# SAFETY DATA SHEET



## 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)

| | |
|---|---|
| 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

**Hazard statements**
H319 - Causes serious eye irritation
H372 - Causes damage to organs through prolonged or repeated exposure

**Precautionary statements**
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** 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 persists.

**Skin contact** Wash skin with soap and water.

**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** 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** 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** 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. Ensure adequate ventilation. 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)<br>CAS#: 7681-11-0 | TWA: 0.01 mg/m³ I inhalable particulate matter<br>Sk* | NDF | NDF |

**Appropriate engineering controls**

**Engineering Controls** Showers
Eyewash stations
Ventilation systems. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. 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**

**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. 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.

**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** | Solid | | |
| **Appearance** | powder | **Color** | White to light pink<br>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 | |
| **Initial boiling point and boiling range** | No data available | |
| **Evaporation rate** | Not applicable | |
| **Vapor pressure** | Not applicable | |
| **Relative vapor density** | No data available | |
| **Specific gravity - VALUE 1** | 1.79 | |
| **Partition coefficient** | 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**

**Corrosive to metals**

| | |
|---|---|
| **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

| 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** | 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 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**

**Product Information**

| | |
|---|---|
| **Inhalation** | May cause irritation of respiratory tract. |
| **Eye contact** | Causes serious eye irritation. May cause redness, itching, and pain. |
| **Skin contact** | May cause irritation. Prolonged contact may cause redness and irritation. |
| **Ingestion** | Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. |

**Symptoms** May cause redness and tearing of the eyes.

**Acute toxicity**
Based on available data, the classification criteria are not met

**Mixture**
Test data reported below.

**Oral Exposure Route**

| Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|---|---|---|---|
| Rat<br>$LD_{50}$ | 4700 mg/kg | None reported | **Behavioral**<br>Flaccid muscle tone<br>Lethargy<br>Prostration<br>**Eye**<br>Chromodacryorrhea<br>Ptosis<br>**Gastrointestinal**<br>Abnormalities of the gastrointestinal tract<br>Diarrhea<br>**Liver**<br>Abnormalities of the liver<br>**Lungs, Thorax, or Respiration**<br>Abnormalities of the lungs<br>Dyspnea<br>Red or brown staining of the nose/mouth area<br>**Nutritional and Gross Metabolic**<br>Soiling of the anogenital area<br>Wetness of the anogenital area<br>**Reproductive**<br>**Skin and Appendages**<br>Piloerection | Internal Data |

**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 iodide (KI)<br>(20 - 30%)<br>CAS#: 7681-11-0 | Rat<br>$LD_{50}$ | 2779 mg/kg | None reported | None reported | RTECS |
| Salt of N,N-Diethyl-p-Phenylenediamine<br>(1 - 5%)<br>CAS#: - | Rat<br>$LD_{50}$ | 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)**

**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**
Based on available data, the classification criteria are not met.

**Mixture**
No data available.

**Ingredient Skin Corrosion/Irritation Data**
No data available.

**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**
Based on available data, the classification criteria are not met.

**Mixture**
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 |

**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.

**Oral Exposure Route**

**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.

**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 |

**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 |
|---|---|---|---|---|---|
| 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 |
| **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** *invitro* **Data**
No data available.

**Substance** *invitro* **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 |

**Mixture** *invivo* **Data**
No data available.

**Substance** *invivo* **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.

**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 $TD_{Lo}$ | 2700 mg/kg | 39 weeks | **Specific Developmental Abnormalities** Endocrine System | RTECS |

**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.

**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 |
|---|---|---|---|---|---|
| Salt of N,N-Diethyl-p-Phenyl enediamine (1 - 5%) CAS#: - | 48 Hours | *Daphina magna* | $EC_{50}$ | 10.8 mg/L | Internal Data |

**Aquatic Chronic Toxicity**
No data available.

**Persistence and degradability**

**Mixture**
No data available.

Bioaccumulation
Material does not bioaccumulate
**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

**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

## 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**
*For Inventory status, "complies" means, listed on the inventory, exempted or otherwise complies.*

| | |
|---|---|
| **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 |
| **KECI** | 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** | 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 |
|---|---|---|---|---|
| Phosphoric acid, disodium salt<br>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<br>7558-79-4 | 5000 lb | - | RQ 5000 lb final RQ<br>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<br>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**

**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<br>- * | **Flammability** - 0 | **Physical hazards** - 0 | **Personal protection** -<br>X<br>- 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 | 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 | 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** | 16-Sep-2019 |
| **Revision Date** | 10-Feb-2025 |
| **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.**



**End of Safety Data Sheet**

# SAFETY DATA SHEET



## 1. IDENTIFICATION

**Product identifier**
**Product Name** Monochlor F™ Reagent

**Other means of identification**
**Product Code(s)** 2802299

**Safety data sheet number** M01921

**UN/ID no** UN2680

**Recommended use of the chemical and restrictions on use**
**Recommended Use** Determination of monochloramine and ammonia. Water Analysis.
**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 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 |

**Hazards not otherwise classified (HNOC)**
Not applicable

**Label elements**

**Signal word**
Danger

**Hazard statements**
H290 - May be corrosive to metals
H314 - Causes severe skin burns and eye damage

**Precautionary statements**
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
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
P234 - Keep only in original container
P390 - Absorb spillage to prevent material damage

**Other Hazards Known**
May be harmful if swallowed

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Substance**
Not applicable

**Mixture**

**Percent ranges are used where confidential product information is applicable.**

| Chemical name | CAS No. | Percent Range | HMRIC # |
|---|---|---|---|
| **Lithium hydroxide monohydrate** | 1310-66-3 | <10% | - |
| **Sodium nitroferricyanide** | 14402-89-2 | 1 - 5% | - |

## 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. 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 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** May emit acrid smoke and fumes.

**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. 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** 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** Not applicable

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Control parameters**

**Exposure Guidelines**

| Chemical name | ACGIH TLV | OSHA PEL | NIOSH |
|---|---|---|---|
| Sodium nitroferricyanide<br>CAS#: 14402-89-2 | TWA: 1 mg/m³ Fe | TWA: 5 mg/m³<br>(vacated) TWA: 1 mg/m³<br>(vacated) TWA: 5 mg/m³<br>* | IDLH: 25 mg/m³ CN<br>TWA: 1 mg/m³ Fe |

**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** Face protection shield.

**Skin and body protection** Wear suitable protective clothing. Long sleeved clothing. Chemical resistant apron. 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. 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** Solid
**Appearance** powder
**Color** light yellow
**Odor** Odorless
**Odor threshold** No data available

| Property | Values | Remarks • Method |
|---|---|---|
| **Molecular weight** | No data available | |
| **pH** | No data available | |
| **Melting point / freezing point** | No data available | |
| **Initial boiling point and boiling range** | No data available | |
| **Evaporation rate** | Not applicable | |
| **Vapor pressure** | Not applicable | |
| **Relative vapor density** | No data available | |
| **Specific gravity - VALUE 1** | 0.7660 | |
| **Partition coefficient** | log $K_{ow}$ ~ 0.58 | |
| **Soil Organic Carbon-Water Partition Coefficient** | log $K_{oc}$ ~ 0.05 | |
| **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 |
|---|---|---|
| No information available | No data available | No information available |

