¹¹ By way of comparison, according to the 2020 U.S. Census, Louisiana's average population density is 107.8 persons per square mile.¹²

Selected Variables	Area of Review	State Average
Demographic Index	74%	41%
People of Color	88%	43%
Low Income	61%	40%
Unemployment Rate	4%	7%
Limited English Speaking Households	0%	2%
Less Than High School Education	20%	15%
Under Age 5	5%	6%
Over age 64	19%	17%
Low Life Expectancy	23%	22%

Environmental Indexes

For the area encompassed by a 3-mile ring with its centroid at the approximate center of the Koch Methanol Facility, EJScreen reports the following EJ index values.

Environmental Justice Index	State Percentile
EJ Index for Particulate Matter 2.5	81

¹⁰ Latitude/longitude 29.981926/-90.861329

¹¹ For the area within 1 mile of the Koch Methanol Facility, EJScreen reports the "area is too small or sparsely populated ... to generate an EJScreen chart or report."

¹² <https://www.census.gov/data/tables/time-series/dec/density-data-text.html>

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Environmental Justice Index	State Percentile
EJ Index for Ozone	96
EJ Index for Diesel Particulate Matter	85
EJ Index for Air Toxics Cancer Risk	97
EJ Index for Air Toxics Respiratory Hazard Index	47
EJ Index for Toxic Releases to Air	98
EJ Index for Traffic Proximity	43
EJ Index for Lead Paint	83
EJ Index for Superfund Proximity	65
EJ Index for RMP Facility Proximity	84
EJ Index for Hazardous Waste Proximity	71
EJ Index for Underground Storage Tanks	50
EJ Index for Wastewater Discharge	90

EPA has indicated that a closer review may be warranted for any environmental indicator with an EJ index greater than or equal to 80.¹³ In the instant case, these indicators include:

- Particulate Matter 2.5;
- Ozone;
- Diesel Particulate Matter;
- Air Toxics Cancer Risk;
- Toxic Releases to Air;
- Lead Paint;
- RMP Facility Proximity; and
- Wastewater Discharge.

Particulate Matter 2.5

The Particulate Matter 2.5 indicator – PM_{2.5} in µg/m³ (annual average) – is less than the state average (8.5 µg/m³ versus 8.62 µg/m³) and well below the national ambient air quality standard (NAAQS) of 12 µg/m³. According to EPA, air quality that is compliant with the NAAQS is protective of public health, including the health of “sensitive” populations such as asthmatics, children, and the elderly, with an adequate margin of safety.

Koch modeled potential PM_{2.5} emissions from the Koch Methanol Facility (i.e., total allowable emissions under Permit No. 2560-00295-V6, not just the increases attributed to the KMe Optimization Project). The maximum modeled annual average concentration of

¹³ See “Learn about Identifying Communities with Environmental Justice (EJ) Concerns” at <https://www.epa.gov/environmentaljustice/learn-about-environmental-justice>.

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PM_{2.5} – 0.11 µg/m³ – was below its significant impact level (SIL) of 0.2 µg/m³.¹⁴ Notably, EPA explains that “changes in air quality within this range are not meaningful, and, thus, do not contribute to a violation of the NAAQS.”¹⁵

Air Toxics Cancer Risk

Based on EPA’s 2019 Air Toxics Screening Assessment, or AirToxScreen, the Air Toxics Cancer Risk value for the area (52 per million people) is higher than the state average of 40 per million people. Nonetheless, this value is less than EPA’s “acceptable risk” threshold of 1 in 10,000 (i.e., 100 in 1 million)¹⁶ and likely overestimates actual cancer risk for two primary reasons.

One, EPA utilized each HAP’s unit risk estimate (URE) to calculate exposure risks from that pollutant. The URE represents the *upper-bound* excess lifetime cancer risk estimated to result from continuous exposure to a HAP at a concentration of 1 µg/m³. EPA acknowledges that the true risk may be lower.¹⁷

Two, as shown in the table below, the average point source cancer risk for every census tract in St. James Parish is heavily influenced by emissions of ethylene oxide and, to a lesser extent, chloroprene.¹⁸ The Koch Methanol Facility is located in census tract 22093040500. Here, these two pollutants are responsible for 89.7 percent of the total point source cancer risk.

Census Tract	Total Cancer Risk (per million)	Point Source Cancer Risk (per million)			
		Total	Ethylene Oxide	Chloroprene	All Others
22093040100	47.7	21.6	17.7	2.3	1.6
22093040200	46.5	20.4	16.9	2.0	1.5
22093040300	44.2	18.5	15.7	1.5	1.3

¹⁴ The maximum modeled 24-hour average concentration of PM_{2.5} – 1.01 µg/m³ – was also below its SIL of 1.2 µg/m³.

¹⁵ “Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program,” dated April 17, 2018 (p. 11) (<https://www.epa.gov/nsr/significant-impact-levels-ozone-and-fine-particles>)

¹⁶ See, for example, EPA’s “2014 National Air Toxics Assessment: Fact Sheet”: “[w]hen NATA shows a potential cancer risk of greater than 100 in 1 million at a census tract, it means there may be an elevated cancer risk in that tract” (https://www.epa.gov/sites/default/files/2018-11/documents/nata_2014_fact_sheet.pdf).

¹⁷ See Technical Support Document for EPA’s Air Toxic Screening Assessment, 2017 AirToxScreen TSD, March 2022 (p. A-8) (https://www.epa.gov/system/files/documents/2022-03/airtoxscreen_2017tsd.pdf).

¹⁸ For a map of the census tracts in St. James Parish, see https://www2.census.gov/geo/maps/dc10map/tract/st22_la/c22093_st_james/DC10CT_C22093_001.pdf.

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22093040400	42.3	16.6	13.7	0.7	2.2
22093040500	38.6	13.4	11.5	0.5	1.4
22093040600	42.4	16.7	14.0	1.5	1.1
22093040700	35.8	12.1	10.0	1.0	1.1

As shown in the table below, actual emissions of ethylene oxide as reported to LDEQ's Emissions Reporting and Inventory Center (ERIC) have decreased substantially since the 2019 assessment. Thus, the current point source cancer risk for St. James, Louisiana, as well as that for all other areas in St. James Parish, should be appreciably lower than as estimated by the 2019 AirToxScreen.

Pollutant	Emissions (tons per year) ¹⁹		Percent Change
	2019	2022	
Ethylene Oxide ²⁰	18.99	13.76	– 27.6 %
Chloroprene ²¹	19.81	19.22	– 3.0 %

Notably, the Koch Methanol Facility is not permitted to emit ethylene oxide or chloroprene.

Toxic Releases to Air

The area's Toxic Releases to Air value is based on Risk-Screening Environmental Indicators (RSEI)-modeled toxicity-weighted concentrations of Toxic Release Inventory (TRI) chemicals in the air.

For calendar year 2021, the RSEI score for fugitive air releases, stack air releases, and off-site incineration in St. James Parish was 166,194.²² However, the primary pollutants emitted by the Koch Methanol Facility – ammonia, hydrogen sulfide, methanol, and n-hexane, which represent 99.6 percent of permitted toxic air pollutants from the facility – have a combined RSEI score of only 317.²³ As such, the Koch Methanol Facility is not a significant contributor to the Toxic Releases to Air value.

In addition, in response to community concerns regarding potential impacts from industrial emissions of toxic air pollutants, Koch has proposed to implement a fenceline monitoring program is incorporated as an enforceable permit condition.

¹⁹ See “Annual Certified Emissions Data 2015-present (Updated 6/6/2023)” at <https://deq.louisiana.gov/page/eric-public-reports>.

²⁰ There are no significant sources of ethylene oxide in St. James Parish. Reported emissions are those from sources located in the surrounding parishes of Ascension, Iberville, St. Charles, and St. John the Baptist.

²¹ Denka Performance Elastomer LLC

²² RSEI scores can be obtained at <https://www.epa.gov/rsei/rsei-results-map>.

²³ Bis (2-chloroethyl) ether and 1,2-dichloroethane account for 83.4 percent of the RSEI score for the parish.

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Ozone

As shown in the table below, the maximum impact of the NO_x and VOC increases associated with Permit Nos. 2560-00295-V6 and PSD-LA-851 on ambient ozone concentrations is predicted to be only 0.33 parts per billion and will therefore have no practical impact on the environmental indicator for ozone (i.e., the average of the top ten maximum daily 8-hour ozone air concentrations in an annual period). Nor will the increase cause or contribute to violations of the 8-hour ozone NAAQS.

Monitor	Current Design Value ²⁴ (parts per billion)	Predicted Ozone Increase (parts per billion)	Projected Design Value (parts per billion)	NAAQS (parts per billion)
Convent	59	0.33 ²⁵	59.33	70

Diesel Particulate Matter, Lead Paint, and RMP Facility Proximity

The modifications addressed by Permit Nos. 2560-00295-V6 and PSD-LA-851 will have no impact, either positive or negative, on ambient diesel particulate matter levels,²⁶ the percent of housing units built pre-1960 (an indicator of potential lead paint exposure), or the number of facilities located within five (5) kilometers of the Koch Methanol Facility that are subject to EPA's "Chemical Accident Prevention Provisions" under 40 CFR 68.

Wastewater Discharge

The EJScreen value for Wastewater Discharge (toxicity-weighted concentration/m distance) for the area (0.0072) is well below the reported state and national averages.

State Average	National
49	22

²⁴ The design value is for calendar years 2020-2022. The design value is used to determine if air quality at a given location is compliant with the relevant NAAQS. See <https://www.epa.gov/air-trends/air-quality-design-values> for more information.

²⁵ Value derived using EPA's "Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM_{2.5} under the PSD Permitting Program," dated April 30, 2019. In order to be conservative, the lowest illustrative NO_x and VOC MERP values for the southern United States (i.e., the amount of each pollutant required to generate 1.0 ppb of ozone) were utilized – 190 tons per year of NO_x and 2307 tons per year of VOC (see p. 43) (<https://www.epa.gov/sites/default/files/2019-05/documents/merps2019.pdf>).

$$0.33 = (55.98/190) + (77.98/2307)$$

²⁶ A significant increase in truck traffic is not anticipated. According to the EAS, the "additional production volume is expected to primarily serve non-local customers and thus be shipped by rail and marine vessel" (EDMS Doc ID 13864134, p. 38 of 111).

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Discharges of sanitary wastewater from the Koch Methanol Facility are regulated by Louisiana Pollutant Discharge Elimination System (LPDES) General Permit LAG535491, issued July 20, 2020.²⁷ Other discharges from the facility are regulated under LPDES Permit No. LA0127367, dated November 12, 2020.²⁸ Koch's application to renew LA0127367 addresses changes associated with the proposed KMe Optimization Project.²⁹

Additional Considerations

In addition to considering EJScreen data, LDEQ evaluated whether individual permitting decisions have, over time, corresponded to increased emissions of criteria pollutants, TAPs, and/or Toxics Release Inventory (TRI)-listed chemicals from the facilities located in St. James Parish. LDEQ compared 2000, 2010, and 2015 ERIC and TRI data to corresponding 2022 values.³⁰

Metric	Percent Change (relative to 2000)	Percent Change (relative to 2010)	Percent Change (relative to 2015)
Criteria	-63.0	-57.8	-29.7
TAPs	-65.1	-60.6	-69.0
TRI ³¹	-49.3	-47.6	-27.9

The results show substantial and continuing declines in actual emissions of pollutants over the timeframes evaluated.

Conclusion

Based on LDEQ's analysis of the information provided by the EJScreen assessment and the terms and conditions of the permits, LDEQ concludes that issuance of the permits will not result in an adverse disproportionate impact under Title VI of the Civil Rights Act. Further, LDEQ is providing opportunity for all interested parties to be meaningfully involved in the permitting process.

XVIII. PUBLIC NOTICE/PUBLIC PARTICIPATION

Written comments, written requests for a public hearing, or written requests for notification of the final decision regarding this permit action may be submitted to:

²⁷ EDMS Doc ID 12259394

²⁸ EDMS Doc ID 12448374

²⁹ EDMS Doc ID 13849306

³⁰ LDEQ compared historical TRI data to corresponding data for calendar year 2021, as this is the most recent available.

³¹ Total On-site Disposal or Other Releases per https://enviro.epa.gov/triexplorer/tri_release.chemical

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PPG Staff
LDEQ, Public Participation Group
P.O. Box 4313
Baton Rouge, Louisiana 70821-4313

Written comments and/or written requests must be received prior to the deadline specified in the public notice. If LDEQ finds a significant degree of public interest, a public hearing will be held. All comments will be considered prior to a final permit decision.

LDEQ will send notification of the final permit decision to the applicant and to each person who has submitted written comments or a written request for notification of the final decision.

The permit application, proposed permit, and this Statement of Basis can be accessed electronically via LDEQ's Electronic Document Management System (EDMS) on LDEQ's public website, www.deq.louisiana.gov.

