# SAFETY DATA SHEET



## 1. IDENTIFICATION

**Product identifier**
**Product Name** FerroZine ® Iron Reagent

**Other means of identification**
**Product Code(s)** 236616

**Safety data sheet number** M01036

**UN/ID no** UN2810

**Recommended use of the chemical and restrictions on use**
**Recommended Use** Indicator for iron.
**Uses advised against** Consumer use.
**Restrictions on use** None.

**Details of the supplier of the safety data sheet**

**Manufacturer Address**
Hach Company P.O.Box 389 Loveland, CO 80539 USA +1(970) 669-3050

**Emergency telephone number**
+1(303) 623-5716 - 24 Hour Service +1(515)232-2533 - 8am - 4pm CST

## 2. HAZARDS IDENTIFICATION

**Classification**

**Regulatory Status**
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

| | |
|---|---|
| Acute toxicity - Oral | Category 3 |
| Acute toxicity - Dermal | Category 4 |
| Acute toxicity - Inhalation (Vapors) | Category 4 |
| Skin corrosion/irritation | Category 1 Sub-category A |
| Serious eye damage/eye irritation | Category 1 |
| Respiratory sensitization | Category 1 |
| Skin sensitization | Category 1 |

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

**Label elements**

**Signal word - Danger**

**Hazard statements**

H301 - Toxic if swallowed
H312 - Harmful in contact with skin
H314 - Causes severe skin burns and eye damage
H317 - May cause an allergic skin reaction
H332 - Harmful if inhaled
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled

**Precautionary statements**
P270 - Do not eat, drink or smoke when using this product
P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
P405 - Store locked up
P501 - Dispose of contents/ container to an approved waste disposal plant
P363 - Wash contaminated clothing before reuse
P260 - Do not breathe dust/fume/gas/mist/vapors/spray
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
P303 + P361 + P353 - IF ON SKIN (or hair): 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
P285 - In case of inadequate ventilation wear respiratory protection
P304 + P341 - IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing
P342 + P311 - If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician
P272 - Contaminated work clothing should not be allowed out of the workplace
P271 - Use only outdoors or in a well-ventilated area

**Other Hazards Known**
Harmful to aquatic life

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Substance**
Not applicable

**Mixture**

**Chemical Family** Mixture.
**Chemical nature** No information available.

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

| Chemical name | CAS No. | Percent Range | HMRIC # |
|---|---|---|---|
| **Thioglycolic acid** | 68-11-1 | 50 - 60% | - |
| **Acetic acid, mercapto-, monoammonium salt** | 5421-46-5 | 10 - 20% | - |
| **Benzenesulfonic acid, 4,4-[3-(2-pyridinyl)-1,2,4-triazine-5,6-diyl]bis-, monosodium salt** | 69898-45-9 | <1% | - |

## 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. May cause allergic respiratory reaction. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation.

**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. May cause an allergic skin reaction.

**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. May produce an allergic reaction.

**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. Avoid breathing vapors or mists.

**Most important symptoms and effects, both acute and delayed**

**Symptoms** Burning sensation. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Coughing and/ or wheezing. Itching. Rashes. Hives. 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. 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** The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating gases and vapors. Product is or contains a sensitizer. May cause sensitization by inhalation and skin contact. May cause sensitization by skin contact.

**Hazardous combustion products** Carbon monoxide, Carbon dioxide. Nitrogen oxides. Sulfur oxides.

**Special protective equipment for** Firefighters should wear self-contained breathing apparatus and full firefighting turnout

**fire-fighters** gear.

## 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. Avoid breathing vapors or mists.

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

**Environmental precautions**

**Environmental precautions** Prevent further leakage or spillage if safe to do so. Should not be released into the environment. Do not allow to enter into soil/subsoil. Prevent product from entering drains.

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

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

**Methods for cleaning up** 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. 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. Provide extract ventilation to points where emissions occur. Remove contaminated clothing and shoes. Avoid breathing vapors or mists.