**Solubility in other solvents**

| Chemical Name | Solubility classification | Solubility | Solubility Temperature |
|---|---|---|---|
| None reported | No information available | No data available | No information available |

**Other information**

**Corrosive to metals**

**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) |
|---|---|---|---|
| Lithium hydroxide monohydrate | 1310-66-3 | No data available | - |
| Sodium nitroferricyanide | 14402-89-2 | 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** 766.0 kg/m$^3$

## 10. STABILITY AND REACTIVITY

**Reactivity**
Not applicable. 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**
None under normal processing.

**Conditions to avoid**
Exposure to air or moisture over prolonged periods.

**Incompatible materials**
Oxidizing agent. Acids. Bases.

**Hazardous decomposition products**
Contact with acids/acid fumes releases toxic cyanide gas. Cyanide. Nitrogen oxides. Sodium oxides.

## 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**
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 |
|---|---|---|---|---|---|
| Lithium hydroxide monohydrate (<10%) CAS#: 1310-66-3 | Rat $LD_{50}$ | 120 mg/kg | None reported | None reported | LOLI |
| Sodium nitroferricyanide (1 - 5%) CAS#: 14402-89-2 | Rat $LD_{50}$ | 99 mg/kg | None reported | None reported | LOLI |

**Inhalation (Dust/Mist) Exposure Route**

| Chemical name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|---|---|---|---|---|
| Lithium hydroxide monohydrate (<10%) | Rat $LC_{50}$ | 0.96 mg/L | 4 hours | None reported | LOLI |

| | | | | | |
|---|---|---|---|---|---|
| CAS#: 1310-66-3 | | | | | |

**Unknown Acute Toxicity**
0.01% 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)** | 2,503.20 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**
Causes severe burns.

**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 |
|---|---|---|---|---|---|---|
| Lithium hydroxide monohydrate (<10%) CAS#: 1310-66-3 | Existing human experience | Human | None reported | None reported | Corrosive to skin | ERMA |

**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**
No data available.

**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**
No data available.

**STOT - repeated exposure**

Based on available data, the classification criteria are not met.

**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 |
|---|---|---|---|---|---|
| Lithium hydroxide monohydrate | 1310-66-3 | - | - | - | - |
| Sodium nitroferricyanide | 14402-89-2 | - | - | - | - |

**Legend**

| | |
|---|---|
| **ACGIH (American Conference of Governmental Industrial Hygienists)** | 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** *invitro* **Data**
No data available.

**Substance** *invitro* **Data**
No data available.

**Mixture** *invivo* **Data**
No data available.

**Substance** *invivo* **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.

**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** 0.01% 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.

**Aquatic Chronic Toxicity**
No data available.

**Persistence and degradability**

**Mixture**
No data available.

Bioaccumulation
Material does not bioaccumulate
**Mixture**
No data available.

**Partition coefficient** log $K_{ow}$ ~ 0.58

**Mobility**

**Soil Organic Carbon-Water Partition Coefficient** log $K_{oc}$ ~ 0.05

**Other adverse effects**
No information available

| Chemical name | EU - Endocrine Disruptors Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Endocrine disrupting potential |
|---|---|---|---|
| Sodium nitroferricyanide (1 - 5%) CAS#: 14402-89-2 | Group III Chemical | - | - |

## 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** Dispose of material in an E.P.A. approved hazardous waste facility.

## 14. TRANSPORT INFORMATION

**DOT**
**UN/ID no** UN2680

| | |
|---|---|
| **Proper shipping name** | LITHIUM HYDROXIDE MIXTURE |
| **Transport hazard class(es)** | 8 |
| **Packing Group** | II |
| **Emergency Response Guide Number** | 154 |

**TDG**

| | |
|---|---|
| **UN/ID no** | UN2680 |
| **Proper shipping name** | LITHIUM HYDROXIDE MIXTURE |
| **Transport hazard class(es)** | 8 |
| **Packing Group** | II |

**IATA**

| | |
|---|---|
| **UN number or ID number** | UN2680 |
| **Proper shipping name** | Lithium hydroxide mixture |
| **Transport hazard class(es)** | 8 |
| **Packing group** | II |
| **ERG Code** | 8L |

**IMDG**

| | |
|---|---|
| **UN number or ID number** | UN2680 |
| **Proper shipping name** | LITHIUM HYDROXIDE MIXTURE |
| **Transport hazard class(es)** | 8 |
| **Packing Group** | II |
| **EmS-No** | F-A, S-B |

**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**
*For Inventory status, "complies" means, listed on the inventory, exempted or otherwise complies.*

| | |
|---|---|
| **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 |
| **KECI** | 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 % |
|---|---|
| Sodium nitroferricyanide (CAS #: 14402-89-2) | 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)

| Chemical name | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|---|---|---|---|---|
| Sodium nitroferricyanide 14402-89-2 | - | X | 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

**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 |
|---|---|---|---|
| Lithium hydroxide monohydrate 1310-66-3 | X | - | - |
| Sodium nitroferricyanide 14402-89-2 | 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 | 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 | 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** | 08-Mar-2021 |
| **Revision Date** | 03-Feb-2025 |
| **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.**



**End of Safety Data Sheet**

# SAFETY DATA SHEET



## 1. IDENTIFICATION

**Product identifier**
**Product Name** DPD Total Chlorine Reagent

**Other means of identification**
**Product Code(s)** 2105669

**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)

| | |
|---|---|
| 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

**Hazard statements**
H319 - Causes serious eye irritation
H372 - Causes damage to organs through prolonged or repeated exposure

**Precautionary statements**
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** 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 persists.