Inquiries or requests for additional information regarding this permit action should be directed to the contact identified on page 1 of this Statement of Basis.

Persons wishing to be included on the public notice mailing list or for other public participation-related questions should contact LDEQ's Public Participation Group at P.O. Box 4313, Baton Rouge, LA 70821-4313; by e-mail at deq.publicnotices@la.gov; or contact LDEQ's Customer Service Center at (225) 219-LDEQ (219-5337). Alternatively, individuals may elect to receive public notices via e-mail by subscribing to LDEQ's Public Notification List Service at http://louisiana.gov/Services/Email_Notifications_DEQ_PN/.

Permit public notices can be viewed at LDEQ's "Public Notices" webpage, <http://deq.louisiana.gov/public-notices>. Electronic access to each proposed permit and Statement of Basis current on notice is also available on this page. General information related to public participation in permitting activities can be viewed at <http://deq.louisiana.gov/page/the-public-participation-group>.

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APPENDIX A - ACRONYMS

AAS	Ambient Air Standard (LAC 33:III.Chapter 51)
AP-42	EPA document number of the Compilation of Air Pollutant Emission Factors
BACT	Best Available Control Technology
BTU	British Thermal Units
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAM	Compliance Assurance Monitoring, 40 CFR 64
CEMS	Continuous Emission Monitoring System
CMS	Continuous Monitoring System
CO	Carbon monoxide
COMS	Continuous Opacity Monitoring System
CFR	Code of Federal Regulations
EI	Emissions Inventory (LAC 33:III.919)
EPA	(United States) Environmental Protection Agency
EIQ	Emission Inventory Questionnaire
ERC	Emission Reduction Credit
FR	Federal Register or Fixed Roof
H ₂ S	Hydrogen sulfide
H ₂ SO ₄	Sulfuric acid
HAP	Hazardous Air Pollutants
Hg	Mercury
HON	Hazardous Organic NESHAP
IBR	Incorporation by Reference
LAER	Lowest Achievable Emission Rate
LDEQ	Louisiana Department of Environmental Quality
M	Thousand
MM	Million
MACT	Maximum Achievable Control Technology
MEK	Methyl ethyl ketone
MIK	Methyl isobutyl ketone
MSDS	Material Safety Data Sheet
MTBE	Methyl tert-butyl ether
NAAQS	National Ambient Air Quality Standards
NAICS	North American Industrial Classification System (replacement to SIC)
NESHAP	National Emission Standards for Hazardous Air Pollutants
NMOC	Non-Methane Organic Compounds

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APPENDIX A - ACRONYMS

NO _x	Nitrogen Oxides
NNSR	Nonattainment New Source Review
NSPS	New Source Performance Standards
NSR	New Source Review
OEA	LDEQ Office of Environmental Assessment
OEC	LDEQ Office of Environmental Compliance
OES	LDEQ Office of Environmental Services
PM	Particulate Matter
PM ₁₀	Particulate Matter less than 10 microns in nominal diameter
PM _{2.5}	Particulate Matter less than 2.5 microns in nominal diameter
ppm	parts per million
ppmv	parts per million by volume
ppmw	parts per million by weight
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
RACT	Reasonably Available Control Technology
RBLCL	RACT-BACT-LAER Clearinghouse
RMP	Risk Management Plan (40 CFR 68)
SICC	Standard Industrial Classification Code
SIP	State Implementation Plan
SO ₂	Sulfur Dioxide
SOCMI	Synthetic Organic Chemical Manufacturing Industry
TAP	Toxic Air Pollutants (LAC 33:III.Chapter 51)
TOC	Total Organic Compounds
TPY	Tons Per Year
TRS	Total Reduced Sulfur
TSP	Total Suspended Particulate
µg/m ³	Micrograms per Cubic Meter
UTM	Universal Transverse Mercator
VOC	Volatile Organic Compound
VOL	Volatile Organic Liquid
VRU	Vapor Recovery Unit

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APPENDIX B – GLOSSARY

Best Available Control Technologies (BACT) – an emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under this Part (Part III) which would be emitted from any proposed major stationary source or major modification which the administrative authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant.

CAM - Compliance Assurance Monitoring – A federal air regulation under 40 CFR Part 64.

Carbon Monoxide (CO) – (Carbon monoxide) a colorless, odorless gas produced by incomplete combustion of any carbonaceous (gasoline, natural gas, coal, oil, etc.) material.

Cooling Tower – A cooling system used in industry to cool hot water (by partial evaporation) before reusing it as a coolant.

Continuous Emission Monitoring System (CEMS) – The total combined equipment and systems required to continuously determine air contaminants and diluent gas concentrations and/or mass emission rate of a source effluent.

Cyclone – A control device that uses centrifugal force to separate particulate matter from the carrier gas stream.

Federally Enforceable Specific Condition – A federally enforceable specific condition written to limit the potential to Emit (PTE) of a source that is permanent, quantifiable, and practically enforceable. In order to meet these requirements, the draft permit containing the federally enforceable specific condition must be placed on public notice and include the following conditions:

- A clear statement of the operational limitation or condition which limits the source's potential to emit;
- Recordkeeping requirements related to the operational limitation or condition;
- A requirement that these records be made available for inspection by LDEQ personnel;
- A requirement to report for the previous calendar year.

Grandfathered Status – those facilities that were under actual construction or operation as of June 19, 1969, the signature date of the original Clean Air Act. These facilities are not required to obtain a permit. Facilities that are subject to Part 70 (Title V) requirements lose grandfathered status and must apply for a permit.

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APPENDIX B – GLOSSARY

Lowest Achievable Emission Rate (LAER) – for any source, the more stringent rate of emissions based on the following:

- a. the most stringent emissions limitation that is contained in the implementation plan of any state for such class or category of major stationary source, unless the owner or operator of the proposed stationary source demonstrates that such limitations are not achievable; or
- b. the most stringent emissions limitation that is achieved in practice by such class or category of stationary source. This limitation, when applied to a modification, means the lowest achievable emissions rate for the new or modified emissions units within the stationary source. In no event shall the application of this term permit a proposed new or modified major stationary source to emit any pollutant in excess of the amount allowable under an applicable new source standard of performance.

NESHAP – National Emission Standards for Hazardous Air Pollutants – Air emission standards for specific types of facilities, as outlined in 40 CFR Parts 61 through 63.

Maximum Achievable Control Technology (MACT) – the maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

NSPS – New Source Performance Standards – Air emission standards for specific types of facilities, as outlined in 40 CFR Part 60.

New Source Review (NSR) – a preconstruction review and permitting program applicable to new or modified major stationary sources of criteria air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C (“Prevention of Significant Deterioration of Air Quality”) and D (“Nonattainment New Source Review”).

Nonattainment New Source Review (NNSR) – a New Source Review permitting program for major sources in geographic areas that do not meet the National Ambient Air Quality Standards (NAAQS) set forth at 40 CFR Part 50. NNSR is designed to ensure that emissions associated with new or modified sources will be regulated with the goal of improving ambient air quality.

Organic Compound – any compound of carbon and another element. Examples: methane (CH₄), ethane (C₂H₆), carbon disulfide (CS₂).

Part 70 Operating Permit – also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507.

STATEMENT OF BASIS

**KOCH METHANOL FACILITY
KOCH METHANOL ST. JAMES, LLC
ST. JAMES, ST. JAMES PARISH, LOUISIANA
Agency Interest (AI) No. 194165
Activity No. PER20220006 & PER20220007
Proposed Permit No. 2560-00295-V6**

APPENDIX B – GLOSSARY

PM₁₀ – particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) – the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – a New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

Selective Catalytic Reduction (SCR) – A non-combustion control technology that destroys NO_x by injecting a reducing agent (e.g., ammonia) into the flue gas that, in the presence of a catalyst (e.g., vanadium, titanium, or zeolite), converts NO_x into molecular nitrogen and water.

Sulfur Dioxide (SO₂) – An oxide of sulphur.

TAP – LDEQ acronym for toxic air pollutants regulated under LAC 33 Part III, Chapter 51, Tables 1 through 3.

“Top Down” Approach – An approach which requires use of the most stringent control technology found to be technically feasible and appropriate based on environmental, energy, economic, and cost impacts.

Title V permit – see Part 70 Operating Permit.

Volatile Organic Compound (VOC) – any organic compound which participates in atmospheric photochemical reactions; that is, any organic compound other than those which the Administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.

Attachment 7

Air Permit No. 2560-00295-V6, PSD-LA-851 Basis for
Decision

**LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF ENVIRONMENTAL SERVICES**

BASIS FOR DECISION

**PART 70 OPERATING PERMIT NO. 2560-00295-V6
PREVENTION OF SIGNIFICANT DETERIORATION PERMIT PSD-LA-851**

**KOCH METHANOL FACILITY
KOCH METHANOL ST. JAMES, LLC
ST. JAMES, ST. JAMES PARISH, LOUISIANA
Agency Interest (AI) No. 194165**

The Louisiana Department of Environmental Quality (LDEQ), Office of Environmental Services (OES), through this decision, issues to Koch Methanol St. James, LLC (Koch) a significant modification to the Part 70 (Title V) operating permit and a Prevention of Significant Deterioration (PSD) permit for its Koch Methanol Facility located at 5181 Wildcat Street in St. James, St. James Parish, Louisiana.

LDEQ finds that as a part of the "IT Requirements,"¹ adverse environmental impacts have been minimized or avoided to the maximum extent possible. [*Save Ourselves v. Envtl. Control Comm'n*, 452 So.2d at 1152, 1157 (La. 1984)]. In making this determination, LDEQ finds that Koch has complied with all applicable federal and state statutes and regulations and has otherwise minimized or avoided environmental impacts to the maximum extent possible. Additionally, LDEQ finds that Koch has met the alternative sites, alternative projects, and mitigating measures requirements of *Save Ourselves*. *Id.* at 1157.

After LDEQ determined that adverse environmental effects had been minimized or avoided to the maximum extent possible, it balanced social and economic factors with environmental impacts. Notably, "the [Louisiana] constitution does not establish environmental protection as an exclusive goal, but requires a balancing process in which environmental costs and benefits must be given full and careful consideration along with economic, social and other factors." *Id.* LDEQ finds that the social and economic benefits of the proposed project will greatly outweigh its adverse environmental impacts.

The details of the LDEQ's reasoning are set forth below.²

¹ The "IT Requirements" or "IT Questions" are five requirements [see *Save Ourselves v. Envtl. Control Comm'n*, 452 So. 2d at 1152, 1157 (La. 1984)] that both the permit applicant and the LDEQ consider during certain permit application processes. Although the five requirements have been expressed as three requirements [see *Rubicon Inc.*, 670 So. 2d at 475, 483 (La. App. 1 Cir 1996)], the requirements remain basically the same whether stated as five or as three. The "IT Requirements" must satisfy the issues of whether:

- 1) the potential and real adverse environmental effects of the proposed project have been avoided to the maximum extent possible;
- 2) a cost benefit analysis of the environmental impact costs balanced against the social and economic benefits of the project demonstrates that the latter outweighs the former; and
- 3) there are alternative projects or alternative sites or mitigating measures which would offer more protection to the environment than the proposed project without unduly curtailing non-environmental benefits to the extent applicable.

² Any finding of fact more appropriately designated as a conclusion of law shall be considered also a conclusion of law, and any conclusion of law more appropriately designated as a finding of fact shall be considered also as a finding of fact.

I. BACKGROUND

A. Background and Origin

Koch owns and operates the Koch Methanol Plant (KMe Plant) and the adjacent Koch Methanol Terminal (KMe Terminal), collectively known as the Koch Methanol Facility, in St. James, St. James Parish, Louisiana. The KMe Plant and the KMe Terminal (AI 213599) constitute a single major stationary source under the Part 70 Operating Permits Program. The KMe Plant previously operated under Part 70 Permit No. 2560-00295-V5, issued on February 23, 2023,³ and the KMe Terminal previously operated under Part 70 Permit No. 3169-V3, issued on August 11, 2022.⁴

A permit application was submitted by Koch on November 2, 2022,⁵ requesting a significant modification to Permit No. 2560-00295-V5 and a PSD permit for the entire Koch Methanol Facility. Additional information dated February 1, February 8, March 20, March 22, March 28, May 2, and June 19, 2023, was also received.⁶

B. Description of Facility

Methanol is produced using licensed Lurgi MegaMethanol® technology. The Lurgi MegaMethanol® process is an advanced, highly efficient technology for converting natural gas into methanol. The technology's main processing features include steam reforming in combination with oxygen-blown natural gas reforming, two-step methanol synthesis in water and gas-cooled reactors, and the capability to recycle hydrogen to adjust synthesis gas composition.