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

**Storage Conditions** Keep containers tightly closed in a dry, cool and well-ventilated place. Keep out of the reach of children. Store locked up. Protect from moisture. 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 IDLH |
|---|---|---|---|
| Thioglycolic acid<br>CAS#: 68-11-1 | TWA: 1 ppm<br>S* | (vacated) TWA: 1 ppm<br>(vacated) TWA: 4 mg/m$^3$<br>(vacated) SKN* | TWA: 1 ppm<br>TWA: 4 mg/m$^3$ |
| Acetic acid, mercapto-, monoammonium salt<br>CAS#: 5421-46-5 | TWA: 1 ppm<br>S* | 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.

**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** Light yellow to colorless
**Odor** Strong, skunk-like
**Odor threshold** No data available

| Property | Values | Remarks • Method |
|---|---|---|
| **Molecular weight** | Not applicable | |
| **pH** | 3.5 | |
| **Melting point/freezing point** | ~ -4 °C / 24.8 °F | Estimation based on theoretical calculation |
| **Boiling point / boiling range** | < 100 °C / 212 °F | |
| **Evaporation rate** | 0.18 (water = 1) | Estimation based on theoretical calculation |
| **Vapor pressure** | 2.4 mm Hg / 0.32 kPa at 25 °C / 77 °F | Estimation based on theoretical |

calculation

**Vapor density (air = 1)** 0.62 (air = 1)

**Specific gravity (water = 1 / air = 1)** 1.263

**Partition Coefficient (n-octanol/water)** Not applicable

**Soil Organic Carbon-Water Partition Coefficient** Not applicable

**Autoignition temperature** No data available

**Decomposition temperature** No information available

**Dynamic viscosity** No data available

**Kinematic viscosity** No data available

**Solubility(ies)**

**Water solubility**

| Water solubility classification | Water solubility | Water Solubility Temperature |
|---|---|---|
| Soluble | > 1000 mg/L | 25 °C / 77 °F |

**Solubility in other solvents**

| Chemical Name | Solubility classification | Solubility | Solubility Temperature |
|---|---|---|---|
| Acid | Soluble | > 1000 mg/L | 25 °C / 77 °F |

**Other Information**

**Metal Corrosivity**

**Steel Corrosion Rate** 1.63 mm/yr / 0.06 in/yr
**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) |
|---|---|---|---|
| Thioglycolic acid | 68-11-1 | No data available | - |
| Acetic acid, mercapto-, monoammonium salt | 5421-46-5 | Not applicable | - |
| Benzenesulfonic acid, 4,4-[3-(2-pyridinyl)-1,2,4-triazine-5,6-diyl]bis-, monosodium salt | 69898-45-9 | 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 |
| **Particle Size** | No information available |
| **Particle Size Distribution** | No information available |

## 10. STABILITY AND REACTIVITY

**Reactivity**
Not applicable.

**Chemical stability**
**Stability** Stable under normal conditions.

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

**Possibility of Hazardous Reactions**
**Possibility of Hazardous Reactions** None under normal processing.

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

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

**Incompatible materials**
**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. May cause sensitization in susceptible persons. 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** | May cause irritation. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons. May cause sensitization by skin contact. May be absorbed through the skin in harmful amounts. Harmful in contact with skin. |
| **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. May cause additional affects as listed under "Inhalation".

**Symptoms** Redness. Burning. May cause blindness. Coughing and/ or wheezing. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain, or flushing. Itching. Rashes. Hives.