**Skin contact** Wash skin with soap and water.

**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** 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** 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** 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. Ensure adequate ventilation. 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)<br>CAS#: 7681-11-0 | TWA: 0.01 mg/m³ I inhalable particulate matter<br>Sk* | NDF | NDF |

**Appropriate engineering controls**

**Engineering Controls** Showers
Eyewash stations
Ventilation systems. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. 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**

**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. 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.

**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** Solid

| | | | |
|---|---|---|---|
| **Appearance** | powder | **Color** | White to light pink<br>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 | |
| **Initial boiling point and boiling range** | No data available | |
| **Evaporation rate** | Not applicable | |
| **Vapor pressure** | Not applicable | |
| **Relative vapor density** | No data available | |
| **Specific gravity - VALUE 1** | 1.79 | |
| **Partition coefficient** | 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**

**Corrosive to metals**

| | |
|---|---|
| **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

| 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** | 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 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**

**Product Information**

| | |
|---|---|
| **Inhalation** | May cause irritation of respiratory tract. |
| **Eye contact** | Causes serious eye irritation. May cause redness, itching, and pain. |
| **Skin contact** | May cause irritation. Prolonged contact may cause redness and irritation. |
| **Ingestion** | Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. |

**Symptoms** May cause redness and tearing of the eyes.

**Acute toxicity**
Based on available data, the classification criteria are not met

**Mixture**
Test data reported below.

**Oral Exposure Route**

| Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|---|---|---|---|
| Rat<br>$LD_{50}$ | 4700 mg/kg | None reported | **Behavioral**<br>Flaccid muscle tone<br>Lethargy<br>Prostration<br>**Eye**<br>Chromodacryorrhea<br>Ptosis<br>**Gastrointestinal**<br>Abnormalities of the gastrointestinal tract<br>Diarrhea<br>**Liver**<br>Abnormalities of the liver<br>**Lungs, Thorax, or Respiration**<br>Abnormalities of the lungs<br>Dyspnea<br>Red or brown staining of the nose/mouth area<br>**Nutritional and Gross Metabolic**<br>Soiling of the anogenital area<br>Wetness of the anogenital area<br>**Reproductive**<br>**Skin and Appendages**<br>Piloerection | Internal Data |

**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 iodide (KI)<br>(20 - 30%)<br>CAS#: 7681-11-0 | Rat<br>$LD_{50}$ | 2779 mg/kg | None reported | None reported | RTECS |
| Salt of N,N-Diethyl-p-Phenylenediamine<br>(1 - 5%)<br>CAS#: - | Rat<br>$LD_{50}$ | 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)**

**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**
Based on available data, the classification criteria are not met.

**Mixture**
No data available.

**Ingredient Skin Corrosion/Irritation Data**
No data available.

**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**
Based on available data, the classification criteria are not met.

**Mixture**
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 |

**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.

**Oral Exposure Route**

**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.

**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 |

**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 |
|---|---|---|---|---|---|
| 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 |
| **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** *invitro* **Data**
No data available.

**Substance** *invitro* **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 |

**Mixture** *invivo* **Data**
No data available.

**Substance** *invivo* **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.

**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 $TD_{Lo}$ | 2700 mg/kg | 39 weeks | **Specific Developmental Abnormalities** Endocrine System | RTECS |

**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.

**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 |
|---|---|---|---|---|---|
| Salt of N,N-Diethyl-p-Phenyl enediamine (1 - 5%) CAS#: - | 48 Hours | *Daphina magna* | $EC_{50}$ | 10.8 mg/L | Internal Data |

**Aquatic Chronic Toxicity**
No data available.

**Persistence and degradability**

**Mixture**
No data available.

Bioaccumulation
Material does not bioaccumulate
**Mixture**
No data available.

**Partition coefficient** log $K_{ow}$ ~ 0

**Mobility**

**Soil Organic Carbon-Water Partition Coefficient** $\log K_{oc} \sim 0$

**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.

**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**
*For Inventory status, "complies" means, listed on the inventory, exempted or otherwise complies.*

| | |
|---|---|
| **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 |
| **KECI** | 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** | 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 |
|---|---|---|---|---|
| Phosphoric acid, disodium salt<br>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<br>7558-79-4 | 5000 lb | - | RQ 5000 lb final RQ<br>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<br>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**

**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<br>- * | **Flammability** - 0 | **Physical hazards** - 0 | **Personal protection** -<br>X<br>- 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 | 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 | 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** | 16-Sep-2019 |
| **Revision Date** | 10-Feb-2025 |
| **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.**



**End of Safety Data Sheet**

# SAFETY DATA SHEET



## 1. IDENTIFICATION

**Product identifier**
**Product Name** NitriVer® 3 Nitrite Reagent

**Other means of identification**
**Product Code(s)** 2107169

**Safety data sheet number** M00055

**Recommended use of the chemical and restrictions on use**
**Recommended Use** Laboratory reagent. Determination of nitrite.
**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)

| | |
|---|---|
| Serious eye damage/eye irritation | Category 1 |
| Skin sensitization | Category 1 |

**Hazards not otherwise classified (HNOC)**
Not applicable

**Label elements**

**Signal word**
Danger

**Hazard statements**

H317 - May cause an allergic skin reaction
H318 - Causes serious eye damage

**Precautionary statements**
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/physician
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray
P272 - Contaminated work clothing should not be allowed out of the workplace
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention
P363 - Wash contaminated clothing before reuse
P501 - Dispose of contents/ container to an approved waste disposal plant

**Other Hazards Known**
None

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Substance**
Not applicable

**Mixture**

**Chemical Family** Mixture.
**Chemical nature** Mixture of organic compounds, Mixture of inorganic salts.

**Percent ranges are used where confidential product information is applicable.**

| Chemical name | CAS No. | Percent Range | HMRIC # |
|---|---|---|---|
| **Potassium pyrosulfate** | 7790-62-7 | <10% | - |
| **Benzenesulfonic acid, 4-amino-, monosodium salt** | 515-74-2 | <10% | - |

## 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. May cause an allergic skin reaction. In the case of skin irritation or allergic reactions see a physician.

**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. Itching. Rashes. Hives.

**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** Phosphorus oxides. Sodium oxides. Carbon monoxide. Carbon dioxide (CO2). Nitrogen oxides (NOx).

**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. 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.

**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**

**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. Ensure adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. 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** 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.

**Eye/face protection** Tight sealing safety goggles.

**Skin and body protection** 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.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Information on basic physical and chemical properties**

**Physical state** Solid
**Appearance** powder
**Color** white
**Odor** Odorless
**Odor threshold** Not applicable

| Property | Values | Remarks • Method |
|---|---|---|
| **Molecular weight** | Not applicable | |
| **pH** | 3.2 | 5% Solution |
| **Melting point / freezing point** | 224 °C / 435.2 °F | |
| **Initial boiling point and boiling range** | No data available | |
| **Evaporation rate** | Not applicable | |

| | |
|---|---|
| **Vapor pressure** | Not applicable |
| **Relative vapor density** | No data available |
| **Specific gravity - VALUE 1** | 3.12 |
| **Partition coefficient** | log $K_{ow}$ ~ -0.33 |
| **Soil Organic Carbon-Water Partition Coefficient** | log $K_{oc}$ ~ 0.06 |
| **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**

**Corrosive to metals**

| | |
|---|---|
| **Steel Corrosion Rate** | Not applicable |
| **Aluminum Corrosion Rate** | Not applicable |

**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 | - |
| Benzenesulfonic acid, 4-amino-, monosodium salt | 515-74-2 | 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**
Phosphorus oxides. Carbon dioxide. Carbon monoxide. Sodium oxides. Nitrogen oxides (NOx).