The methanol production process consists of three main steps: synthesis gas (syngas) production, crude methanol synthesis, and methanol distillation.

Syngas Production

Syngas production by the combined reforming method starts with desulfurization and pre-reforming of natural gas feedstock. After pre-reforming, the natural gas feedstock is split into two branches, with one branch of the gas stream routed to the steam methane reformer (SMR) (EQT 0001). The SMR uses a catalyst in the presence of steam to reform methane into a raw syngas stream, composed primarily of hydrogen, carbon monoxide, and carbon dioxide. The SMR contains two independent burner systems: the primary SMR burners used to drive the reforming process and auxiliary burners in the SMR exhaust duct. The auxiliary burners provide additional heat to the SMR exhaust stream, similar to duct burners, to facilitate heat recovery.

The other branch of the pre-reformed natural gas stream bypasses the SMR and is mixed with the raw syngas exiting the SMR. The combined stream is then routed to the secondary reforming process, the Autothermal Reformer (ATR), where oxygen is introduced as the reforming agent. The syngas stream leaving the secondary reforming process contains water as a by-product of the reforming process. Heat is recovered from this stream through

³ EDMS Doc ID 13691884

⁴ EDMS Doc ID 13446684

⁵ EDMS Doc ID 13537742

⁶ See EDMS Doc IDs 13658117, 13678688, 13731144, 13743740, 13743739, 13805063, 13864134, respectively.

various process heaters, and the water is removed as process condensate. This condensate contains traces of dissolved gases and ammonia, which are extracted in the Process Condensate Stripper and routed to the SMR for destruction. The dry syngas is then directed to the methanol synthesis unit.

Crude Methanol Synthesis

The methanol synthesis process utilizes two synthesis steps in series: twin water-cooled reactors followed by a gas-cooled reactor. The isothermal, water-cooled reactors use a highly reactive catalyst to partially convert the syngas to methanol. The heat of reaction from this process is drawn off by water cooling and utilized to produce steam, which can be used to generate electricity via a condensing turbine depending on the energy balance within the facility. The partially converted process gas stream is routed to the gas-cooled methanol reactor, where it is further reacted while passing over a catalyst bed.

The crude methanol is cooled and condensed, and a purge gas stream is separated before the liquid crude methanol is routed to the methanol distillation unit. Hydrogen can be separated from the purge gas; the hydrogen-rich stream contains minor amounts of non-reactive components in the form of nitrogen and any remaining methane. This stream is used for pre-reformer and synthesis loop catalyst reduction and can also be recycled to methanol synthesis and for desulfurization. The remaining purge gas is combusted as fuel gas in the SMR and Auxiliary Boiler (EQT 0002). The crude methanol is routed to the methanol distillation unit.

Methanol Distillation

The crude methanol contains impurities together with unconverted reactants and traces of dissolved gases from the methanol synthesis stage. The stream is degassed in an expansion vessel, which rids the crude methanol stream of much of the dissolved N₂, CO₂, CO, H₂, and methane. This expansion gas stream is combusted in the SMR as fuel. Volatile light ends and the remainder of the dissolved gases are removed in the pre-run column, which separates them into an overhead vapor stream. The overhead vapor stream, called distillation off gas, is combusted as fuel in the SMR. The less volatile, higher boiling components are further separated in two methanol columns in series. The first methanol column operates at high pressure, while the second operates at atmospheric pressure. The overhead stream from the high-pressure column is used to heat the bottoms of the atmospheric pressure column. The overhead streams from both columns are condensed and refluxed back to their respective columns, with some portion of each extracted as the product methanol. Product grade methanol exiting the distillation process is sent to the Pure Methanol Intermediate Tanks (EQTs 0013 and 0017) prior to storage and distribution at the KMe Terminal. An additional storage tank containing raw methanol (EQT 0008) is used to reprocess methanol that does not meet product specifications and to process other methanol-containing streams. A chiller/scrubber system controls emissions from the two product grade storage tanks and raw methanol storage tank. Methanol from the scrubber water is recovered by pumping the scrubber water to the expansion vessel or directly to the Raw Methanol Tank for reprocessing.

KMe Terminal

The purpose of the KMe Terminal is to store and transfer methanol product. The facility consists of four internal floating roof Methanol Product Tanks (EQTs 0029, 0030, 0031, and 0032); methanol truck and rail loading operations; and infrastructure for transferring methanol

to and from marine loading operations at the St. James Terminal (AI 129733), which is located adjacent to the site and owned and operated by Plains Marketing LP.

C. Permit Modification

Permit Consolidation

With this permit modification, Koch requested to incorporate all permitted KMe Terminal sources addressed in Permit No. 3169-V3 into the KMe Plant's Title V permit in order to address both operations in a single Title V permit for the Koch Methanol Facility. Koch also requested that "Fugitive Emissions – Tanks and Terminals" from the KMe Terminal's Title V permit be combined with "Fugitive Emissions – Process Units" from the KMe Plant's Title V permit under a single fugitive emissions source (FUG 0001) for the Koch Methanol Facility.

KMe Optimization Project

The KMe Optimization Project consists of a number of activities, including a raw material feed upgrade, improvements to the facility's cooling capability, and other equipment upgrades with the collective primary goal of increasing utilization of existing assets and methanol production. The project is intended to achieve a 25 percent increase in the Koch Methanol Facility's design production rate from approximately 4950 metric tons per day (MTPD) to 6200 MTPD of refined methanol.

The raw material feed upgrade includes constructing ethane gas piping, a vaporizer, and associated equipment to inject ethane into the process natural gas feed to the SMR. Ethane will be brought into the facility from an existing third-party ethane gas pipeline. Piping, a metering skid, and associated piping components will be constructed, owned, and operated by the third party. Koch will connect to the third-party's metering skid at a point of demarcation within the Koch Methanol Facility's property boundaries. A shell and tube exchanger using low pressure steam, owned and operated by Koch, will be used to vaporize the ethane prior to its injection into the process natural gas feed line to the SMR.

To meet the additional cooling needs anticipated for the project, Koch plans to make upgrades to existing fin fan coolers as well as the existing Cooling Water Tower (EQT 0007). This work may involve upgrades to or replacement of the fin fans for improved cooling capability at increased production rates. The cooling tower upgrades are anticipated to include the addition of a new cooling tower cell and new or upgraded pumps for increased cooling tower circulation rates above current capability.

A modification to the Flare (EQT 0003) design may occur as a result of the project. The flare will either remain a non-assisted flare or may be modified to incorporate steam-assist.

Other equipment upgrades, such as changes to or addition of piping fugitive components for process safety valve upgrades, improved process monitoring, or new or changed piping configurations or process flows, may be made as part of the project. Zoloscans technology utilizing advanced combustion monitoring may be installed on the SMR. Additionally, process equipment such as heat exchangers or burners may be replaced, physically modified, or added to accommodate the increased production rates.

Revisions to Emissions Limits

Permit No. 2560-00295-V6:

- Increases the annual average and maximum firing rates of the SMR (the combined firing rates of the primary burners and auxiliary burners) to 1725 MMBtu/hr and 1794 MMBtu/hr, respectively;
- Increases the Auxiliary Boiler's maximum firing rate from 997 MMBtu/hr to 1100 MMBtu/hr;
- Revises the NO_x, CO, and VOC emission limits for the SMR and Auxiliary Boiler to account for increased firing rates and for end-of-run performance of the selective catalytic reduction (SCR) catalyst and the CO/VOC oxidation catalyst at the higher firing rates, taking into account the results of a stack test performed near start-of-run (i.e., close to the date when the catalysts were newly installed);
- Increases the maximum hourly and annual ammonia emission limits for the SMR and the maximum hourly ammonia emission limit for the Auxiliary Boiler to account for additional ammonia injection which may be needed to meet permitted NO_x limits near the end of SCR catalyst life;
- Revises methanol emission limits for the SMR and Auxiliary Boiler based on the anticipated methanol mass flow rate;
- Increases the emission limits for the Process Condensate Stripper Vent (RLP 0024) to account for the increase in facility-wide methanol production; and
- Revises the average hourly emission limits for the SMR, Boiler, PCS Vent CAP (GRP 0002) based on 8760 hours per year of operation;
- Revises the emission limits for the Flare to account for the increase in the flare load as well as increased supplemental natural gas that would be required to meet the minimum net heating value requirements in the event a steam-assisted flare design is selected;
- Revises the emission limits for the Cooling Water Tower based on updates to the circulating rate, drift factor, total dissolved solids (TDS) concentration, and VOC calculation methodology, and establishes limits for CO and greenhouse gas (GHG) emissions;
- Revises the emission limits for Fugitive Emissions to account for additional components associated with ethane gas piping and other piping changes associated with the project;
- Revises the emission limits for the Methanol Scrubber (EMS 0001). The Methanol Scrubber controls emissions from the Raw Methanol Tank and the two (2) Pure Methanol Intermediate Tanks. Emissions changes are due to the increase in facility-wide methanol production; updates to the tanks' physical parameters to reflect their as-built designs; the use of updated AP-42 Section 7.1 "Organic Liquid Storage Tanks" (June 2020) emission factors, equations, and algorithms; and to account for emissions from a methanol stream that is currently routed to the Raw Methanol Tank from an expansion vessel;

- Increases the throughput of the Ammonia Tank (EQT 0014) to 440,000 gallons per year of aqueous ammonia so that the SCR unit can effectively control NO_x emissions attributed to increases in the SMR and Auxiliary Boiler's firing rates. Emissions were also revised to reflect the updated AP-42 Section 7.1 emission factors;
- Updates the emission limits for Wastewater Treatment (FUG 0002) to reflect a 25 percent increase in wastewater flow associated with the production rate increase;
- Increases the emission limits for the Condensate Trap Vents (RLP 0025) to account for the increase in facility-wide methanol production;
- Revises the emission limits for the Methanol Transfer and Product Tank CAP (GRP 0003), which accounts for emissions from the four internal floating roof Methanol Product Tanks, including tank cleanings and roof landings, as well as emissions from Methanol Railcar and Tank Truck Loading Operations (EQT 0028). A vapor control unit (VCU) is used to control VOC emissions from railcar and truck loading operations. Emissions changes are due to the increase in facility-wide methanol production; updates to the tanks' physical parameters to reflect their as-built design; the use of updated AP-42 Section 7.1 emission factors, equations, and algorithms; adjustment of the average flow rate of enrichment gas to the VCU to account for both current operations and increased production; and recalculation of NO_x emissions from the VCU based on a vendor guarantee;
- Updates the emission limits for the General Condition XVII (GCXVII) Activity "Plant Portable Thermal Oxidizer" (GCXVII-15), which controls emissions during tank cleanings, to account for the cleaning of the internal floating roof tanks located at the KMe Terminal;
- Updates the emission limits for the GCXVII Activity "Terminal Railcar Cleanings" (GCXVII-31) to account for the increase in methanol being loaded out via railcars;
- Updates the maximum hourly emission limit for the Admin Building Emergency Generator (EQT 0026) to account for condensable PM₁₀/PM_{2.5} emissions; and
- Updates the emission limits for all natural gas-fired combustion sources to fully speciate organic and inorganic toxic air pollutants.