**Aggravated Medical Conditions** Eye disorders. Skin disorders. Respiratory disorders. Preexisting eye disorders.
**Toxicologically synergistic products** None known.
**Toxicokinetics, metabolism and distribution** No information available.

| Chemical name | Toxicokinetics, metabolism and distribution |
|---|---|
| Benzenesulfonic acid, 4,4-[3-(2-pyridinyl)-1,2,4-triazine-5,6-diyl]bis-, monosodium salt (<1%) CAS#: 69898-45-9 | No data available. |

**Product Acute Toxicity Data**

| | |
|---|---|
| **Oral Exposure Route** | No data available |
| **Dermal Exposure Route** | No data available |
| **Inhalation (Dust/Mist) Exposure Route** | No data available |
| **Inhalation (Vapor) Exposure Route** | No data available |
| **Inhalation (Gas) Exposure Route** | No data available |

**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)** | 137.00 mg/kg |
| **ATEmix (dermal)** | 1,598.00 mg/kg |
| **ATEmix (inhalation-dust/mist)** | No information available |
| **ATEmix (inhalation-vapor)** | No information available |
| **ATEmix (inhalation-gas)** | No information available |

**Ingredient Acute Toxicity Data**

**Oral Exposure Route** If available, see data below

| Chemical name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|---|---|---|---|---|
| Thioglycolic acid (50 - 60%) CAS#: 68-11-1 | Rat $LD_{50}$ | 73 mg/kg | None reported | None reported | RTECS (Registry of Toxic Effects of Chemical Substances) |
| Acetic acid, mercapto-, monoammonium salt (10 - 20%) CAS#: 5421-46-5 | Rat $LD_{50}$ | 3500 mg/kg | None reported | None reported | RTECS (Registry of Toxic Effects of Chemical Substances) |

**Dermal Exposure Route** If available, see data below

| Chemical name | Endpoint | Reported | Exposure | Toxicological effects | Key literature references and |
|---|---|---|---|---|---|

| | type | dose | time | | sources for data |
|---|---|---|---|---|---|
| Thioglycolic acid (50 - 60%) CAS#: 68-11-1 | Rat $LD_{50}$ | 848 mg/kg | None reported | None reported | RTECS (Registry of Toxic Effects of Chemical Substances) |

**Inhalation (Dust/Mist) Exposure Route** If available, see data below
**Inhalation (Vapor) Exposure Route** If available, see data below
**Inhalation (Gas) Exposure Route** If available, see data below

**Product Specific Target Organ Toxicity Single Exposure Data**
**Oral Exposure Route** No data available
**Dermal Exposure Route** No data available
**Inhalation (Dust/Mist) Exposure Route** No data available
**Inhalation (Vapor) Exposure Route** No data available
**Inhalation (Gas) Exposure Route** No data available

**Ingredient Specific Target Organ Toxicity Single Exposure Data**
**Oral Exposure Route** If available, see data below
**Dermal Exposure Route** If available, see data below
**Inhalation (Dust/Mist) Exposure Route** If available, see data below
**Inhalation (Vapor) Exposure Route** If available, see data below
**Inhalation (Gas) Exposure Route** If available, see data below

**Aspiration toxicity**
If available, see data below
**Kinematic viscosity** No data available

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

**Ingredient Skin Corrosion/Irritation Data**
If available, see data below

| Chemical name | Test method | Species | Reported dose | Exposure time | Results | Key literature references and sources for data |
|---|---|---|---|---|---|---|
| Thioglycolic acid (50 - 60%) CAS#: 68-11-1 | EpiDerm Skin Model (Directive 2000/33/EC, B.27) | None reported | 990 mg | 3 minutes | Corrosive to skin | ECHA (The European Chemicals Agency) |
| Acetic acid, mercapto-, monoammonium salt (10 - 20%) CAS#: 5421-46-5 | Existing human experience | Human | None reported | None reported | Skin irritant | HSDB (Hazardous Substances Data Bank) |
| Benzenesulfonic acid, 4,4-[3-(2-pyridinyl)-1, 2,4-triazine-5,6-diyl]bi s-, monosodium salt (<1%) CAS#: 69898-45-9 | QSAR (Quantitative Structure Activity Relationship Models) | None reported | None reported | None reported | Not corrosive or irritating to skin | Toxtree (Ideaconsult, Ltd) |