## 11. TOXICOLOGICAL INFORMATION

**Information on likely routes of exposure**

**Product Information**

| | |
|---|---|
| **Inhalation** | No known effect based on information supplied. |
| **Eye contact** | Severely irritating to eyes. Causes serious eye damage. May cause burns. May cause irreversible damage to eyes. |
| **Skin contact** | May cause irritation. May cause sensitization by skin contact. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons. |
| **Ingestion** | Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. |
| **Symptoms** | Redness. Burning. May cause blindness. Itching. Rashes. Hives. |

**Acute toxicity**
Based on available data, the classification criteria are not met

**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 |
|---|---|---|---|---|---|
| Benzenesulfonic acid, 4-amino-, monosodium salt (<10%) CAS#: 515-74-2 | Rat $LD_{50}$ | 12300 mg/kg | None reported | None reported | IUCLID |

**Inhalation (Dust/Mist) Exposure Route**

| Chemical name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|---|---|---|---|---|
| Potassium pyrosulfate (<10%) CAS#: 7790-62-7 | Rat $LC_{50}$ | 0.375 mg/L | 4 hours | Upper Respiratory Tract lesions | ECHA |

**Unknown Acute Toxicity**
1E-05% 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 mg/kg |
| **ATEmix (dermal)** | No information available |
| **ATEmix (inhalation-dust/mist)** | 5.63 mg/l |
| **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.

**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 | None reported | None reported | Not corrosive or irritating 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 (<10%) CAS#: 7790-62-7 | OECD Test 431: In Vitro Skin Corrosion: Reconstructed Human Epidermis (Rhe) Test Method | synthetic bio-barrier membrane | None reported | None reported | Corrosive to skin | Outside testing |
| Benzenesulfonic acid, 4-amino-, monosodium salt (<10%) CAS#: 515-74-2 | Patch test | Rabbit | None reported | None reported | Skin irritant | No information available |

**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 |
|---|---|---|---|---|---|---|
| Potassium pyrosulfate (<10%) CAS#: 7790-62-7 | None reported | None reported | None reported | None reported | Corrosive to eyes | Vendor SDS |

**Respiratory or skin sensitization**
May cause sensitization by skin contact.

**Mixture**
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 |
|---|---|---|---|---|
| Benzenesulfonic acid, 4-amino-, monosodium salt (<10%) CAS#: 515-74-2 | OECD Test No. 406: Skin Sensitization | Guinea pig | Confirmed to be a skin sensitizer | IUCLID |

**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**
No data available.

**STOT - repeated exposure**
Based on available data, the classification criteria are not met.

**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 |
|---|---|---|---|---|---|
| Potassium pyrosulfate | 7790-62-7 | - | - | - | - |
| Benzenesulfonic acid, 4-amino-, monosodium salt | 515-74-2 | - | - | - | - |

**Legend**

| | |
|---|---|
| **ACGIH (American Conference of Governmental Industrial Hygienists)** | 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** *invitro* **Data**
No data available.

**Substance** *invitro* **Data**
Test data reported below.

| Chemical name | Test | Cell Strain | Reported dose | Exposure time | Results | Key literature references and sources for data |
|---|---|---|---|---|---|---|
| Benzenesulfonic acid, 4-amino-, monosodium salt (<10%) CAS#: 515-74-2 | Mutation in microorganisms | *Salmonella typhimurium* | None reported | None reported | Negative | IUCLID |

**Mixture** *invivo* **Data**
No data available.

**Substance** *invivo* **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.

**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**
Test data reported below.

**Fish**

| Chemical name | Exposure time | Species | Endpoint type | Reported dose | Key literature references and sources for data |
|---|---|---|---|---|---|
| Potassium pyrosulfate (<10%) CAS#: 7790-62-7 | 96 hours | *Oncorhynchus mykiss* | $LC_{50}$ | 420 mg/L | ERMA |
| Benzenesulfonic acid, 4-amino-, monosodium salt (<10%) CAS#: 515-74-2 | 96 hours | *Pimephales promelas* | $LC_{50}$ | 100 mg/L | IUCLID |

**Crustacea**

| Chemical name | Exposure time | Species | Endpoint type | Reported dose | Key literature references and sources for data |
|---|---|---|---|---|---|
| Potassium pyrosulfate (<10%) CAS#: 7790-62-7 | 48 Hours | *Daphnia magna* | $EC_{50}$ | 140 mg/L | ERMA |
| Benzenesulfonic acid, 4-amino-, monosodium salt (<10%) CAS#: 515-74-2 | 48 Hours | *Daphnia magna* | $EC_{50}$ | 86 mg/L | IUCLID |

**Algae**

| Chemical name | Exposure time | Species | Endpoint type | Reported dose | Key literature references and sources for data |
|---|---|---|---|---|---|
| Benzenesulfonic acid, 4-amino-, monosodium salt (<10%) CAS#: 515-74-2 | 72 Hours | *Scenedesmus subspicatus* | $EC_{50}$ | 375 mg/L | IUCLID |

**Aquatic Chronic Toxicity**
No data available.

**Persistence and degradability**

**Mixture**
No data available.

Bioaccumulation
Material does not bioaccumulate
**Mixture**
No data available.

**Partition coefficient** log $K_{ow}$ ~ -0.33

**Mobility**

**Soil Organic Carbon-Water Partition Coefficient** log $K_{oc}$ ~ 0.06

**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 |

## 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**
*For Inventory status, "complies" means, listed on the inventory, exempted or otherwise complies.*

| | |
|---|---|
| **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** | Does not comply |
| **ENCS** | Does not comply |
| **IECSC** | Complies |
| **KECI** | Complies |
| **PICCS** | Does not comply |
| **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** | 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)

**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**

## 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 | 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 | 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** | 14-Jan-2021 |
| **Revision Date** | 10-Feb-2025 |
| **Revision Note** | SDS sections updated<br>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.**



**End of Safety Data Sheet**

# SAFETY DATA SHEET



## 1. IDENTIFICATION

**Product identifier**
**Product Name** MSDS Battery, CR1220, Lithium Perchlorate

**Other means of identification**
**Product Code(s)** CR1220MC

**Safety data sheet number** M02735

**UN/ID no** UN3090

**Recommended use of the chemical and restrictions on use**
**Recommended Use** Battery / Internal Battery Back-up.
**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**
Safety Data Sheets are a sub-requirement of the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard, 29 CFR Subpart 1910.1200. This Hazard Communication Standard does not apply to various subcategories including anything defined by OSHA as an "article".
According to OSHA, Article means a manufactured item other than a fluid or particle: (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g., minute or trace amounts of a hazardous chemical (as determined under paragraph (d) of this section), and does not pose a physical hazard or health risk to employees.
Because all of our batteries are defined as "articles", they are exempted from the requirements of the Hazard Communication Standard.
The battery is hermetically sealed. Thus, the ingredients have no hazard potential, except the battery is violated or dismantled.
In case of mistreatment the ingredients are released, a spontaneously flammable gas mixture may be released under certain circumstances (measures according to chapter 4 to 6).
Attention: If batteries are treated wrong the danger of burns or bursts occurs. Batteries must not be heated above 100°C or incinerated. The battery contents must not get in contact with water. If the negative electrode gets in contact with water or humidity hydrogen gas is formed, which may inflame spontaneously.