Revisions to the Specific Requirements

Permit No. 2560-00295-V6:

- Adds a Specific Requirement (SR) requiring Koch to develop and implement a fence line monitoring program for VOC and/or methanol (see Section VI for more information);
- Removes the phrase "Evaporative Loss from the Cleaning of Storage Tanks" from the compliance demonstration method for the Common Requirement Group (CRG) Raw Methanol Tank, Pure Methanol Intermediate Tanks, and Methanol Scrubber (CRG0004) (SR 28 in Permit No. 2560-00295-V5);

- Adds requirements to monitor CO from the SMR and Auxiliary Boiler using continuous emission monitoring systems (CEMS). The CEMS shall comply with Performance Specification 4 or 4A of 40 CFR 60, Appendix B, and be evaluated in accordance with Procedure 1 of 40 CFR 60, Appendix F;
- Increases the frequency of required performance tests on the SMR and Auxiliary Boiler for filterable and condensable particulate matter from once every 5 years to annually and requires performance tests on the Auxiliary Boiler for VOC to be conducted annually;
- Revises the PM₁₀, PM_{2.5}, and VOC compliance demonstration method for the SMR (SR 72 in Permit No. 2560-00295-V5) to specify that such emissions shall be calculated monthly based on the actual operating rates of the SMR during the calendar month and the emission factors derived from the performance test;
- Revises the PM₁₀ and PM_{2.5} compliance demonstration method for the Auxiliary Boiler (SR 125 in Permit No. 2560-00295-V5) to specify that such emissions shall be calculated monthly based on the actual operating rates of the Auxiliary Boiler during the calendar month and the emission factor derived from the performance test;
- Removes the requirement to conduct periodic performance tests for CO from the SMR and Auxiliary Boiler since such emissions will now be monitored using CEMS;
- Adds an SR requiring Koch to continuously monitor the heating value and VOC content of the waste gas routed to the Flare;
- Revises the SR for 40 CFR 60.665(b)(3) for the Flare (SR 134 in Permit No. 2560-00295-V5) to correctly reference 40 CFR 60.705(b)(3) instead of 40 CFR 60.705(c);
- Specifies that the Flare may comply with 40 CFR 60.703(b)(2) of Subpart RRR in lieu of the flow indicator requirements of 40 CFR 63.663(b)(2) of Subpart NNN;
- Revises the compliance demonstration method for the Plant Emergency Generator (EQT 0004) (SR 169 in Permit No. 2560-00295-V5) to clarify that emissions during emergency use must be reported pursuant to LAC 33:III.919, but shall not be counted against emission limits for purposes of determining compliance;
- Revises the compliance demonstration methods for Firewater Pump Engine No. 1, Firewater Pump Engine No. 2, Firewater Pump Engine No. 3, and the Admin Building Emergency Generator (EQT0005, EQT0006, EQT0022, and EQT0026) (SRs 171, 173, 185, and 204 in Permit No. 2560-00295-V5) to specify that compliance with emission limits shall be based on actual non-emergency operating time;
- Amends the compliance demonstration method for the Methanol Transfer and Product Tank Cap with the following sentence: "The combustion emissions from the vapor combustion unit will be calculated as follows: VOC (from pilot and enrichment gas), PM₁₀, and PM_{2.5} will be calculated using AP-42 Section 1.4-2, July 1998; CO will be calculated using AP-42 Section 1.4-1, July 1998; and NO_x will be calculated using the vendor-provided guarantee of 0.25 lb/MMBTU. Heating values shall be based on process knowledge for the full combustion stream";

- Removes the initial notification requirements (i.e., 40 CFR 63.6645(f)) from Firewater Pump No. 1 and Firewater Pump No. 2 since the notifications have been submitted; and
- Incorporates five existing sulfuric acid tanks that were previously included as GCVXII Activities into the permit and limits their annual emissions to 0.04 tons per year under the Sulfuric Acid Tanks Cap (GRP 0004).

The Koch Methanol Facility is a major source of criteria pollutants, a major source of hazardous air pollutants (HAPs) regulated under Section 112 of the Clean Air Act, and a major source of TAPs regulated under LAC 33:III.Chapter 51. Changes in permitted emissions from the facility attributed to the subject permit actions, in tons per year, are as follows:

*Criteria Pollutants*⁷

Pollutant	Before			After	Change
	2560-00295-V5	3169-V3	Total	2560-00295-V6	
PM ₁₀ ⁸	49.92	0.41	50.33	76.30	+ 25.97
PM _{2.5} ⁹	48.46	0.41	48.87	75.32	+ 26.45
SO ₂	4.65	0.04	4.69	6.16	+ 1.47
NO _x	87.29	9.57	96.86	152.84	+ 55.98
CO	92.57	3.96	96.53	181.46	+ 84.93
VOC	63.55	24.81	88.36	166.34	+ 77.98

Greenhouse Gas Emissions

Pollutant	Before			After	Change
	2560-00295-V5	3169-V3	Total	2560-00295-V6	
CO ₂ e ¹⁰	–	–	–	1,401,096	–

⁷ Any compound for which an ambient air quality standard has been listed in LAC 33:III.Chapter 7; volatile organic compounds (VOC) are regulated as a precursor for ozone.

⁸ PM₁₀ is particulate matter with a nominal diameter of less than or equal to 10 micrometers.

⁹ PM_{2.5} is particulate matter with a nominal diameter of less than or equal to 2.5 micrometers. PM_{2.5} is a subset of PM₁₀.

¹⁰ Carbon dioxide equivalents. Greenhouse gas emissions from the Koch Methanol Facility were not previously required to be permitted.

*Toxic Air Pollutants (TAPs)*¹¹

Pollutant	Before			After	Change
	2560-00295-V5	3169-V3	Total	2560-00295-V6	
1,4-Dichlorobenzene	0.01	–	0.01	0.01	–
2,2,4-Trimethylpentane	0.01	–	0.01	0.01	–
Acetaldehyde	0.01	–	0.01	0.01	–
Ammonia	101.22	–	101.22	120.49	+ 19.27
Arsenic (and compounds)	–	–	–	0.001	+ 0.001
Barium (and compounds)	–	–	–	0.045	+ 0.045
Benzene	0.03	0.02	0.05	0.06	+ 0.01
Cadmium (and compounds)	–	–	–	0.014	+ 0.014
Chromium VI (and compounds)	–	–	–	0.015	+ 0.015
Cobalt compounds	–	–	–	0.01	+ 0.01
Copper (and compounds)	–	–	–	0.008	+ 0.008
Ethyl benzene	<0.01	–	<0.01	0.01	–
Formaldehyde	0.19	0.01	0.20	0.49	+ 0.29
Hydrogen sulfide	9.13	–	9.13	9.13	–
Manganese (and compounds)	–	–	–	0.01	+ 0.01
Mercury (and compounds)	–	–	–	0.003	+ 0.003
Methanol	44.14	23.36	67.50	140.72	+ 73.22
Naphthalene	0.01	–	0.01	0.01	–
n-Hexane	4.45	0.25	4.70	11.32	+ 6.62
Nickel (and compounds)	–	–	–	0.021	+ 0.021
Sulfuric acid ¹²	–	–	–	0.04	+ 0.04
Toluene	0.02	–	0.02	0.04	+ 0.02
Zinc (and compounds)	–	–	–	0.30	+ 0.30
Totals:	159.23	23.64	182.87	282.767	+ 99.897

¹¹ Substances listed in LAC 33:III.5112, Tables 51.1 and 51.3. 1,4-dichlorobenzene, 2,2,4-trimethylpentane, acetaldehyde, benzene, ethyl benzene, formaldehyde, methanol, naphthalene, n-hexane, and toluene are also classified as VOC and are included in the VOC total in the *Criteria Pollutants* table above.

¹² Sources of sulfuric acid were formerly permitted as General Condition XVII Activities.

II. PUBLIC COMMENT

A notice requesting public comment and announcing a public hearing on the proposed permits was published on LDEQ's "Public Notices" webpage¹³ on July 31, 2023.¹⁴ On July 31, 2023, copies of the public notice were also mailed or e-mailed to the individuals who have requested to be placed on the mailing list maintained by the OES. The proposed permits were submitted to the U.S. Environmental Protection Agency (EPA) on July 27, 2023.

The comment period was originally set to close on September 5, 2023; however, prior to the public hearing, a request for an extension of the comment period was received and additional time was granted. Notice of the extension of the comment period was published on LDEQ's "Public Notices" webpage in August 25, 2023,¹⁵ and those on the mailing list maintained by the OES were notified on August 24, 2023.

The public hearing was held on Thursday, August 31, 2023, at St. Louis Academy, 8184 Villavaso Street, St. James, Louisiana. The comment period closed on September 18, 2023, for a total comment period of 49 days.¹⁶

During the comment period, the proposed permits, Statement of Basis (SOB), permit application, additional information, and Environmental Assessment Statement (EAS) were available for review at LDEQ's Public Records Center, 602 North 5th Street, Baton Rouge, Louisiana, and at the Vacherie Branch of the St. James Parish Library, 2593 Highway 20, Vacherie, Louisiana. These documents were also accessible through LDEQ's Electronic Document Management System (EDMS).¹⁷

The proposed permits and SOB, along with the Public Comments Response Summary, were again submitted to EPA on November 6, 2023, in accordance with 40 CFR 70.8(a)(1)(ii) and LAC 33:III.533.B.2.b.

III. PUBLIC COMMENTS RESPONSE SUMMARY

A "Public Comment Response Summary" was prepared for all pertinent comments and is attached and made part of this Basis for Decision.

IV. ALTERNATIVE SITES: Are there alternative sites that would offer more protection to the environment than the proposed facility site without unduly curtailing non-environmental benefits?

While LDEQ recognizes that the concepts of alternative sites, alternative projects, and mitigating measures are closely interrelated and overlap, each concept is addressed separately

¹³ <https://deq.louisiana.gov/public-notices>

¹⁴ EDMS Doc ID 13920064

¹⁵ EDMS Doc ID 13963357

¹⁶ Figure excludes date of publication.

¹⁷ LDEQ's EDMS is the electronic repository of official records that have been created or received by LDEQ. Members of the public can search and retrieve documents stored in EDMS via the internet at <http://edms.deq.louisiana.gov>.

in this document for purposes of emphasis and clarity. However, LDEQ stresses the interrelation of the three. For example, the choice of a particular site could involve mitigating factors and possibly alternative project considerations. Likewise, selection of an alternative project could invoke mitigating factors and impact site selection. The Louisiana First Circuit Court of Appeal has also recognized this interrelationship and now considers the three requirements as one. *Matter of Rubicon, Inc.*, 95-0108 (La. App. 1 Cir. 2/14/96); 670 So. 2d 475, 483.

Therefore, because of this interrelationship, LDEQ adopts any and all of its findings on all three factors under each of the specific designated areas -- alternative sites (Section IV), alternative projects (Section V), and mitigating measures (Section VI). Additionally, the assessment and findings set forth in Section VII (Avoidance of Adverse Environmental Effects) also interrelate and have been considered relative to these facts.

As explained in Section I.C, the KMe Optimization Project is designed to increase the production rate of the Koch Methanol Facility primarily through the injection of ethane into the natural gas feed to the SMR and via the modification of existing process equipment (e.g., fin fan coolers, cooling water tower). The project does not involve the construction of a second plant or process unit capable of operating independently from the existing facility. Accordingly, the KMe Optimization Project could not be constructed at an alternative site.

Therefore, a traditional alternative sites analysis, in which a permit applicant would typically consider multiple prospective locations, is not appropriate or reasonable in the instant case. Nevertheless, in considering the permit application, LDEQ closely reviewed Koch's existing operations and the potential impacts of the KMe Optimization Project on human health and the environment. See Sections VI (Mitigating Measures) and VII (Avoidance of Adverse Environmental Impacts).

CONCLUSION: For the foregoing reasons, LDEQ finds there are no alternative sites that would offer more protection to the environment than the proposed site without unduly curtailing non-environmental benefits.

V. ALTERNATIVE PROJECTS: Are there alternative projects that would offer more protection to the environment than the proposed facility without unduly curtailing non-environmental benefits?

LDEQ finds that the project as proposed offers more protection to the environment than any other possible alternative without unduly curtailing non-environmental benefits. Additionally, LDEQ recognizes that selection of the most environmentally sound project usually also serves as a mitigating measure because the two considerations overlap substantially.

As noted in Section IV above, the KMe Optimization Project is designed to increase the production rate of the Koch Methanol Facility primarily through the injection of ethane into the natural gas feed to the SMR and via the modification of existing process equipment (e.g., fin fan coolers, cooling water tower). The project will improve utilization and efficiency of existing assets and infrastructure to produce an additional 1250 MTPD of refined methanol.

An alternative project that involves construction of a second plant or process unit capable of producing an equivalent amount of methanol and operating independently from the existing facility would be highly inefficient relative to the proposed project and would substantially increase costs without any corresponding environmental benefits.

LDEQ considered the “no action” alternative, in which the KMe Optimization Project would not be approved. However, as noted in the introduction of this Basis for Decision, LDEQ determined the proposed permits have minimized or avoided potential and real adverse environmental impacts to the maximum extent possible and that the social and economic benefits of the KMe Optimization Project will outweigh its adverse environmental impacts. LDEQ also determined that the emission limits established by Permit Nos. 2560-00295-V6 and PSD-LA-851 are protective of human health and the environment (see Section VI). Because the “no action” alternative would only serve to eliminate the social and economic benefits stemming from the project (see Section VIII.B), this alternative was discounted.

CONCLUSION: For the foregoing reasons, LDEQ finds there are no alternative projects that would offer more protection to the environment than the proposed project without curtailing non-environmental benefits.

VI. MITIGATING MEASURES: Are there mitigating measures that would offer more protection to the environment than the facility as proposed without unduly curtailing non-environmental benefits?

Permit Requirements

Permit No. 2560-00295-V6 requires Koch to meet or exceed the requirements of all applicable federal emission standards promulgated pursuant to Sections 111 and 112 of the Clean Air Act and state emission standards promulgated pursuant to the Louisiana Environmental Quality Act.

