# SAFETY DATA SHEET



## 1. IDENTIFICATION

**Product identifier**
**Product Name** Dissolved Oxygen 1 Reagent

**Other means of identification**
**Product Code(s)** 98199

**Safety data sheet number** M00029

**UN/ID no** UN3077

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

| | |
|---|---|
| Serious eye damage/eye irritation | Category 1 |
| Specific target organ toxicity (repeated exposure) | Category 2 |
| Chronic aquatic toxicity | Category 2 |

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

**Label elements**

**Signal word**
Danger

**Hazard statements**
H318 - Causes serious eye damage
H373 - May cause damage to organs through prolonged or repeated exposure
H411 - Toxic to aquatic life with long lasting effects

**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
P260 - Do not breathe dust/fume/gas/mist/vapors/spray
P501 - Dispose of contents/ container to an approved waste disposal plant
P273 - Avoid release to the environment
P391 - Collect spillage

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

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Substance**

| | |
|---|---|
| **Chemical Name** | Manganous Sulfate |
| **Chemical Family** | Inorganic salt. |
| **Formula** | $MnSO_4$ |
| **CAS No** | 7785-87-7 |
| **Alternate CAS Number** | 10034-96-5 - Monohydrate |
| Alternate CAS Number | 10101-68-5 |
| Type | - Tetrahydrate |

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

| Chemical name | CAS No | Percent Range | HMRIC # |
|---|---|---|---|
| **Manganese(II) sulfate** | 7785-87-7 | 100% | - |

## 4. FIRST AID MEASURES

**Description of first aid measures**

**General advice** Immediate medical attention is required. Show this safety data sheet to the doctor in attendance.

**Inhalation** Remove to fresh air. Get medical attention immediately if symptoms occur.

**Eye contact** Get immediate medical advice/attention. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. Do not rub affected area.

**Skin contact** Wash off immediately with soap and plenty of water for at least 15 minutes. Get medical attention if irritation develops and persists.

**Ingestion** Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Call a physician.

**Self-protection of the first aider** Avoid contact with skin, eyes or clothing.

**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** This material will not burn. Sulfur oxides.

**Special protective equipment for fire-fighters** Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

## 6. ACCIDENTAL RELEASE MEASURES

**U.S. Notice** Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance. Outside of the US, only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.

**Personal precautions, protective equipment and emergency procedures**

**Personal precautions** Avoid contact with skin, eyes or clothing. Use personal protective equipment as required. Ensure adequate ventilation. Evacuate personnel to safe areas.

**Other Information** Refer to protective measures listed in Sections 7 and 8.

**Environmental precautions**

**Environmental precautions** Prevent further leakage or spillage if safe to do so.

**Methods and material for containment and cleaning up**

**Methods for containment** Prevent further leakage or spillage if safe to do so.

**Methods for cleaning up** Pick up and transfer to properly labeled containers.

**Prevention of secondary hazards** Clean contaminated objects and areas thoroughly observing environmental regulations.

**Reference to other sections** See section 8 for more information. See section 13 for more information.

## 7. HANDLING AND STORAGE

**Precautions for safe handling**

**Advice on safe handling** Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. Ensure adequate ventilation.

**Conditions for safe storage, including any incompatibilities**

**Storage Conditions** Keep containers tightly closed in a dry, cool and well-ventilated place. Store locked up. Keep out of the reach of children.

**Flammability class** Not applicable

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Control parameters**

**Exposure Guidelines**

| Chemical name | ACGIH TLV | OSHA PEL | NIOSH |
|---|---|---|---|
| Manganese(II) sulfate<br>CAS#: 7785-87-7 | 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 |

**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. 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** 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** | pink |
| **Odor** | Odorless | **Odor threshold** | No data available |

| Property | Values | Remarks • Method |
|---|---|---|
| **Molecular weight** | 151.01 g/mole | |
| **pH** | 3.7 | 5% @ 20°C |
| **Melting point / freezing point** | > 400 °C / 752 °F | |
| **Initial boiling point and boiling range** | 850 °C / 1562 °F | |
| **Evaporation rate** | Not applicable | |
| **Vapor pressure** | Not applicable | |
| **Relative vapor density** | No data available | |
| **Specific gravity - VALUE 1** | 3.25 | |
| **Partition coefficient** | log $K_{ow}$ ~ 0 | |
| **Soil Organic Carbon-Water Partition Coefficient** | log $K_{oc}$ ~ 0 | |
| **Autoignition temperature** | No data available | |
| **Decomposition temperature** | 850 °C / 1562 °F | |
| **Dynamic viscosity** | Not applicable | |
| **Kinematic viscosity** | Not applicable | |