| | |
|---|---|
| Substances or mixtures which, in contact with water, emit flammable gases | Category 1 |
| Acute toxicity - Oral | Category 4 |
| Acute toxicity - Inhalation (Vapors) | Category 4 |
| Acute toxicity - Inhalation (Dusts/Mists) | Category 4 |

| | |
|---|---|
| Skin corrosion/irritation | Category 1 Sub-category B |
| Serious eye damage/eye irritation | Category 1 |
| Reproductive toxicity | Category 1B |
| Specific target organ toxicity (repeated exposure) | Category 1 |

**Hazards not otherwise classified (HNOC)**
Not applicable

**Label elements**

**Signal word**
Danger

**Hazard statements**
H260 - In contact with water releases flammable gases which may ignite spontaneously
H302 - Harmful if swallowed
H314 - Causes severe skin burns and eye damage
H332 - Harmful if inhaled
H360 - May damage fertility or the unborn child
H372 - Causes damage to organs through prolonged or repeated exposure

**Precautionary statements**
P270 - Do not eat, drink or smoke when using this product
P501 - Dispose of contents/ container to an approved waste disposal plant
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
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
P201 - Obtain special instructions before use
P308 + P313 - IF exposed or concerned: Get medical advice/attention
P260 - Do not breathe dust/fume/gas/mist/vapors/spray
P223 - Keep away from any possible contact with water, because of violent reaction and possible flash fire
P231 + P232 - Handle under inert gas. Protect from moisture
P335 + P334 - Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages
P370 + P378 - In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish
P402 + P404 - Store in a dry place. Store in a closed container

**Other Hazards Known**
None

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Substance**
Not applicable

**Mixture**

**Chemical Family** Battery, Manganese Dioxide Lithium (Perchlorate).
**Chemical nature** Battery.

**Percent ranges are used where confidential product information is applicable.**

| Chemical name | CAS No. | Percent Range | HMRIC # |
|---|---|---|---|
| **Manganese oxide (MnO2)** | 1313-13-9 | 60 - 70% | - |
| **Lithium** | 7439-93-2 | 3 - 7% | - |
| **Ethylene glycol dimethyl ether** | 110-71-4 | 1 - 5% | - |
| **Perchloric acid, lithium salt** | 7791-03-9 | 1 - 5% | - |

## 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. 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. Keep eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if present and easy to do. Continue rinsing. 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** Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Get immediate medical advice/attention.

**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. 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. 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** May emit acrid smoke and fumes.

**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** Attention! Corrosive material. 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. Avoid generation of dust. Do not breathe dust.

**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** 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. Remove contaminated clothing and shoes. Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid generation of dust.

**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. Protect from moisture. Store locked up. 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 |
|---|---|---|---|
| Manganese oxide (MnO2)<br>CAS#: 1313-13-9 | TWA: 0.02 mg/m³ Mn respirable particulate matter<br>TWA: 0.1 mg/m³ Mn inhalable particulate matter | (vacated) Ceiling: 5 mg/m³<br>Ceiling: 5 mg/m³ | IDLH: 500 mg/m³ Mn<br>TWA: 1 mg/m³ Mn<br>STEL: 3 mg/m³ Mn |
| Ethylene glycol dimethyl ether<br>CAS#: 110-71-4 | TWA: 0.5 ppm<br>Sk* | 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** Wear suitable gloves. Impervious gloves.

**Eye/face protection** Face protection shield.

**Skin and body protection** Wear suitable protective clothing. Long sleeved clothing. Chemical resistant apron.

**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. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Avoid breathing dust/fume/gas/mist/vapors/spray.

**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** Solid

| | | | |
|---|---|---|---|
| **Appearance** | Battery | **Color** | Not applicable |
| **Odor** | Not applicable | **Odor threshold** | Not applicable |

| Property | Values | Remarks • Method |
|---|---|---|
| **Molecular weight** | Not applicable | |
| **pH** | No data available | |
| **Melting point / freezing point** | No data available | |
| **Initial boiling point and boiling range** | No data available | |
| **Evaporation rate** | Not applicable | |
| **Vapor pressure** | Not applicable | |
| **Relative vapor density** | No data available | |
| **Specific gravity - VALUE 1** | Not applicable | |
| **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** | Not applicable | |
| **Kinematic viscosity** | Not applicable | |

**Solubility(ies)**

**Water solubility**

| Water solubility classification | Water solubility | Water Solubility Temperature |
|---|---|---|
| No information available | No data available | No information available |

**Solubility in other solvents**

| Chemical Name | Solubility classification | Solubility | Solubility Temperature |
|---|---|---|---|
| None reported | No information available | No data available | No information available |

**Other information**

**Corrosive to metals**

**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) |
|---|---|---|---|
| Manganese oxide (MnO2) | 1313-13-9 | No data available | - |
| Lithium | 7439-93-2 | No data available | - |
| Ethylene glycol dimethyl ether | 110-71-4 | No data available | X |
| Perchloric acid, lithium salt | 7791-03-9 | No data available | - |

**Explosive properties**

| | |
|---|---|
| **Upper explosion limit** | Not applicable |
| **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**

## 10. STABILITY AND REACTIVITY

**Reactivity**
Reacts violently with water.

**Chemical stability**
Water reactive chemical. Reacts violently with water.

**Explosion data**
**Sensitivity to Mechanical Impact** None.
**Sensitivity to Static Discharge** None.

**Possibility of hazardous reactions**
Contact with water generates heat. Keep away from any possible contact with water, because of violent reaction and possible flash fire. Do not add water to contents while in a container because of violent reaction and possible flash fire. Do not get water inside containers: a violent reaction may occur.