The following federal subparts are applicable to the Koch Methanol Facility:

Under 40 CFR 60

- A – General Provisions
- Db – Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units
- VVa – Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006
- NNN – Standards of Performance for Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations
- RRR – Standards of Performance for Volatile Organic Compound Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes
- III – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
- JJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

Under 40 CFR 63

- A – General Provisions
- F – National Emission Standards for Organic Hazardous Air Pollutants From the Synthetic Organic Chemical Manufacturing Industry
- G – National Emission Standards for Organic Hazardous Air Pollutants From the Synthetic Organic Chemical Manufacturing Industry for Process Vents, Storage Vessels, Transfer Operations, and Wastewater
- H – National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks
- ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines
- DDDDD – National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters

Best Available Control Technology

The Koch Methanol Facility is located in St. James Parish, which is currently designated as attainment or unclassifiable with respect to the national ambient air quality standards (NAAQS) for all criteria pollutants. The permit modifications described in Section I.C will increase the facility's potential emissions of NO_x, CO, and VOC to greater than 100 tons per year. Thus, the facility will become a major stationary source under the PSD program.

The subject permit actions do not trigger PSD review because the Koch Methanol Facility (as permitted under Permit Nos. 2560-00295-V5 and 3169-V3) is not an existing major stationary source, and the modifications authorized by Permit No. 2560-00295-V6 do not by themselves constitute a new major stationary source.¹⁸ Nevertheless, Koch requested that PSD requirements be applied as if the facility had not yet been built and to all pollutants for which post-project facility-wide potential emissions would exceed PSD significant emission rates. Therefore, LDEQ required all sources of PM₁₀, PM_{2.5}, NO_x, CO, VOC, and CO_{2e} emissions to be controlled by best available control technology (BACT). BACT is defined, in relevant part, as:

an emissions limitation . . . based on the *maximum* degree of reduction for each pollutant subject to regulation under this Section that would be emitted from any proposed major stationary source or major modification that the administrative authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant.¹⁹

LDEQ's BACT determinations set forth in Permit No. PSD-LA-851 establish additional requirements with which Koch must comply. For example, Koch must:

¹⁸ See LAC 33:III.509.B. *Major Stationary Source.c.*

¹⁹ LAC 33:III.509.B (emphasis added)

- control NO_x emissions from the SMR using ultra low NO_x burners (ULNB) and SCR to limit such emissions to 0.01 lb/MM Btu (12-month rolling average);²⁰
- control NO_x emissions from the Auxiliary Boiler using low NO_x burners and SCR to limit such emissions to 0.01 lb/MM Btu (12-month rolling average);
- control CO and VOC emissions from the SMR and Auxiliary Boiler using oxidation catalysts;
- continuously monitor NO_x and CO emissions from the SMR and Auxiliary Boiler using continuous emission monitoring systems (CEMS);
- conduct performance tests on the SMR and Auxiliary Boiler for filterable and condensable particulate matter and VOC annually;
- control particulate matter emissions from the Cooling Water Tower using high efficiency drift eliminators that limit the drift rate to no more than 0.0005 percent;
- monitor the total dissolved solids (TDS) concentration in the cooling water monthly;
- control VOC (methanol) emissions from the Raw Methanol Tank and Pure Methanol Intermediate Tanks by 98 percent using a chiller and scrubber system (EMS 0001);²¹
- control VOC emissions from the Slop Vessel using the Flare;
- implement a leak detection and repair (LDAR) program to minimize fugitive emissions of CO and GHGs;
- implement energy efficiency measures to limit facility-wide GHG emissions to 0.56 metric tons (MT) of CO₂e per MT of methanol produced at daily methanol production rates above 5100 MT and to 0.68 MT of CO₂e per MT of methanol produced at daily methanol production rates at or below 5100 MT.

Additional Requirements

LDEQ has also imposed additional monitoring provisions in order to assure compliance with the terms and conditions of the permits, including requirements to:

- continuously monitor the volume of vent gas and pilot gas routed to the Flare;
- continuously monitor the heating value and VOC content of waste gas routed to the Flare;
- monitor the temperature of the methanol stored in the Raw Methanol Tank, Pure Methanol Intermediate Tanks, and Methanol Product Tanks daily;
- monitor the throughput of all tanks storing methanol;
- record the number and duration of floating roof landings (in the case of the Methanol Product Tanks) and the number of tank cleanings;
- continuously monitor the pressure in the railcars and tank trucks being loaded to ensure a vacuum is maintained and discontinue loading if a positive pressure is indicated;
- monitor the Ammonia Tank weekly for visible, audible, or olfactory indications of leaks; and
- monitor the emergency generators and firewater pump engines for visible emissions during readiness testing events and take corrective action if the opacity exceeds 20 percent.²²

²⁰ ULNB are applicable to the primary burners only.

²¹ 40 CFR 63.119(e)(1) of Subpart G requires methanol emissions to be controlled by 95 percent.

²² The “Best Available Control Technology” and “Additional Requirements” discussions highlight the major control requirements and work practice standards mandated by Permit Nos. 2560-00295-V6 and PSD-LA-851. They do not describe the requirements imposed by applicable federal provisions under 40 CFR 60 or 40 CFR 63 or provide an exhaustive list of the requirements with which Koch must comply.

Emission Limits

The emission limits established by Permit Nos. 2560-00295-V6 and PSD-LA-851 have been determined to be protective of human health and the environment.

The Clean Air Act requires EPA to establish health-based NAAQS for pollutants considered harmful to public health and the environment. The Act establishes two types of standards. Primary standards are limits designed to protect public health, including the health of “sensitive” populations such as asthmatics, children, and the elderly. Secondary standards are designed to protect public welfare, including protection from decreased visibility and damage to animals, crops, vegetation, and buildings. According to EPA, air quality that adheres to the NAAQS is protective of public health, animals, soils, and vegetation with an “adequate margin of safety.”²³ EPA has set NAAQS for six principal pollutants, called criteria pollutants – particulate matter (PM₁₀ and PM_{2.5}), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), carbon monoxide (CO), ozone, and lead.²⁴ Air quality in St. James Parish is compliant with the primary and secondary NAAQS for all pollutants.

At the state level, Louisiana has established unique, risk-based ambient air standards (AAS) for 99 TAPs.²⁵ TAPs include federally regulated HAPs such as benzene, formaldehyde, methanol, and n-hexane, as well as a number of chemicals that are not HAPs, such as ammonia, hydrogen sulfide, sulfuric acid, and zinc (and compounds).

Standards such as the NAAQS and AAS contemplate multiple sources of pollution and establish protective limits on cumulative emissions that should ordinarily prevent adverse air quality impacts.

As evidenced in the tables below, emissions from the Koch Methanol Facility, as modeled using AERMOD,²⁶ will not cause or contribute to a violation of a NAAQS or AAS.

²³ Clean Air Act § 109(b)(1)

²⁴ NO_x and VOC are regulated as precursors to ozone.

²⁵ See Table 51.2 of LAC 33:III.5112.

²⁶ AERMOD is EPA’s required dispersion model for a wide range of regulatory applications, including NAAQS compliance demonstrations. Per Section 4.2.2.1 of 40 CFR 51, Appendix W (Guideline on Air Quality Models), AERMOD is a steady-state Gaussian plume model applicable to directly emitted air pollutants that employs best state-of-practice parameterizations for characterizing meteorological influences and dispersion. The AERMOD modeling system has been extensively evaluated across a wide range of scenarios based on numerous field studies, including tall stacks in flat and complex terrain settings, sources subject to building downwash influences, and low-level non-buoyant sources. These evaluations included several long-term field studies associated with operating plants as well as several intensive tracer studies. AERMOD has shown consistently good performance. Further, the model code is not static, but evolves to accommodate the best available science (<https://www.epa.gov/scram/air-quality-dispersion-modeling-preferred-and-recommended-models>).

Criteria Pollutants

Pollutant	Averaging Period	Maximum Modeled Concentration ²⁷ (µg/m ³)	Significant Impact Level (SIL) ²⁸ (µg/m ³)	Cumulative Impacts ²⁹ (µg/m ³)	NAAQS (µg/m ³)
PM ₁₀	24-hour	1.32	5	–	150
PM _{2.5} ³⁰	24-hour	1.01	1.2	–	35
	Annual	0.11	0.2	–	12
NO ₂	1-hour	13.47	7.5	182.4	188
	Annual	0.40	1	–	100
CO	1-hour	1453.56	2000	–	40,000
	8-hour	441.48	500	–	10,000

Ozone

Monitor	Current Design Value ³¹ (parts per billion)	Predicted Ozone Increase (parts per billion)	Projected Design Value ³² (parts per billion)	NAAQS (parts per billion)
Convent	59	0.33 ³³	59.33	70

²⁷ Koch Methanol Facility only

²⁸ The legal basis justifying the use of SILs in a source impact analysis under LAC 33:III.509.K is set forth in EPA's "Legal Memorandum: Application of Significant Impact Levels in the Air Quality Demonstration for Prevention of Significant Deterioration Permitting under the Clean Air Act." With respect to PM_{2.5} and ozone, LDEQ also relied on two additional documents, EPA's "Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program," dated April 17, 2018, and "Technical Basis for the EPA's Development of the Significant Impact Thresholds for PM_{2.5} and Ozone" (EPA-454/R-18-001, April 2018). LDEQ hereby incorporates these documents, which are available at <https://www.epa.gov/nsr/significant-impact-levels-ozone-and-fine-particles>, into the permit record.

²⁹ Modeling results include background concentrations and emissions from other industrial sources in the modeling domain. An evaluation of cumulative impacts (i.e., refined modeling) is not required if the maximum impact of the Koch Methanol Facility is below the pollutant's SIL.

³⁰ Includes secondary impacts

³¹ The design value is for calendar years 2020-2022. The design value is used to determine if air quality at a given location is compliant with the relevant NAAQS and accounts for ozone formation attributed to existing NO_x and VOC emissions from the Koch Methanol Facility. See <https://www.epa.gov/air-trends/air-quality-design-values> for more information.

³² The projected design value is extremely conservative since the maximum predicted increase will not occur at the location of the air monitoring station.

³³ Value derived using EPA's "Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM_{2.5} under the PSD Permitting Program," dated April 30, 2019. In order to be conservative, the lowest illustrative NO_x and VOC MERP values for the southern United States (i.e., the amount of each pollutant required to generate 1.0 ppb of ozone) were utilized – 190 tons per year of NO_x and 2307 tons per year of VOC (see p. 43) (<https://www.epa.gov/sites/default/files/2019-05/documents/merps2019.pdf>).

$$0.33 = (55.98/190) + (77.98/2307)$$

TAPs

Pollutant	Averaging Period	Maximum Modeled Concentration ($\mu\text{g}/\text{m}^3$)	7.5% of AAS ³⁴ ($\mu\text{g}/\text{m}^3$)	AAS ($\mu\text{g}/\text{m}^3$)
Ammonia	8-hour	44.04	48.00	640.00
Methanol	8-hour	72.02	468.00	6240.00

Ambient Air Monitoring

LDEQ has an extensive network of ambient air monitoring stations that continually monitor and record concentrations of pollutants in the air, including an ozone monitor at the St. James Parish Courthouse.³⁵

In addition, LDEQ has applied for and been awarded EPA grant funding to install and operate for a period of approximately two years a Temporary Located Community (TLC) ambient air monitoring station near the community of Welcome in St. James Parish. The station will be equipped with monitors for PM₁₀, PM_{2.5}, SO₂, NO₂, total hydrocarbons (THC), methane, non-methane hydrocarbons, and meteorological data. The station will also collect periodic canister samples which will be analyzed for numerous volatile organic compounds and/or HAPs. Operation of this monitor will be privately funded for an additional three years.

Moreover, Permit No. 2560-000295-V6 requires Koch to install and operate a fenceline monitoring system for VOC and/or methanol prior to the introduction of ethane gas into the SMR.

CONCLUSION: For the foregoing reasons, LDEQ finds there are no mitigating measures that would offer more protection to the environment than the project as proposed without unduly curtailing non-environmental benefits.

VII. AVOIDANCE OF ADVERSE ENVIRONMENTAL EFFECTS: Have the potential and real adverse environmental effects of the proposed facility been avoided to the maximum extent possible?

As part of the permitting process, the potential and real adverse environmental impacts from the Koch Methanol Facility are assessed prior to its modification to ensure that they are minimized to the maximum extent possible. The following paragraphs describe this assessment by media. The discussion related to air emissions is addressed in Section VI – Mitigating Measures.

³⁴ There are no SILs for TAPs, but LDEQ uses a threshold of 7.5 percent of the AAS to determine if additional modeling is required.

³⁵ <https://www.deq.louisiana.gov/index.cfm?md=pagebuilder&tmp=home&pid=convent>

To view air quality data and reports, obtain current hourly air quality readings, or learn more about LDEQ's ambient air monitoring operations, see <https://deq.louisiana.gov/page/ambient-air-monitoring-program>.