**Product Serious Eye Damage/Eye Irritation Data**
No data available.

**Ingredient Eye Damage/Eye Irritation Data**
If available, see data below

| Chemical name | Test method | Species | Reported dose | Exposure time | Results | Key literature references and sources for data |
|---|---|---|---|---|---|---|
| Benzenesulfonic acid, 4,4-[3-(2-pyridinyl)-1, | QSAR (Quantitative Structure Activity | None reported | None reported | None reported | Not corrosive or irritating to eyes | Toxtree (Ideaconsult, Ltd) |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2,4-triazine-5,6-diyl]bis-, monosodium salt (<1%) CAS#: 69898-45-9 | Relationship Models) | | | | | |

**Sensitization Information**

**Product Sensitization Data**

**Skin Sensitization Exposure Route** No data available.
**Respiratory Sensitization Exposure Route** No data available.

**Ingredient Sensitization Data**

**Skin Sensitization Exposure Route** If available, see data below.
**Respiratory Sensitization Exposure Route** If available, see data below.

| Chemical name | Test method | Species | Results | Key literature references and sources for data |
|---|---|---|---|---|
| Acetic acid, mercapto-, monoammonium salt (10 - 20%) CAS#: 5421-46-5 | Based on human experience | None reported | Confirmed to be a respiratory sensitizer | HSDB (Hazardous Substances Data Bank) |

**Chronic Toxicity Information**

**Product Specific Target Organ Toxicity Repeat Dose Data**

**Oral Exposure Route** No data available.
**Dermal Exposure Route** No data available.
**Inhalation (Dust/Mist) Exposure Route** No data available.
**Inhalation (Vapor) Exposure Route** No data available.
**Inhalation (Gas) Exposure Route** No data available.

**Ingredient Specific Target Organ Toxicity Repeat Exposure Data**

**Oral Exposure Route** If available, see data below
**Dermal Exposure Route** If available, see data below
**Inhalation (Dust/Mist) Exposure Route** If available, see data below
**Inhalation (Vapor) Exposure Route** If available, see data below
**Inhalation (Gas) Exposure Route** If available, see data below

**Product Carcinogenicity Data**

**Oral Exposure Route** No data available
**Dermal Exposure Route** No data available
**Inhalation (Dust/Mist) Exposure Route** No data available
**Inhalation (Vapor) Exposure Route** No data available
**Inhalation (Gas) Exposure Route** No data available

**Ingredient Carcinogenicity Data**

| Chemical name | CAS No. | ACGIH | IARC | NTP | OSHA |
|---|---|---|---|---|---|
| Thioglycolic acid | 68-11-1 | - | - | - | - |
| Acetic acid, mercapto-, monoammonium salt | 5421-46-5 | - | - | - | - |
| Benzenesulfonic acid, 4,4-[3-(2-pyridinyl)-1,2,4-triazine-5,6-diyl]bis-, monosodium salt | 69898-45-9 | - | - | - | - |

**Legend**

| | |
|---|---|
| **ACGIH (American Conference of Governmental Industrial Hygienists)** | Does not apply |
| **IARC (International Agency for Research on Cancer)** | Does not apply |
| **NTP (National Toxicology Program)** | Does not apply |
| **OSHA (Occupational Safety and Health Administration of the US Department of** | Does not apply |

| **Labor)** | |
|---|---|

**Oral Exposure Route** If available, see data below
**Dermal Exposure Route** If available, see data below
**Inhalation (Dust/Mist) Exposure Route** If available, see data below

| Chemical name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|---|---|---|---|---|
| Benzenesulfonic acid, 4,4-[3-(2-pyridinyl)-1, 2,4-triazine-5,6-diyl]bi s-, monosodium salt (<1%) CAS#: 69898-45-9 | QSAR (Quantitative Structure Activity Relationship Models) | None reported | None reported | Not Carcinogenic | Toxtree (Ideaconsult, Ltd) |