**Hazardous polymerization**
Hazardous polymerization does not occur.

**Conditions to avoid**
Exposure to air or moisture over prolonged periods. Excessive heat. Exposure to water.

**Incompatible materials**
Acids. Bases. Oxidizing agent. Water. 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**

**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. Harmful by inhalation. |
| **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**
Harmful if swallowed
Harmful if inhaled

**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 |
|---|---|---|---|---|---|
| Manganese oxide (MnO2) (60 - 70%) CAS#: 1313-13-9 | Rat $LD_{50}$ | > 9000 mg/kg | None reported | None reported | LOLI |

**Inhalation (Dust/Mist) Exposure Route**

**Inhalation (Vapor) Exposure Route**

| Chemical name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|---|---|---|---|---|
| Ethylene glycol dimethyl ether (1 - 5%) CAS#: 110-71-4 | Rat $LC_{50}$ | >= 20 mg/L | 4 hours | None reported | CHEMVIEW |

**Unknown Acute Toxicity**
20% 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)** | 666.70 mg/kg |
| **ATEmix (dermal)** | No information available |
| **ATEmix (inhalation-dust/mist)** | 2.00 mg/l |
| **ATEmix (inhalation-vapor)** | 14.10 mg/l |
| **ATEmix (inhalation-gas)** | No information available |

**Skin corrosion/irritation**
Causes severe burns.

**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 |
|---|---|---|---|---|---|---|
| Manganese oxide (MnO2) (60 - 70%) CAS#: 1313-13-9 | Existing human experience | Human | None reported | None reported | Not corrosive or irritating to skin | IUCLID |
| Ethylene glycol dimethyl ether (1 - 5%) CAS#: 110-71-4 | Standard Draize Test | Rabbit | 0.5 mL | 24 hours | Skin irritant | ECHA |

**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 |
|---|---|---|---|---|---|---|
| Manganese oxide (MnO2) (60 - 70%) CAS#: 1313-13-9 | Existing human experience | Human | None reported | None reported | Not corrosive or irritating to eyes | IUCLID |
| Ethylene glycol dimethyl ether (1 - 5%) CAS#: 110-71-4 | Standard Draize Test | Rabbit | 0.1 mL | 24 hours | Not corrosive or irritating to eyes | ECHA |

**Respiratory or skin sensitization**
Based on available data, the classification criteria are not met.

**Mixture**
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 |
|---|---|---|---|---|
| Ethylene glycol dimethyl ether (1 - 5%) CAS#: 110-71-4 | Local Lymph Node Assay | Mouse | Not confirmed to be a skin sensitizer | ECHA |

**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.

**Oral Exposure Route**

| Chemical name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|---|---|---|---|---|
| Ethylene glycol dimethyl ether (1 - 5%) CAS#: 110-71-4 | Rat $LD_{Lo}$ | 1000 mg/kg | None reported | None reported | RTECS |

**Dermal Exposure Route**

| Chemical name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|---|---|---|---|---|
| Ethylene glycol dimethyl ether (1 - 5%) CAS#: 110-71-4 | Rabbit $LD_{Lo}$ | 2000 mg/kg | None reported | None reported | RTECS |

**Inhalation (Vapor) Exposure Route**

| Chemical name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|---|---|---|---|---|
| Ethylene glycol dimethyl ether (1 - 5%) CAS#: 110-71-4 | Rat $LC_{Lo}$ | 63000 mg/m³ | 6 hours | **Behavioral** Somnolence (general depressed activity) Irritability | 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.

**Oral Exposure Route**

| Chemical name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|---|---|---|---|---|
| Ethylene glycol dimethyl ether (1 - 5%) CAS#: 110-71-4 | Mouse $TD_{Lo}$ | 16000 mg/kg | 8 days | **Chronic** Death | RTECS |

**Inhalation (Vapor) Exposure Route**

| Chemical name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|---|---|---|---|---|
| Ethylene glycol dimethyl ether (1 - 5%) CAS#: 110-71-4 | Rat $TC_{Lo}$ | 4000 mg/L | 14 days | **Behavioral** Change in psychophysiological tests **Lungs, Thorax, or Respiration** Other changes **Chronic** Death | RTECS |

**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 |
|---|---|---|---|---|---|
| Manganese oxide (MnO2) | 1313-13-9 | - | - | - | - |
| Lithium | 7439-93-2 | - | - | - | - |
| Ethylene glycol dimethyl ether | 110-71-4 | - | - | - | - |
| Perchloric acid, lithium salt | 7791-03-9 | - | - | - | - |

**Legend**

| | |
|---|---|
| **ACGIH (American Conference of Governmental Industrial Hygienists)** | 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** *invitro* **Data**
No data available.

**Substance** *invitro* **Data**
Test data reported below.

| Chemical name | Test | Cell Strain | Reported dose | Exposure time | Results | Key literature references and sources for data |
|---|---|---|---|---|---|---|
| Ethylene glycol dimethyl ether (1 - 5%) CAS#: 110-71-4 | Mutation in microorganisms | *Salmonella typhimurium* | 0.010 mg/plate | None reported | Negative | ECHA |

**Mixture** *invivo* **Data**
No data available.

**Substance** *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 |
|---|---|---|---|---|---|---|
| Ethylene glycol dimethyl ether (1 - 5%) CAS#: 110-71-4 | Micronucleus test | Mouse | 2000 mg/kg | 12 weeks | Negative test result for mutagenicity | ECHA |

**Reproductive toxicity**
Classification based on data available for ingredients. Contains a known or suspected reproductive toxin. The table below indicates ingredients above the cut-off threshold considered as relevant which are listed as reproductive toxins.

**Mixture**
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 |
|---|---|---|---|---|---|
| Ethylene glycol dimethyl ether (1 - 5%) CAS#: 110-71-4 | Rat | 660 mg/kg | 18 days | **Effects on Fertility** Post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants) **Specific Developmental Abnormalities** Musculoskeletal system Homeostasis **Effects on Newborn** Stillbirth Live birth index (# fetuses per litter measured after birth) Viability index (e.g. # alive at day 4 per # born alive) Growth statistics (e.g. % reduced weight gain) | RTECS |

**Inhalation (Dust/Mist) Exposure Route**

| Chemical name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|---|---|---|---|---|
| Manganese oxide (MnO2) (60 - 70%) CAS#: 1313-13-9 | Mouse $TC_{Lo}$ | 0.085 mg/L | 17 days | **Effects on Newborn** Decrease in average pup weight at birth Decreased activity levels | RTECS |

**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** 20% 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.

**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** Do NOT incinerate or subject battery to temperatures in excess of 212 degrees fahrenheit. Cells may rupture. Perchlorate Material - special handling may apply. In California, see www.dtsc.ca.gov/hazardouswaste/perchlorate. Lithium- manganese dioxide batteries are not listed as a hazardous waste. Recycle at an approved recycling facility or dispose as ordinary waste.