A. Wastewater and Storm Water

Discharges of sanitary wastewater from the Koch Methanol Facility are regulated by Louisiana Pollutant Discharge Elimination System (LPDES) General Permit LAG535491, issued July 20, 2020.³⁶ Other discharges from the facility are regulated under LPDES Permit No. LA0127367, dated November 12, 2020.³⁷ Discharge limits are based, among other things, on the applicable technology-based effluent limitations under 40 CFR 414 Subparts F (Commodity Organic Chemicals) and I (Direct Discharge Point Sources That Use End-of-Pipe Biological Treatment). LDEQ determined that discharges from the facility “will have no adverse impact on the existing uses of the receiving waterbody.”³⁸

The LPDES permit also requires adherence to a Storm Water Pollution Prevention Plan (SWPPP).³⁹

The KMe Optimization Project will increase the volume of process-generated wastewater sent to Wastewater Treatment (FUG 0002) as well as increase the volume of blowdown water from the cooling and steam systems, demineralized regeneration wastewater, and return water from the feed water treatment plant clarifier systems. Although a change in the concentration of pollutants in the wastewater is not anticipated, there will be an increase in pollutant loading from the final outfall that discharges to the Mississippi River.⁴⁰

Koch’s application to renew Permit No. LA0127367 requests the modifications necessary to implement the KMe Optimization Project.⁴¹ Discharge limits imposed by LDEQ, should the requested permit renewal and modification be granted, will be based on the applicable effluent limitations as well as the characteristics of the receiving stream, including any relevant total maximum daily load (TMDL) standards, to ensure that discharges from the facility do not cause adverse environmental effects or compromise the existing uses of the receiving waterbody.

Spills

Koch must also adhere to a Spill Prevention, Control, and Countermeasure (SPCC) Plan as required by 40 CFR 112 (Oil Pollution Prevention) and a Spill Prevention and Control (SPC) Plan as required by LAC 33:IX.Chapter 9 to address contingency planning and implementation of operating procedures and best management practices to prevent and control the discharge of pollutants resulting from spill events. The state rule is broader in scope than the federal rule because it covers *all* liquids and solids listed under LAC 33:I.3931 that could be immediately transported to waters of the state, not just oil. The SPC plan requires, among other things:

- a prediction of the direction, rate of flow, and total quantity of applicable substances which could be spilled at the facility where experience indicates a reasonable potential for equipment failure and/or human error;

³⁶ EDMS Doc ID 12259394

³⁷ EDMS Doc ID 12448374

³⁸ EDMS Doc ID 12206914 (p. 2 of 5)

³⁹ EDMS Doc ID 12448374 (pp. 34-37 of 154)

⁴⁰ EDMS Doc ID 13864134 (pp. 33-34 of 111)

⁴¹ EDMS Doc ID 13849306

- appropriate containment and/or diversionary structures or equipment (e.g., dikes, berms, and/or retaining walls sufficiently impervious to contain spills; sumps and collection systems) to prevent a spilled substance from reaching waters of the state;
- drainage from diked storage areas to be restrained by valves or other positive means to prevent a spill event, except where facility treatment systems are designed to handle such spills;
- visual inspections of storage vessels by a competent person for condition and need for maintenance; and
- personnel training in the operation and maintenance of equipment to prevent or contain spills of substances and all applicable spill control rules and regulations associated with substances present on the facility site.

Storage tank installations (with a capacity greater than 660 gallons for an individual container or 1320 gallons for two or more containers in aggregate within a common storage area) must be constructed so that a secondary means of containment is provided for the entire contents of the largest tank plus sufficient freeboard to allow for precipitation.

B. Waste⁴²

The Koch Methanol Facility is classified as a small quantity generator of hazardous waste under the Resource Conservation and Recovery Act (RCRA) and complies with applicable federal and state hazardous waste requirements under 40 CFR Part 262 and LAC 33:V, respectively. The facility does not include any hazardous waste treatment, storage, and disposal (TSD) units, nor is there an industrial solid waste landfill on the property. Typical wastes generated at the facility include:

- used oil;⁴³
- non-hazardous industrial solid wastes (e.g., oily rags, water treatment lab testing wastes that do not contain methanol, and wastewater treatment plant centrifuge cake);
- hazardous wastes (e.g., methanol lab testing wastes; un-punctured aerosol cans; and paint, coating, and thinner wastes); and
- universal wastes (e.g., non-alkaline batteries, lamps/bulbs, mercury-containing equipment, and pesticides).

All solid and hazardous wastes generated at the facility are collected, placed into appropriate containers, and temporarily stored on-site in accordance with applicable federal and state regulations prior to being transported to an authorized solid waste disposal facility, hazardous waste TSD facility, or recycling center, as appropriate. Hazardous waste is stored on-site for no longer than 180 days.

The KMe Optimization Project is not anticipated to generate any new types of wastes, change the Koch Methanol Facility's generator status, or change the applicable solid and hazardous waste requirements to which the facility is subject.

⁴² EDMS Doc ID 13864134 (pp. 36-37 of 111)

⁴³ Used oil is not considered a waste when reused in compliance with used oil regulations (40 CFR 279).

C. Process Safety

The Koch Methanol Facility is subject to 40 CFR 68 – Chemical Accident Prevention Provisions.⁴⁴ According to EPA, the “goal of part 68 and the risk management program it requires is to prevent accidental releases of substances that can cause serious harm to the public and the environment from short-term exposures and to mitigate the severity of releases that do occur.”⁴⁵ This program requires Koch to:

- develop a risk management plan (RMP);
- analyze, for the processes at the Koch Methanol Facility;
 - one worst-case release scenario that is estimated to create the greatest distance in any direction to an endpoint resulting from an accidental release of regulated toxic substances from covered processes under worst-case conditions;
 - one worst-case release scenario that is estimated to create the greatest distance in any direction to an endpoint resulting from an accidental release of regulated flammable substances from covered processes under worst-case conditions;
 - additional worst-case release scenarios for a hazard class if a worst-case release from another covered process at the stationary source potentially affects public receptors different from those potentially affected by the worst-case release scenario; and
 - one alternative release scenario for each regulated toxic substance held in covered processes and at least one alternative release scenario to represent all flammable substances held in covered processes;
- complete a five-year accident history;
- develop and implement an emergency response program;
- coordinate response actions with local emergency planning and response agencies;
- conduct exercises involving the simulated accidental release of a regulated substance;
- develop a management system to oversee the implementation of the risk management program;
- compile and maintain up-to-date safety information related to the regulated substances, processes, and equipment;
- conduct a review of the hazards associated with the regulated substances, process, and procedures;
- prepare written operating procedures that provide clear instructions or steps for safely conducting activities associated with each covered process consistent with the safety information for that process;
- ensure that each employee presently involved in operating a process and each employee newly assigned to a covered process has been trained or tested competent in the operating procedures that pertain to his or her duties;
- prepare and implement procedures to maintain the on-going mechanical integrity of the process equipment;
- establish and implement written procedures to manage changes to process chemicals, technology, equipment, and procedures;
- investigate incidents, including “near misses”; and
- engage a third-party to conduct an audit that evaluates compliance with these provisions.

⁴⁴ LAC 33:III.Chapter 59 (Chemical Accident Prevention and Minimization of Consequences) is the analogous state program. See proposed Specific Requirements 440 and 441.

⁴⁵ https://www2.epa.gov/sites/production/files/2015-04/documents/intro_final_general_guidance.pdf

D. Wetlands

The Louisiana Department of Natural Resources' Office of Coastal Management (OCM) is responsible for the maintenance and protection of the state's coastal wetlands and the regulation of uses in the Louisiana coastal zone, especially those which have a direct and significant impact on coastal waters. The purpose of the Coastal Use Permit process is to make certain that any activity affecting the coastal zone is performed in accordance with guidelines established by the Louisiana Coastal Resources Program and to "regulate activities that may increase the loss of wetlands and aquatic resources."⁴⁶

While the Koch Methanol Facility is located in the Louisiana Coastal Zone, a Coastal Use Permit is not required for the KMe Optimization Project since it will not have a direct and significant impact on coastal waters.⁴⁷ In addition, no aspect of the project for which Koch is responsible will impact jurisdictional wetlands.⁴⁸

CONCLUSION: Accordingly, LDEQ determined that Koch Methanol has avoided, to the maximum extent possible, the potential and real adverse environmental impact of the proposed project.

VIII. COST/BENEFIT ANALYSIS (BALANCING): Does a cost benefit analysis of the environmental impact costs balanced against the social and economic benefits of the proposed facility demonstrate that the latter outweighs the former?

The Louisiana constitution requires balancing, not protection of the environment as an exclusive goal. *Save Ourselves*, 452 So. 2d at 1157. The social and economic benefits of the Koch Methanol Facility, modified as proposed in Section I.C, will outweigh its potential adverse environmental impacts.

A. Environmental Impact Costs

Impacts to air quality and other media are discussed in Sections VI and VII above. These impacts have been avoided to the maximum extent possible.

B. Social and Economic Benefits

The KMe Optimization Project will result in the creation of approximately 400 temporary construction-related jobs and 2 to 5 permanent jobs.⁴⁹ The direct economic benefits of the Koch Methanol Facility are significant and include, but are not limited to:

- capital expenditures associated with the KMe Optimization Project (approximately \$50 million);⁵⁰
- non-capital expenditures associated with the project (labor, engineering, etc.) (approximately \$100 million);⁵¹

⁴⁶ <http://www.dnr.louisiana.gov/index.cfm?md=pagebuilder&tmp=home&pid=90>

⁴⁷ EDMS Doc ID 13864134 (p. 40 of 111)

⁴⁸ *Id.* (p. 42 of 111)

⁴⁹ Oral comments of Josh Wiggins of Koch (EDMS Doc ID 13981282, p. 14 of 18)

⁵⁰ EDMS Doc ID 13864134 (p. 82 of 111)

⁵¹ *Id.*

- revenue from salaries paid to employees and contractors (Koch currently has 114 full-time employees);⁵²
- purchases to cover the plant's operating costs; and
- state and local tax payments (Koch pays approximately \$1.1 million in taxes to St. James Parish per year, and the KMe Optimization Project is anticipated to increase that amount by \$3.9 million over the next 10 years).⁵³

Economic benefits will occur not only as the result of direct expenditures associated with the KMe Optimization Project and continued operation of the facility, but also indirectly as direct dollars injected into the economy are subsequently spent for goods and services from multiple providers, many of which will be based in St. James Parish and elsewhere in Louisiana. These indirect benefits are often referred to as “multiplier” or “ripple” effects and support additional jobs in the area.

Retention and creation of jobs in St. James Parish is especially important, as the U.S. Department of Labor reported the August 2023 unemployment rate in the parish (4.5 percent) to be higher than Louisiana's overall unemployment rate of 3.4 percent for the same period.⁵⁴

CONCLUSION: Based on the reasoning above, LDEQ finds that the social and economic benefits outweigh the environmental impact costs.

IX. ENVIRONMENTAL JUSTICE AND TITLE VI /CIVIL RIGHTS ISSUES

Environmental justice (EJ) is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial operations. Meaningful involvement means:

- people have an opportunity to participate in decisions about activities that may affect their environment and/or health;
- the public's contribution can influence the permitting authority's decision;
- community concerns will be considered in the decision making process; and
- decision makers will seek out and facilitate the involvement of those potentially affected.⁵⁵

With respect to air quality, EPA's External Civil Rights Compliance Office (formerly the Office of Civil Rights) has approached the matter of environmental justice in various ways. For many years, EPA took the position that air quality meeting the NAAQS was presumptively protective, and emissions of a pollutant meeting the NAAQS should not be viewed as “adverse” under Title VI of the Civil Rights Act.

⁵² Oral comments of Josh Wiggins of Koch (EDMS Doc ID 13981282, p. 14 of 18)

⁵³ *Id.*

⁵⁴ Data obtained from the U.S. Department of Labor, Bureau of Labor Statistics (<https://data.bls.gov/map/MapToolServlet?survey=la>). Unemployment rates are not seasonally adjusted. August 2023 data is the most recent available at the time this document was prepared.

⁵⁵ <https://www.epa.gov/environmentaljustice/learn-about-environmental-justice>

This approach is more fully described in EPA's response to a Title VI administrative complaint filed on June 9, 1998, against the Michigan Department of Environmental Quality (i.e., the Select Steel Complaint).

Select Steel Complaint

In this matter, EPA's Office of Civil Rights addressed allegations regarding "adverse" and "disparate" air quality impacts as follows:⁵⁶

The environmental laws that EPA and the states administer generally do not prohibit pollution outright; rather, they treat some level of pollution as "acceptable" when pollution sources are regulated under individual, facility-specific permits, recognizing society's demand for such things as power plants, waste treatment systems, and manufacturing facilities. In effect, Congress--and, by extension, society--has made a judgment that some level of pollution and possible associated risk should be tolerated for the good of all, in order for Americans to enjoy the benefits of a modern society--to have electricity, heat in our homes, and the products we use to clean our dishes or manufacture our wares. Similarly, society recognizes that we need facilities to treat and dispose of wastes from our homes and businesses (such as landfills to dispose of our trash and treatment works to treat our sewage), despite the fact that these operations also result in some pollution releases. The expectation and belief of the regulators is that, assuming that facilities comply with their permit limits and terms, the allowed pollution levels are acceptable and low enough to be protective of most Americans.