**Solubility(ies)**

**Water solubility**

| Water solubility classification | Water solubility | Water Solubility Temperature |
|---|---|---|
| Completely soluble | 629000 mg/L | 20 °C / 68 °F |

**Solubility in other solvents**

| Chemical Name | Solubility classification | Solubility | Solubility Temperature |
|---|---|---|---|
| Acids | Soluble | > 1000 mg/L | 25 °C / 77 °F |
| Methanol | Slightly soluble | > 0.1 mg/L | 25 °C / 77 °F |
| Ethyl alcohol | Insoluble | < 0.1 mg/L | 25 °C / 77 °F |
| Ether | Insoluble | < 0.1 mg/L | 25 °C / 77 °F |

**Other information**

**Metal Corrosivity**

**Steel Corrosion Rate** Not applicable
**Aluminum Corrosion Rate** 0.05 mm/yr / 0 in/yr

**Volatile Organic Compounds (VOC) Content**
This Product is by Weight 100% an Individual Pure Chemical Substance

| Chemical name | CAS No | Volatile organic compounds (VOC) content | CAA (Clean Air Act) |
|---|---|---|---|
| Manganese(II) sulfate | 7785-87-7 | 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**
None under normal processing.

**Conditions to avoid**
None known based on information supplied.

**Incompatible materials**
Strong acids. Strong bases. Strong oxidizing agents.

**Hazardous decomposition products**
Sulfur oxides. Manganese oxides.

## 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. |
| **Ingestion** | Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. |

**Symptoms** Redness. Burning. May cause blindness.

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

**Mixture**
If available, see ingredient data below.

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

| Chemical name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|---|---|---|---|---|
| Manganese(II) sulfate (100%) CAS#: 7785-87-7 | Rat $LD_{50}$ | 2150 mg/kg | None reported | None reported | IUCLID |

**Unknown Acute Toxicity**
0% of the mixture consists of ingredient(s) of unknown toxicity.

**Acute Toxicity Estimations (ATE)**
Not applicable
**The following values are calculated based on chapter 3.1 of the GHS document**

| | |
|---|---|
| **ATEmix (oral)** | No information available |
| **ATEmix (dermal)** | No information available |
| **ATEmix (inhalation-dust/mist)** | No information available |
| **ATEmix (inhalation-vapor)** | No information available |
| **ATEmix (inhalation-gas)** | No information available |

**Skin corrosion/irritation**
May cause skin irritation.

**Mixture**
If available, see ingredient data below.

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

| Chemical name | Test method | Species | Reported dose | Exposure time | Results | Key literature references and sources for data |
|---|---|---|---|---|---|---|
| Manganese(II) sulfate (100%) CAS#: 7785-87-7 | Standard Draize Test | Rabbit | 500 mg | 4 hours | Not corrosive or irritating to skin | ECHA |

**Serious eye damage/irritation**
Classification based on data available for ingredients. Causes burns. Risk of serious damage to eyes.

**Mixture**
If available, see ingredient data below.

**Ingredient Eye Damage/Eye Irritation Data**
No data available.

| Chemical name | Test method | Species | Reported dose | Exposure time | Results | Key literature references and sources for data |
|---|---|---|---|---|---|---|
| Manganese(II) sulfate (100%) CAS#: 7785-87-7 | Standard Draize Test | Rabbit | 80 mg | 72 hours | Corrosive to eyes | ECHA |

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

**Mixture**
If available, see ingredient data below.

**Ingredient Sensitization Data**
No data available.

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

**Mixture**
If available, see ingredient data below.

**Ingredient Specific Target Organ Toxicity Single Exposure Data**
No data available.

**STOT - repeated exposure**
May cause damage to organs.

**Mixture**
If available, see ingredient data below.

**Ingredient Specific Target Organ Toxicity Repeat Exposure Data**
No data available.

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

**Mixture**
If available, see ingredient data below.

**Ingredient Carcinogenicity Data**
No data available.

| Chemical name | CAS No | ACGIH | IARC | NTP | OSHA |
|---|---|---|---|---|---|
| Manganese(II) sulfate | 7785-87-7 | - | - | - | - |