## 14. TRANSPORT INFORMATION

**DOT**

| | |
|---|---|
| **UN/ID no** | UN3090 |
| **Proper shipping name** | Lithium Battery |
| **Transport hazard class(es)** | 9 |
| **Packing Group** | II |
| **Emergency Response Guide Number** | 138 |

**TDG**

| | |
|---|---|
| **UN/ID no** | UN3090 |
| **Proper shipping name** | Lithium Battery |
| **Transport hazard class(es)** | 9 |
| **Packing Group** | II |

**IATA**

| | |
|---|---|
| **UN number or ID number** | UN3090 |
| **Proper shipping name** | Lithium Battery |
| **Transport hazard class(es)** | 9 |
| **Packing group** | II |
| **ERG Code** | 138 |

**IMDG**

| | |
|---|---|
| **UN number or ID number** | UN3090 |

| | |
|---|---|
| **Proper shipping name** | Lithium Battery |
| **Transport hazard class(es)** | 9 |
| **Packing Group** | II |

**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**
*For Inventory status, "complies" means, listed on the inventory, exempted or otherwise complies.*

| | |
|---|---|
| **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 |
| **KECI** | Complies |
| **PICCS** | Does not comply |
| **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 % |
|---|---|
| Manganese oxide (MnO2) (CAS #: 1313-13-9) | 1.0 |
| Ethylene glycol dimethyl ether (CAS #: 110-71-4) | 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)

**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 | TSCA 12(b) |
|---|---|
| Ethylene glycol dimethyl ether<br>(1 - 5%)<br>CAS#: 110-71-4 | Section 5(a)(2) |

## 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 |
|---|---|---|---|
| Manganese oxide (MnO2)<br>1313-13-9 | X | - | X |
| Lithium<br>7439-93-2 | X | X | X |
| Ethylene glycol dimethyl ether<br>110-71-4 | 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)**

| Chemical name | Global Automotive Declarable Substance List Classifications | Global Automotive Declarable Substance List Thersholds |
|---|---|---|
| Ethylene glycol dimethyl ether<br>110-71-4 | Declarable Substance (LR) | None reported |
| Perchloric acid, lithium salt<br>7791-03-9 | Declarable Substance (FA)<br>Prohibited Substance (FA) | 0.1 % |

**NFPA and HMIS Classifications**

| | | | | |
|---|---|---|---|---|
| **NFPA** | **Health hazards** - 3 | **Flammability** - 0 | **Instability** - 0 | **Physical and chemical properties** W |
| **HMIS** | **Health hazards** - 3<br>- * | **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 | 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 | 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** 19-09-2018

**Revision Date** 10-Feb-2025

**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.**



**End of Safety Data Sheet**

# SAFETY DATA SHEET



## 1. IDENTIFICATION

**Product identifier**
**Product Name** Free Ammonia Chlorinating Solution

**Other means of identification**
**Product Code(s)** 2877436

**Safety data sheet number** M03136

**UN/ID no** UN1824

**Recommended use of the chemical and restrictions on use**
**Recommended Use** Water Analysis. Chlorinating Agent.
**Uses advised against**
**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 1 |
| Serious eye damage/eye irritation | Category 1 |
| Chronic aquatic toxicity | Category 3 |

**Hazards not otherwise classified (HNOC)**
Not applicable

**Label elements**

**Signal word**
Danger

**Hazard statements**
H314 - Causes severe skin burns and eye damage
H412 - Harmful to aquatic life with long lasting effects

**Precautionary statements**
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
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
P273 - Avoid release to the environment

**Other Hazards Known**
Harmful to aquatic life

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Substance**
Not applicable

**Mixture**

**Percent ranges are used where confidential product information is applicable.**

| Chemical name | CAS No. | Percent Range | HMRIC # |
|---|---|---|---|
| **Sodium hydroxide** | 1310-73-2 | <1% | - |
| **Sodium hypochlorite** | 7681-52-9 | <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. 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. Keep eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if present and easy to do. Continue rinsing. 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** Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Get immediate medical advice/attention.

**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. 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 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** 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** Attention! Corrosive material. 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.

**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** Not applicable

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Control parameters**

**Exposure Guidelines**

| Chemical name | ACGIH TLV | OSHA PEL | NIOSH |
|---|---|---|---|
| Sodium hydroxide<br>CAS#: 1310-73-2 | Ceiling: 2 mg/m$^3$ | TWA: 2 mg/m$^3$<br>(vacated) Ceiling: 2 mg/m$^3$ | IDLH: 10 mg/m$^3$<br>Ceiling: 2 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. Impervious gloves.

**Eye/face protection** Face protection shield.

**Skin and body protection** Wear suitable protective clothing. Long sleeved clothing. Chemical resistant apron.

**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. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Contaminated work clothing should not be

allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. 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
**Appearance** aqueous solution
**Color** colorless
**Odor** Irritating
**Odor threshold** No data available

| Property | Values | Remarks • Method |
|---|---|---|
| **Molecular weight** | No data available | |
| **pH** | 12.5 | @ 20 °C |
| **Melting point / freezing point** | ~ 0 °C / 32 °F | |
| **Initial boiling point and boiling range** | ~ 100 °C / 212 °F | |
| **Evaporation rate** | No data available | |
| **Vapor pressure** | 23.702 mm Hg / .? kPa at 25 °C / .? °F | |
| **Relative vapor density** | 0.62 | |
| **Specific gravity - VALUE 1** | 1 | |
| **Partition coefficient** | Not applicable | |
| **Soil Organic Carbon-Water Partition Coefficient** | Not applicable | |
| **Autoignition temperature** | No data available | |
| **Decomposition temperature** | Not applicable | |
| **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 / .? °F |

**Solubility in other solvents**

| Chemical Name | Solubility classification | Solubility | Solubility Temperature |
|---|---|---|---|
| Acid | Violent reaction will occur | No data available | No information available / |

**Other information**

**Corrosive to metals**

**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) |
|---|---|---|---|
| Sodium hydroxide | 1310-73-2 | No data available | - |
| Sodium hypochlorite | 7681-52-9 | Not applicable | - |

**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**
Exposure to air or moisture over prolonged periods.

**Incompatible materials**
Acids. Bases. Oxidizing agent.

**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**
No data available.

**Ingredient Acute Toxicity Data**
No data available.

**Unknown Acute Toxicity**
0.01% 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)** | 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**
Causes severe burns.

**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 |
|---|---|---|---|---|---|---|
| Sodium hydroxide | Patch test | Human | 20 mg | 24 hours | Corrosive to skin | RTECS |

| | | | | | | |
|---|---|---|---|---|---|---|
| (<1%)<br>CAS#: 1310-73-2 | | | | | | |

**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 |
|---|---|---|---|---|---|---|
| Sodium hydroxide (<1%)<br>CAS#: 1310-73-2 | Standard Draize Test | Rabbit | 0.05 mg | 24 hours | Corrosive to eyes | RTECS |

**Respiratory or skin sensitization**
Based on available data, the classification criteria are not met.

**Mixture**
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 hypochlorite (<1%)<br>CAS#: 7681-52-9 | OECD Test No. 406: Skin Sensitization | Guinea pig | Not confirmed to be a skin sensitizer | ECHA |

**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.

**Oral Exposure Route**

| Chemical name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|---|---|---|---|---|
| Sodium hypochlorite (<1%)<br>CAS#: 7681-52-9 | Human $TD_{Lo}$ | 1000 mg/kg | None reported | **Behavioral**<br>Somnolence (general depressed activity)<br>**Vascular**<br>BP lowering not characterized in autonomic section<br>**Skin and Appendages**<br>Corrosive to skin after topical application | RTECS |

**STOT - repeated exposure**
Based on available data, the classification criteria are not met.

**Mixture**
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 |
|---|---|---|---|---|---|
| Sodium hypochlorite (<1%) CAS#: 7681-52-9 | Rat $TD_{Lo}$ | 140 mg/kg | 63 days | **Endocrine** Changes in spleen weight **Immunological Including Allergic** Decrease in cellular immune response **Biochemical** Intermediary metabolism (lipids including transport) | RTECS |

**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 |
|---|---|---|---|---|---|
| Sodium hydroxide | 1310-73-2 | - | - | - | - |
| Sodium hypochlorite | 7681-52-9 | - | Group 3 | - | - |

**Legend**

| | |
|---|---|
| **ACGIH (American Conference of Governmental Industrial Hygienists)** | Does not apply |
| **IARC (International Agency for Research on Cancer)** | Group 3 - Not Classifiable as to Carcinogenicity in Humans |
| **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** *invitro* **Data**
No data available.