EPA and the states have promulgated a wide series of regulations to effectuate these protections. Some of these regulations are based on assessment of public health risks associated with certain levels of pollution in the ambient environment. The NAAQS established under the Clean Air Act (CAA) are an example of this kind of health-based ambient standard setting. Air quality that adheres to such standards is presumptively protective of public health. Other standards are "technology-based," requiring installation of pollution control equipment which has been determined to be appropriate in view of pollution reduction goals. In the case of hazardous air pollutants under the CAA, EPA sets technology-based standards for industrial sources of toxic air pollution. The maximum achievable control technology standards under the Clean Air Act are examples of this kind of technology-based standard setting. After the application of technology-based standards, an assessment of the remaining or residual risk is undertaken and additional controls implemented where needed.

Title VI and EPA's implementing regulations set out a requirement independent of the environmental statutes that all recipients of EPA financial assistance ensure that they implement their environmental

⁵⁶ "Investigative Report for Title VI Administrative Complaint File No. 5R-980R5 (Select Steel Complaint)," pp. 27-29 (internal citations omitted)

programs in a manner that does not have a discriminatory effect based on race, color, or national origin. If recipients of EPA funding are found to have implemented their EPA-delegated or authorized federal environmental programs (e.g., permitting programs) in a manner which distributes the otherwise acceptable residual pollution or other effects in ways that result in a harmful concentration of those effects in racial or ethnic communities, then a finding of an adverse disparate impact on those communities within the meaning of Title VI may, depending on the circumstances, be appropriate.

Importantly, to be actionable under Title VI, an impact must be both “adverse” and “disparate.” The determination of whether the distribution of effects from regulated sources to racial or ethnic communities is “adverse” within the meaning of Title VI will necessarily turn on the facts and circumstances of each case and the nature of the environmental regulation designed to afford protection. As the United States Supreme Court stated in the case of *Alexander v. Choate*, 469 U.S. 287 (1985), the inquiry for federal agencies under Title VI is to identify the sort of disparate impacts upon racial or ethnic groups which constitute “sufficiently significant social problems, and [are] readily enough remediable, to warrant altering the practices of the federal grantees that had produced those impacts.” *Id.* at 293-94 (emphasis added).

The complaint in this case raises air quality concerns regarding several NAAQS-covered pollutants, as well as several other pollutants. With respect to the NAAQS-covered pollutants, and as explained more fully below, EPA believes that where, as here, an air quality concern is raised regarding a pollutant regulated pursuant to an ambient, health-based standard, and where the area in question is in compliance with, and will continue after the operation of the challenged facility to comply with, that standard, the air quality in the surrounding community is presumptively protective and emissions of that pollutant should not be viewed as “adverse” within the meaning of Title VI. By establishing an ambient, public health threshold, standards like the NAAQS contemplate multiple source contributions and establish a protective limit on cumulative emissions that should ordinarily prevent an adverse air quality impact.

With respect to the pollutants of concern in the complaint which are not covered by the NAAQS, Title VI calls for an examination of whether those pollutants have become so concentrated in a racial or ethnic community that the addition of a new source will pose a harm to that community. Because EPA has determined that there is no “adverse” impact for anyone living in the vicinity of the facility, it is unnecessary to reach the question of whether the impacts are “disparate.”

Notably, this approach has been upheld by EPA’s Environmental Appeals Board (EAB), which has commented:

The Board relies on and defers to the Agency’s cumulative expertise when upholding a permit issuer’s environmental justice analysis based on a proposed facility’s compliance with the relevant NAAQS in a PSD appeal. In the context of an environmental justice analysis, compliance with the

NAAQS is emblematic of achieving a level of public health protection that, based on the level of protection afforded by a primary NAAQS, demonstrates that minority or low-income populations will not experience disproportionately high and adverse human health or environmental effects due to exposure to relevant criteria pollutants.⁵⁷

U.S. EPA's External Civil Rights Compliance Office Compliance Toolkit

EPA's current "approach to adversity" is set forth in the "U.S. EPA's External Civil Rights Compliance Office Compliance Toolkit," dated January 18, 2017 (hereafter "Toolkit").⁵⁸ While EPA's approach described therein eliminates application of the rebuttable presumption, it is still intrinsically linked to whether a given area is compliant with the NAAQS. According to the Toolkit, in analyzing a civil rights complaint:

EPA will consider the information provided in the complaint, including any information pertinent to whether the air quality in the area in question does not meet the NAAQS. EPA will examine whether site-specific information demonstrates the presence of adverse health effects from the NAAQS pollutants, even though the area is designated attainment for all such pollutants and the facility recently obtained a construction and operating permit that ostensibly meets applicable requirements. For instance, EPA's assessment would seek to establish whether a localized adverse health impact, as indicated by the NAAQS, exists in the area at issue and has been (or will be) caused by the emissions from the [facility] even though the impact of the facility had previously been modeled to demonstrate that the source met the criteria for obtaining a construction permit. (Note that some NAAQS, especially those that are source-oriented in nature, are more likely to be associated with localized air quality impacts than those that are more regional.) The localized adverse health impact may result from the increased emissions from the [facility], but was not identified at the time of the permit review.

* * *

EPA's investigation would seek to ascertain the existence of such adverse impacts (*e.g.*, violations of the NAAQS) in an area regardless of the area's designation and the prior permitting record.⁵⁹

EPA goes on to encourage complainants to "provide precise allegations and quantified information about the location and nature of the adverse impact from higher-than expected concentrations of the NAAQS pollutant" and concludes by stating:

EPA will determine if a health-based NAAQS is likely not being met at the location in question, and whether the likely localized violation of a NAAQS is due, at least in part, to the impact of the particular source of air pollution that has recently obtained permits to construct and operate.⁶⁰

⁵⁷ *In re Shell Gulf of Mexico Inc. & In re Shell Offshore, Inc. (Frontier Discoverer Drilling Unit)*, 15 E.A.D. 103, 156 (EAB 2010), available at http://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/Case~Name!OpenView

⁵⁸ https://www.epa.gov/sites/production/files/2017-01/documents/toolkit-chapter1-transmittal_letter-faqs.pdf

⁵⁹ *Id.* (pp. 12-13)

⁶⁰ *Id.* (p. 13)

As explained in Section VI, air quality in St. James Parish is currently compliant with the primary and secondary NAAQS for all pollutants, and the emissions increases attributed to the KMe Optimization Project will not cause or contribute to a violation of a NAAQS or AAS. Accordingly, the project will not result in “adverse” impacts in the surrounding area (described in more detail below).

Finally, note that the United States Supreme Court held in *Alexander v. Sandoval* (532 U.S. 275) (2001) [No. 99-1908, decided April 24, 2001] that there is no private cause of action to enforce Section 602 of Title VI of the Civil Rights Act of 1964, 78 Stat. 252, as amended, 42 U.S.C. §2000d *et seq.*

EJScreen

EJScreen is an EJ mapping and screening tool developed by EPA that provides users with a nationally consistent dataset and approach for combining environmental and demographic indicators in the form of EJ indexes. An EJ index is a combination of environmental and demographic information; it combines demographic factors with a single environmental factor.⁶¹

EPA uses EJScreen to “screen for areas that may be candidates for additional consideration, analysis or outreach as EPA develops programs, policies and activities that may affect communities.”⁶² EPA cautions that EJScreen should *not* be used:

- as a means to identify or label an area as an “EJ community”;
- to quantify specific risk values for a selected area;
- to measure cumulative impacts of multiple environmental factors; or
- as the sole basis for agency decision-making or making a determination regarding the existence or absence of EJ concerns.⁶³

EPA goes on to state that screening-level results:

- do not, by themselves, determine the existence or absence of environmental justice concerns in a given location;
- do not provide a risk assessment; and
- have other significant limitations.⁶⁴

According to EPA, the EJ index is a product of the environmental indicator percentile for the block group and the demographic index, which averages low income and people of color populations, for the block group.⁶⁵ The EJ index does not reflect the percentage of the population that is at less risk based on exposure to a given environmental factor.

⁶¹ <https://www.epa.gov/EJScreen/environmental-justice-indexes-EJScreen>

⁶² <https://www.epa.gov/EJScreen/how-does-epa-use-EJScreen>

⁶³ *Id.*

⁶⁴ <https://www.epa.gov/EJScreen/purposes-and-uses-EJScreen>

⁶⁵ <https://www.epa.gov/EJScreen/environmental-justice-indexes-EJScreen>

EJScreen is a “living” website that is updated as newer information becomes available. Notice that the underlying data has been updated is not typically provided by EPA. Therefore, LDEQ notes that this analysis was performed on October 11, 2023, and the data reported herein was the current information utilized by EJScreen as of that date.

LDEQ prepared an EJScreen Community Report (Version 2.2) for the area encompassed by a 3-mile ring with its centroid at the approximate center of the Koch Methanol Facility.⁶⁶

Demographic Information

The EJScreen Community Report includes a demographic index based on the average of the people of color population and the low income population. The demographic index for the evaluated area is 74 percent, which is higher than the state average demographic index of 41 percent. More specifically, the people of color population is greater than the state average (88 percent versus 43 percent), and the low income population is also greater than the state average (61 percent versus 40 percent).

According to EJScreen, 177 people live within 2 miles of the Koch Methanol Facility, a 12.56 square mile area (14.1 persons per square mile), and 739 people live within 3 miles of the Koch Methanol Facility, a 28.27 square mile area (26.1 persons per square mile).⁶⁷ By way of comparison, according to the 2020 U.S. Census, Louisiana’s average population density is 107.8 persons per square mile.⁶⁸

Selected Variables	Area of Review Value	State Average
Demographic Index	74%	41%
People of Color	88%	43%
Low Income	61%	40%
Unemployment Rate	4%	7%
Limited English Speaking Households	0%	2%
Less Than High School Education	20%	15%
Under Age 5	5%	6%
Over age 64	19%	17%
Low Life Expectancy	23%	22%

Environmental Indexes

For the area evaluated by LDEQ, EJScreen reports the following EJ index values.

Environmental Justice Index	State Percentile
EJ Index for Particulate Matter 2.5	81
EJ Index for Ozone	96
EJ Index for Diesel Particulate Matter	84

⁶⁶ Latitude/longitude 29.981926/-90.861329

⁶⁷ For the area within 1 mile of the Koch Methanol Facility, EJScreen reports the “area is too small or sparsely populated ... to generate an EJScreen chart or report.”

⁶⁸ <https://www.census.gov/data/tables/time-series/dec/density-data-text.html>

Environmental Justice Index	State Percentile
EJ Index for Air Toxics Cancer Risk	95
EJ Index for Air Toxics Respiratory Hazard Index	46
EJ Index for Toxic Releases to Air	95
EJ Index for Traffic Proximity	42
EJ Index for Lead Paint	83
EJ Index for Superfund Proximity	65
EJ Index for RMP Facility Proximity	84
EJ Index for Hazardous Waste Proximity	71
EJ Index for Underground Storage Tanks	50
EJ Index for Wastewater Discharge	90

EPA has indicated that an area with any of the 13 EJ indexes at or above the 80th percentile should be considered as a potential candidate for further review.⁶⁹ In the instant case, these indicators include:

- Particulate Matter 2.5;
- Ozone;
- Diesel Particulate Matter;
- Air Toxics Cancer Risk;
- Toxic Releases to Air;
- Lead Paint;
- RMP Facility Proximity; and
- Wastewater Discharge.

EPA notes that a high percentile is not necessarily a real concern from a health or legal perspective. To understand the actual health or other implications of any screening results requires looking at the actual data the indicator represents and other relevant data if available. Besides the percentile, other important considerations in interpreting any screening results include the following:

- whether and to what extent the environmental data shows values above any relevant health-based or legal threshold;
- the significance of any such thresholds, or the magnitude and severity of the health or other impacts of the given environmental concern, nationally or locally; and
- the degree of any disparity between various groups in exposures to the relevant environmental pollutants.⁷⁰

⁶⁹ EJScreen Technical Documentation for Version 2.2, July 2023 (p. 36) (<https://www.epa.gov/system/files/documents/2023-06/ejscreen-tech-doc-version-2-2.pdf>). See also “Learn about Identifying Communities with Environmental Justice (EJ) Concerns” at <https://www.epa.gov/environmentaljustice/learn-about-environmental-justice>. The Technical Document also reaffirms that the “80th percentile filter in EJScreen is not intended to designate an area as an ‘EJ community.’ EJScreen provides screening level indicators, not a determination of the existence or absence of EJ concerns. Nor does the use of the 80th percentile filter suggest that all of the 13 environmental indicators are equal in terms of their impact on human health and the environment” (p. 37).