**Legend**

| | |
|---|---|
| **ACGIH (American Conference of Governmental Industrial Hygienists)** | Does not apply |
| **IARC (International Agency for Research on Cancer)** | Does not apply |
| **NTP (National Toxicology Program)** | Does not apply |
| **OSHA** | Does not apply |

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

**Mixture** *invitro* **Data**
If available, see ingredient data below.

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

| Chemical name | Test | Cell Strain | Reported dose | Exposure time | Results | Key literature references and sources for data |
|---|---|---|---|---|---|---|
| Manganese(II) sulfate (100%) CAS#: 7785-87-7 | Mutation in microorganisms | *Salmonella typhimurium* | 1775 nmol/tubes | None reported | Positive test result for mutagenicity | RTECS |

**Mixture** *invivo* **Data**
If available, see ingredient data below.

**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.

| Chemical name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|---|---|---|---|---|
| Manganese(II) sulfate (100%) CAS#: 7785-87-7 | Mouse $TD_{Lo}$ | 15000 mg/kg | 3 weeks | **Effects on Fertility** Post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants) **Effects on Newborn** Growth statistics (e.g. % reduced weight gain) | RTECS |
| **Chemical name** | **Endpoint type** | **Reported dose** | **Exposure time** | **Toxicological effects** | **Key literature references and sources for data** |
| Manganese(II) sulfate (100%) CAS#: 7785-87-7 | Rat $TC_{Lo}$ | 0.0005 mg/L | None reported | **Effects on Newborn** Metabolic effects | RTECS |

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

## 12. ECOLOGICAL INFORMATION

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

**Unknown aquatic toxicity** 0% of the mixture consists of components(s) of unknown hazards to the aquatic environment.

**Mixture**

**Aquatic Acute Toxicity**
If available, see ingredient data below.

**Aquatic Chronic Toxicity**
If available, see ingredient data below.

**Substance**

**Aquatic Acute Toxicity**
No data available.

| Chemical name | Exposure time | Species | Endpoint type | Reported dose | Key literature references and sources for data |
|---|---|---|---|---|---|
| Manganese(II) sulfate (100%) CAS#: 7785-87-7 | 96 hours | *Oncorhynchus mykiss* | $LC_{50}$ | 3.17 mg/L | PEEN |
| **Chemical name** | **Exposure time** | **Species** | **Endpoint type** | **Reported dose** | **Key literature references and sources for data** |
| Manganese(II) sulfate (100%) | 48 Hours | *Daphnia magna* | $EC_{50}$ | 5.7 mg/L | PEEN |

| | | | | | |
|---|---|---|---|---|---|
| CAS#: 7785-87-7 | | | | | |

**Aquatic Chronic Toxicity**
No data available.

**Persistence and degradability**

**Mixture**
No data available.

**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.

**Special instructions for disposal** If permitted by regulation. Dilute to 3 to 5 times the volume with cold water. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Open cold water tap completely, slowly pour the material to the drain. Flush system with plenty of water. Dispose of material in an E.P.A. approved hazardous waste facility.

## 14. TRANSPORT INFORMATION

**DOT**

| | |
|---|---|
| **UN/ID no** | UN3077 |
| **Proper shipping name** | Environmentally hazardous substances, solid, n.o.s. |
| **DOT Technical Name** | (Manganese sulfate) |
| **Transport hazard class(es)** | 9 |
| **Packing Group** | III |

**TDG**

| | |
|---|---|
| **UN/ID no** | UN3077 |
| **Proper shipping name** | Environmentally hazardous substances, solid, n.o.s. |
| **TDG Technical Name** | (Manganese sulfate) |
| **Transport hazard class(es)** | 9 |
| **Packing Group** | III |

**IATA**

| | |
|---|---|
| **UN number or ID number** | UN3077 |
| **Proper shipping name** | Environmentally hazardous substances, solid, n.o.s. |
| **IATA Technical Name** | (Manganese sulfate) |
| **Transport hazard class(es)** | 9 |
| **Packing group** | III |