**Inhalation (Vapor) Exposure Route** If available, see data below
**Inhalation (Gas) Exposure Route** If available, see data below

**Product Germ Cell Mutagenicity** *invitro* **Data**
No data available.

**Ingredient Germ Cell Mutagenicity** *invitro* **Data**
If available, see data below

| Chemical name | Test | Cell Strain | Reported dose | Exposure time | Results | Key literature references and sources for data |
|---|---|---|---|---|---|---|
| Thioglycolic acid (50 - 60%) CAS#: 68-11-1 | Mutation in microorganisms | *Salmonella typhimurium* | None reported | None reported | Negative test result for mutagenicity | IUCLID (The International Uniform Chemical Information Database) |

**Product Germ Cell Mutagenicity** *invivo* **Data**
**Oral Exposure Route** No data available
**Dermal Exposure Route** No data available
**Inhalation (Dust/Mist) Exposure Route** No data available
**Inhalation (Vapor) Exposure Route** No data available
**Inhalation (Gas) Exposure Route** No data available

**Ingredient Germ Cell Mutagenicity** *invivo* **Data**
**Oral Exposure Route** If available, see data below
**Dermal Exposure Route** If available, see data below
**Inhalation (Dust/Mist) Exposure Route** If available, see data below
**Inhalation (Vapor) Exposure Route** If available, see data below
**Inhalation (Gas) Exposure Route** If available, see data below

**Product Reproductive Toxicity Data**
**Oral Exposure Route** No data available
**Dermal Exposure Route** No data available
**Inhalation (Dust/Mist) Exposure Route** No data available
**Inhalation (Vapor) Exposure Route** No data available
**Inhalation (Gas) Exposure Route** No data available

**Ingredient Reproductive Toxicity Data**
**Oral Exposure Route** If available, see data below
**Dermal Exposure Route** If available, see data below
**Inhalation (Dust/Mist) Exposure Route** If available, see data below
**Inhalation (Vapor) Exposure Route** If available, see data below
**Inhalation (Gas) Exposure Route** If available, see data below

## 12. ECOLOGICAL INFORMATION

**Ecotoxicity** Not considered to be harmful to aquatic life

**Product Ecological Data**

**Aquatic toxicity**

**Fish** No data available
**Crustacea** No data available
**Algae** No data available

**Ingredient Ecological Data**

**Aquatic toxicity**

**Fish** If available, see ingredient data below

| Chemical name | Exposure time | Species | Endpoint type | Reported dose | Key literature references and sources for data |
|---|---|---|---|---|---|
| Thioglycolic acid (50 - 60%) CAS#: 68-11-1 | 96 hours | *Pimephales promelas* | $LC_{50}$ | 30 mg/L | IUCLID (The International Uniform Chemical Information Database) |
| Acetic acid, mercapto-, monoammonium salt (10 - 20%) CAS#: 5421-46-5 | 96 hours | None reported | $LC_{50}$ | 8596 mg/L | Estimation through ECOSARS v1.11 part of the Estimation Programs Interface (EPI) Suite™ |
| Benzenesulfonic acid, 4,4-[3-(2-pyridinyl)-1, 2,4-triazine-5,6-diyl]bi s-, monosodium salt (<1%) CAS#: 69898-45-9 | 96 hours | None reported | $LC_{50}$ | 22900 mg/L | Estimation through ECOSARS v1.11 part of the Estimation Programs Interface (EPI) Suite™ |

**Crustacea** If available, see ingredient data below

| Chemical name | Exposure time | Species | Endpoint type | Reported dose | Key literature references and sources for data |
|---|---|---|---|---|---|
| Acetic acid, mercapto-, monoammonium salt (10 - 20%) CAS#: 5421-46-5 | 48 Hours | None reported | $EC_{50}$ | 41 mg/L | Estimation through ECOSARS v1.11 part of the Estimation Programs Interface (EPI) Suite™ |
| Benzenesulfonic acid, 4,4-[3-(2-pyridinyl)-1, 2,4-triazine-5,6-diyl]bi s-, monosodium salt (<1%) CAS#: 69898-45-9 | 48 Hours | None reported | $EC_{50}$ | 97900 mg/L | Estimation through ECOSARS v1.11 part of the Estimation Programs Interface (EPI) Suite™ |