**Substance** *invitro* **Data**
Test data reported below.

| Chemical name | Test | Cell Strain | Reported dose | Exposure time | Results | Key literature references and sources for data |
|---|---|---|---|---|---|---|
| Sodium hypochlorite (<1%) CAS#: 7681-52-9 | Cytogenetic analysis | Human lymphocyte | 100 mg/L | 24 hours | Positive test result for mutagenicity | RTECS |

**Mixture** *invivo* **Data**
No data available.

**Substance** *invivo* **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.

**Oral Exposure Route**

| Chemical name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|---|---|---|---|---|
| Sodium hypochlorite (<1%) CAS#: 7681-52-9 | Rat NOAEL | >= 5 mg/kg | Single generation | No reproductive or developmental toxic effects observed | ECHA |

**Aspiration hazard**
Based on available data, the classification criteria are not met.

## 12. ECOLOGICAL INFORMATION

**Ecotoxicity** Harmful to aquatic life with long lasting effects.

**Unknown aquatic toxicity** 0.01% 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.

**Fish**

| Chemical name | Exposure time | Species | Endpoint type | Reported dose | Key literature references and sources for data |
|---|---|---|---|---|---|
| Sodium hydroxide (<1%) CAS#: 1310-73-2 | 96 hours | *Oncorhynchus mykiss* | $LC_{50}$ | 45.4 mg/L | IUCLID |
| Sodium hypochlorite (<1%) CAS#: 7681-52-9 | 96 hours | *Clupea pallasi* | $LC_{50}$ | 0.065 mg/L | Vendor SDS |

**Crustacea**

| Chemical name | Exposure time | Species | Endpoint type | Reported dose | Key literature references and sources for data |
|---|---|---|---|---|---|
| Sodium hydroxide (<1%) CAS#: 1310-73-2 | 48 Hours | *Daphnia sp.* | $EC_{50}$ | 40.4 mg/L | IUCLID |

| | | | | | |
|---|---|---|---|---|---|
| Sodium hypochlorite (<1%) CAS#: 7681-52-9 | 48 Hours | *Daphnia magna* | $LC_{50}$ | 0.032 mg/L | Vendor SDS |

**Algae**

| Chemical name | Exposure time | Species | Endpoint type | Reported dose | Key literature references and sources for data |
|---|---|---|---|---|---|
| Sodium hypochlorite (<1%) CAS#: 7681-52-9 | 72 Hours | *Pseudokirchnerella subcapitata* | $EC_{50}$ | 0.05 mg/L | ECHA |

**Aquatic Chronic Toxicity**
Test data reported below.

**Fish**

| Chemical name | Exposure time | Species | Endpoint type | Reported dose | Key literature references and sources for data |
|---|---|---|---|---|---|
| Sodium hypochlorite (<1%) CAS#: 7681-52-9 | 28 days | *Menidia peninsulae* | NOEC | 0.04 mg/L | ECHA |

**Crustacea**

| Chemical name | Exposure time | Species | Endpoint type | Reported dose | Key literature references and sources for data |
|---|---|---|---|---|---|
| Sodium hypochlorite (<1%) CAS#: 7681-52-9 | 15 days | *Crassostrea virginica* | NOEC | 0.007 mg/L | ECHA |

**Algae**

| Chemical name | Exposure time | Species | Endpoint type | Reported dose | Key literature references and sources for data |
|---|---|---|---|---|---|
| Sodium hypochlorite (<1%) CAS#: 7681-52-9 | 7 days | None reported | NOEC | 0.0021 mg/L | ECHA |

**Persistence and degradability**

**Mixture**
No data available.

Bioaccumulation
There is no data for this product
**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 material with excess water making a weaker than 5% solution. 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. Flush system with plenty of water. |

## 14. TRANSPORT INFORMATION

**DOT**

| | |
|---|---|
| **UN/ID no** | UN1824 |
| **Proper shipping name** | Sodium Hydroxide Solution |
| **Transport hazard class(es)** | 8 |
| **Packing Group** | II |
| **Emergency Response Guide Number** | 154 |

**TDG**

| | |
|---|---|
| **UN/ID no** | UN1824 |
| **Proper shipping name** | Sodium Hydroxide Solution |
| **Transport hazard class(es)** | 8 |
| **Packing Group** | II |

**IATA**

| | |
|---|---|
| **UN number or ID number** | UN1824 |
| **Proper shipping name** | Sodium Hydroxide Solution |
| **Transport hazard class(es)** | 8 |
| **Packing group** | II |
| **ERG Code** | 154 |

**IMDG**

| | |
|---|---|
| **UN number or ID number** | UN1824 |
| **Proper shipping name** | Sodium Hydroxide Solution |
| **Transport hazard class(es)** | 8 |
| **Packing Group** | II |

**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**
*For Inventory status, "complies" means, listed on the inventory, exempted or otherwise complies.*

| | |
|---|---|
| **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 |
| **KECI** | 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** | 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 |
|---|---|---|---|---|
| Sodium hydroxide<br>1310-73-2 | 1000 lb | - | - | X |
| Sodium hypochlorite<br>7681-52-9 | 100 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) |
|---|---|---|---|
| Sodium hydroxide<br>1310-73-2 | 1000 lb | - | RQ 1000 lb final RQ<br>RQ 454 kg final RQ |
| Sodium hypochlorite<br>7681-52-9 | 100 lb | - | RQ 100 lb final RQ<br>RQ 45.4 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 may contain substances regulated by state right-to-know regulations.

| Chemical name | New Jersey | Massachusetts | Pennsylvania |
|---|---|---|---|
| Sodium hydroxide<br>1310-73-2 | X | X | X |
| Sodium hypochlorite<br>7681-52-9 | X | X | X |

**U.S. EPA Label Information**

| Chemical name | FIFRA | FDA |
|---|---|---|
| Sodium hydroxide | 180.0910 | 21 CFR 184.1763 |
| Sodium hypochlorite | 180.0940 | - |

## 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 | 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 | 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** | 14-06-2019 |
| **Revision Date** | 10-Feb-2025 |
| **Revision Note** | SDS sections updated<br>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.**



**End of Safety Data Sheet**