**IMDG**

| | |
|---|---|
| **UN number or ID number** | UN3077 |
| **Proper shipping name** | Environmentally hazardous substances, solid, n.o.s. |
| **IMDG Technical Name** | (Manganese sulfate) |
| **Transport hazard class(es)** | 9 |
| **Packing Group** | III |
| **Marine pollutant** | This material meets the definition of a marine pollutant |

**Note:** No special precautions necessary.

**Additional information**
There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is not in a reagent set or kit, the classification given above applies.
If the item is part of a reagent set or kit the classification would change to the following:
UN3316 Chemical Kit, Hazard Class 9, Packing Group II or III.
If the item is not regulated, the Chemical Kit classification does not apply.

## 15. REGULATORY INFORMATION

**National Inventories**

| | |
|---|---|
| **TSCA** | Complies |
| **DSL/NDSL** | Complies |

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory
**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List

**International Inventories**

| | |
|---|---|
| **EINECS/ELINCS** | Complies |
| **ENCS** | Complies |
| **IECSC** | Complies |
| **KECL** | 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 % |
|---|---|
| Manganese(II) sulfate (CAS #: 7785-87-7) | 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

## US State Regulations

**California Proposition 65**
This product does not contain any Proposition 65 chemicals

**U.S. State Right-to-Know Regulations**

This product does not contain any substances regulated by state right-to-know regulations.

| Chemical name | New Jersey | Massachusetts | Pennsylvania |
|---|---|---|---|
| Manganese(II) sulfate<br>7785-87-7 | X | - | X |

**U.S. EPA Label Information**

| Chemical name | FIFRA | FDA |
|---|---|---|
| Manganese(II) sulfate | - | 21 CFR 184.1461 |

## 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<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 | EPA (Environmental Protection Agency) |
| ERMA | ERMA (New Zealands Environmental Risk Management Authority) |
| ECOSARS | Estimation through ECOSARS v1.11 part of the Estimation Programs Interface (EPI) Suite™ |
| FDA | FDA (Food & Drug Administration) |
| GESTIS | GESTIS (Information System on Hazardous Substances of the German Social Accident |

| | |
|---|---|
| | Insurance) |
| HSDB | HSDB (Hazardous Substances Data Bank) |
| INERIS | INERIS (The National Industrial Environment and Risks Institute) |
| IPCS INCHEM | IPCS INCHEM (International Programme on Chemical Safety) |
| IUCLID | IUCLID (The International Uniform Chemical Information Database) |
| NITE | Japan National Institute of Technology and Evaluation (NITE) |
| NIH | NIH (National Institutes of Health) |
| NIOSH | NIOSH (National Institute for Occupational Safety and Health) |
| LOLI | LOLI (List of Lists - An International Chemical Regulatory Database) |
| NDF | no data |
| NICNAS | Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS) |
| NIOSH IDLH | Immediately Dangerous to Life or Health |
| OSHA | OSHA (Occupational Safety and Health Administration of the US Department of Labor) |
| PEEN | PEEN (Pan European Ecological Network) |
| RTECS | RTECS (Registry of Toxic Effects of Chemical Substances) |
| SIDS | SIDS (Screening Information Dataset) for High Volume Chemicals |
| SYKE | The Finnish Environment Institute (SYKE) |
| USDA | USDA (United States Department of Agriculture) |
| USDC | USDC (United States Department of Commerce) |
| WHO | WHO (World Health Organization) |

**Legend - Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

| | | | |
|---|---|---|---|
| TWA | TWA (time-weighted average) | STEL | STEL (Short Term Exposure Limit) |
| MAC | Maximum Allowable Concentration | Ceiling | Ceiling Limit Value |
| X | Listed | Vacated | These values have no official status. The only binding levels of contaminants are those listed in the final OSHA PEL. These lists are for reference purposes only. Please note that some reference state regulations of these "liberated" exposure limits in their state regulations. |
| SKN* | Skin designation | SKN+ | Skin sensitization |
| RSP+ | Respiratory sensitization | ** | Hazard Designation |
| C | Carcinogen | R | Reproductive toxicant |
| M | mutagen | | |

| | |
|---|---|
| **Prepared By** | Hach Product Compliance Department |
| **Issue Date** | 30-10-2019 |
| **Revision Date** | 26-Jan-2024 |
| **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**