⁷⁰ EJScreen Technical Documentation for Version 2.2 (p. 34)

Particulate Matter 2.5

The Particulate Matter 2.5 indicator – PM_{2.5} in µg/m³ (annual average) – is less than the state average (8.5 µg/m³ versus 8.62 µg/m³) and well below the NAAQS of 12 µg/m³. According to EPA, air quality that is compliant with the NAAQS is protective of public health, including the health of “sensitive” populations such as asthmatics, children, and the elderly, with an adequate margin of safety (see Section VI).

Koch modeled potential PM_{2.5} emissions from the Koch Methanol Facility (i.e., total allowable emissions under Permit No. 2560-00295-V6, not just the increases attributed to the KMe Optimization Project). The maximum modeled annual average concentration of PM_{2.5} – 0.11 µg/m³ – was below its SIL of 0.2 µg/m³.⁷¹ Notably, EPA explains that a “degree of change in concentration [below a SIL] is ... indistinguishable from the inherent variability in the measured atmosphere and may be observed even in the absence of the increased emissions from a new or modified source” and therefore concludes that “changes in air quality within this range are not meaningful, and, thus, do not contribute to a violation of the NAAQS.”⁷²

Ozone

As shown in the table below, ambient ozone concentrations in the area are currently well below the health-based NAAQS. Furthermore, the maximum impact of the NO_x and VOC increases associated with Permit Nos. 2560-00295-V6 and PSD-LA-851 on ambient ozone concentrations is predicted to be only 0.33 parts per billion and will therefore have no practical impact on the environmental indicator for ozone (i.e., the average of the top ten maximum daily 8-hour ozone air concentrations in an annual period). Nor will the increases cause or contribute to violations of the 8-hour ozone NAAQS.

Monitor	Current Design Value (parts per billion)	Predicted Ozone Increase (parts per billion)	Projected Design Value (parts per billion)	NAAQS (parts per billion)
Convent	59	0.33	59.33	70

Air Toxics Cancer Risk

Based on EPA’s 2019 Air Toxics Screening Assessment, or AirToxScreen, the Air Toxics Cancer Risk value for the area (40 per million people) is higher than the state average of 32 per million people. Nonetheless, this value is less than EPA’s “acceptable risk” threshold of 1 in 10,000 (i.e., 100 in 1 million)⁷³ and likely overestimates actual cancer risk for two primary reasons.

⁷¹ The maximum modeled 24-hour average concentration of PM_{2.5} – 1.01 µg/m³ – was also below its SIL of 1.2 µg/m³.

⁷² “Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program,” dated April 17, 2018 (p. 11) (<https://www.epa.gov/nsr/significant-impact-levels-ozone-and-fine-particles>)

⁷³ See, for example, EPA’s “2014 National Air Toxics Assessment: Fact Sheet”: “[w]hen NATA shows a potential cancer risk of greater than 100 in 1 million at a census tract, it means there may be an elevated cancer risk in that tract” (https://www.epa.gov/sites/default/files/2018-11/documents/nata_2014_fact_sheet.pdf).

One, EPA utilized each HAP's unit risk estimate (URE) to calculate exposure risks from that pollutant. The URE represents the *upper-bound* excess lifetime cancer risk estimated to result from continuous exposure to a HAP at a concentration of 1 µg/m³. EPA acknowledges that the true risk may be lower.⁷⁴

Two, as shown in the table below, the average point source cancer risk for every census tract in St. James Parish is heavily influenced by emissions of ethylene oxide and, to a lesser extent, chloroprene.⁷⁵ The Koch Methanol Facility is located in census tract 22093040500. Here, these two pollutants are responsible for 89.7 percent of the total point source cancer risk.

Census Tract	Total Cancer Risk (per million)	Point Source Cancer Risk (per million)			
		Total	Ethylene Oxide	Chloroprene	All Others
22093040100	47.7	21.6	17.7	2.3	1.6
22093040200	46.5	20.4	16.9	2.0	1.5
22093040300	44.2	18.5	15.7	1.5	1.3
22093040400	42.3	16.6	13.7	0.7	2.2
22093040500	38.6	13.4	11.5	0.5	1.4
22093040600	42.4	16.7	14.0	1.5	1.1
22093040700	35.8	12.1	10.0	1.0	1.1

As shown in the table below, actual emissions of ethylene oxide as reported to LDEQ's Emissions Reporting and Inventory Center (ERIC) have decreased substantially since the 2019 assessment. Thus, the current point source cancer risk for St. James, Louisiana, as well as that for all other areas in St. James Parish, should be appreciably lower than as estimated by the 2019 AirToxScreen.

Pollutant	Emissions (tons per year) ⁷⁶		Percent Change
	2019	2022	
Ethylene Oxide ⁷⁷	18.99	13.76	– 27.6 %
Chloroprene ⁷⁸	19.81	19.22	– 3.0 %

The Koch Methanol Facility is not permitted to emit ethylene oxide or chloroprene.

⁷⁴ See Technical Support Document for EPA's Air Toxic Screening Assessment, 2017 AirToxScreen TSD, March 2022 (p. A-8) (https://www.epa.gov/system/files/documents/2022-03/airtoxscreen_2017tsd.pdf).

⁷⁵ For a map of the census tracts in St. James Parish, see https://www2.census.gov/geo/maps/dc10map/tract/st22_la/c22093_st_james/DC10CT_C22093_001.pdf.

⁷⁶ See "Annual Certified Emissions Data 2015-present (Updated 6/6/2023)" at <https://deq.louisiana.gov/page/eric-public-reports>.

⁷⁷ There are no significant sources of ethylene oxide in St. James Parish. Reported emissions are those from sources located in the surrounding parishes of Ascension, Iberville, St. Charles, and St. John the Baptist.

⁷⁸ Denka Performance Elastomer LLC

Toxic Releases to Air

The area's Toxic Releases to Air value is based on Risk-Screening Environmental Indicators (RSEI)-modeled toxicity-weighted concentrations of Toxic Release Inventory (TRI) chemicals in the air.

For calendar year 2021, the RSEI score for fugitive air releases, stack air releases, and off-site incineration in St. James Parish was 166,194.⁷⁹ However, the primary pollutants emitted by the Koch Methanol Facility – ammonia, hydrogen sulfide, methanol, and n-hexane, which represent 99.6 percent of permitted toxic air pollutants from the facility – have a combined RSEI score of only 317.⁸⁰ As such, the Koch Methanol Facility is not a significant contributor to the Toxic Releases to Air value.

Diesel Particulate Matter, Lead Paint, and RMP Facility Proximity

The modifications addressed by Permit Nos. 2560-00295-V6 and PSD-LA-851 will have no impact, either positive or negative, on ambient diesel particulate matter levels,⁸¹ the percent of housing units built pre-1960 (an indicator of potential lead paint exposure), or the number of facilities located within five (5) kilometers of the Koch Methanol Facility that are subject to EPA's "Chemical Accident Prevention Provisions" under 40 CFR 68.

Wastewater Discharge

The EJScreen value for Wastewater Discharge (toxicity-weighted concentration/m distance) for the area (0.0072) is well below the reported state and national averages.

State Average	National Average
49	22

As explained in Section VII.A, discharges of sanitary wastewater from the Koch Methanol Facility are regulated by LPDES General Permit LAG535491, issued July 20, 2020. Other discharges from the facility are regulated under LPDES Permit No. LA0127367, dated November 12, 2020. Koch's application to renew LA0127367 addresses changes associated with the KMe Optimization Project.

Additional Considerations

In addition to considering EJScreen data, LDEQ evaluated whether individual permitting decisions have, over time, corresponded to increased emissions of criteria pollutants, TAPs, and/or Toxics Release Inventory (TRI)-listed chemicals from facilities located in St. James Parish. LDEQ compared 2000, 2010, and 2015 ERIC and TRI data to corresponding 2022 values.⁸²

⁷⁹ RSEI scores can be obtained at <https://www.epa.gov/rsei/rsei-results-map>.

⁸⁰ Bis (2-chloroethyl) ether and 1,2-dichloroethane account for 83.4 percent of the RSEI score for the parish.

⁸¹ A significant increase in truck traffic is not anticipated. According to the EAS, the "additional production volume is expected to primarily serve non-local customers and thus be shipped by rail and marine vessel" (EDMS Doc ID 13864134, p. 38 of 111).

⁸² LDEQ compared historical TRI data to corresponding data for calendar year 2021, as this is the most recent available.

Metric	Percent Change (relative to 2000)	Percent Change (relative to 2010)	Percent Change (relative to 2015)
Criteria	-63.0	-57.8	-29.7
TAPs	-65.1	-60.6	-69.0
TRI ⁸³	-49.3	-47.6	-27.9

The results show substantial and continuing declines in actual emissions of pollutants over the timeframes evaluated.

Conclusion

LDEQ provided an opportunity for all parties to be meaningfully involved in the permit process, including a lengthy public comment period (49 days) and a public hearing on the proposed permits.⁸⁴ Moreover, as evidenced by the Public Comments Response Summary, LDEQ carefully considered the public's concerns in its decision making process.

Based on the results of the air quality analysis, which demonstrates that the Koch Methanol Facility will not cause or contribute to a violation of a NAAQS or AAS, LDEQ's assessment of the EJScreen Community Report and additional considerations described above, and the terms and conditions of the permits, LDEQ concludes that issuance of the permits will not result in an adverse disproportionate impact under Title VI of the Civil Rights Act.

X. ENFORCEMENT HISTORY

Pursuant to La. R.S. 30:2014(A)(2), LDEQ is required to consider the "history of violations and compliance" for the facility when making a permit decision.

LDEQ has issued the following enforcement action for the facility:

<u>Enforcement Action</u>	<u>Date of Issuance</u>
AE-XP-19-00296 ⁸⁵	August 7, 2019

Expedited Penalty Agreement & Notice of Potential Penalty AE-XP-19-00296 was issued to YCI Methanol One, LLC, the former owner of the Koch Methanol Facility, for failure to submit one semiannual monitoring report by the prescribed deadline. This matter has been closed by LDEQ's Enforcement Division. Notably, no enforcement actions have been issued to Koch.

Upon consideration of the enforcement history described above, LDEQ has concluded that Koch is willing and able to achieve and maintain compliance with applicable federal and state regulations and the terms and conditions of Permit Nos. 2560-00295-V6 and PSD-LA-851.

⁸³ Total On-site Disposal or Other Releases per https://enviro.epa.gov/triexplorer/tri_release.chemical

⁸⁴ Koch's efforts to engage the local community are summarized in Section 2.11.4 of the EAS (EDMS Doc ID 13864134, pp. 72-75 of 111).

⁸⁵ EDMS Doc ID 11821869

However, should LDEQ in the future determine that Koch is unwilling or unable to comply with the terms and conditions of its permits, the department has sufficient legal authority to issue compliance orders; impose civil penalties; pursue criminal charges, if appropriate; revise or revoke Koch's permits; and/or deny applications to renew its Part 70 (Title V) permit.⁸⁶

XI. CONCLUSION

LDEQ's OES has conducted a review of the information submitted and has concluded that a significant modification to the Part 70 (Title V) operating permit and a PSD permit for the Koch Methanol Facility should be issued.

The proposed permits' emission limitations and Specific Requirements mandate that emissions be controlled to meet or exceed the requirements of all applicable federal and state regulations and should not allow for air quality impacts that could adversely affect human health or the environment.

The local and state economy will benefit from the KMe Optimization Project and the continued operation of the Koch Methanol Facility, which provides personal income for the facility's permanent and contract employees, increases the tax revenues for St. James Parish and the state of Louisiana, and necessitates the purchase of goods and services from other businesses. These benefits are major, significant, and tangible, and outweigh the environmental impacts of the Koch Methanol Facility.

Based on a careful review and evaluation of the entire administrative record, which includes the permit application, additional information, EAS, proposed permits and associated SOB, and all public comments, the OES finds that Koch's proposed permits comply with all applicable federal and state statutes and regulations and the requirements of *Save Ourselves v. La. Env'tl. Control Comm'n*, 452 So. 2d at 1152, 1157 (La. 1984).

Particularly, LDEQ finds that the proposed permits have minimized or avoided potential and real adverse environmental impacts to the maximum extent possible and that the social and economic benefits of the KMe Optimization Project will outweigh its adverse environmental impacts.

Accordingly, the Department hereby issues Permit Nos. 2560-00295-V6 and PSD-LA-851.



Bliss M. Higgins
Assistant Secretary
Office of Environmental Services

December 20, 2023
Date

BMH:BDJ

⁸⁶ R.S. 30:2025, LAC 33:III.501.C.4, LAC 33:III.507.B.2