**Algae** If available, see ingredient data below

| Chemical name | Exposure time | Species | Endpoint type | Reported dose | Key literature references and sources for data |
|---|---|---|---|---|---|
| Acetic acid, mercapto-, monoammonium salt (10 - 20%) CAS#: 5421-46-5 | 96 hours | None reported | $EC_{50}$ | 19 mg/L | Estimation through ECOSARS v1.11 part of the Estimation Programs Interface (EPI) Suite™ |
| Benzenesulfonic acid, 4,4-[3-(2-pyridinyl)-1, 2,4-triazine-5,6-diyl]bi | 96 hours | None reported | $EC_{50}$ | 22400 mg/L | Estimation through ECOSARS v1.11 part of the Estimation Programs Interface (EPI) Suite™ |

| | | | | | |
|---|---|---|---|---|---|
| s-, monosodium salt (<1%) CAS#: 69898-45-9 | | | | | |

**Other Information**

**Persistence and degradability**

**Product Biodegradability Data**
No data available.

**Ingredient Biodegradability Data**

| Chemical name | Test method | Biodegradation | Exposure time | Results |
|---|---|---|---|---|
| Thioglycolic acid (50 - 60%) CAS#: 68-11-1 | None reported | 100% | 28 days | Readily biodegradable |
| Acetic acid, mercapto-, monoammonium salt (10 - 20%) CAS#: 5421-46-5 | OECD Test No. 303: Simulation Test - Aerobic Sewage Treatment -- A: Activated Sludge Units; B: Biofilms Estimation through BIOWIN v4.10 part of the Estimation Programs Interface (EPI) Suite™ | None reported | None reported | Not readily biodegradable |

**Bioaccumulation**

**Product Bioaccumulation Data**
No data available.

**Partition Coefficient (n-octanol/water)** Not applicable

**Ingredient Bioaccumulation Data**

| Chemical name | Test method | Exposure time | Species | Bioconcentration factor (BCF) | Results |
|---|---|---|---|---|---|
| Thioglycolic acid (50 - 60%) CAS#: 68-11-1 | None reported | None reported | None reported | None reported | Not determined |
| Acetic acid, mercapto-, monoammonium salt (10 - 20%) CAS#: 5421-46-5 | Estimation through BCFBAF v3.01 part of the Estimation Programs Interface (EPI) Suite™ | None reported | None reported | BCF = 3.162 | Does not have the potential to bioaccumulate |
| Benzenesulfonic acid, 4,4-[3-(2-pyridinyl)-1,2,4-triazine-5,6-diyl]bis-, monosodium salt (<1%) CAS#: 69898-45-9 | None reported | None reported | None reported | None reported | Not determined |

**Mobility**

**Soil Organic Carbon-Water Partition Coefficient** Not applicable

**Water solubility**

| Water solubility classification | Water solubility | Water Solubility Temperature |
|---|---|---|
| Soluble | > 1000 mg/L | 25 °C / 77 °F |

**Other adverse effects**
No information available.

**Endocrine Disruptor Information**

| Chemical name | EU - Endocrine Disrupters Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Endocrine disrupting potential |
|---|---|---|---|
| Benzenesulfonic acid, 4,4-[3-(2-pyridinyl)-1,2,4-triazine-5,6-diyl]bis-, monosodium salt (<1%) CAS#: 69898-45-9 | 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** Not applicable

**Special instructions for disposal** Work in an approved fume hood. Dilute to 3 to 5 times the volume with cold water. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Open cold water tap completely, slowly pour the reacted material to the drain. Allow cold water to run for 5 minutes to completely flush the system.

## 14. TRANSPORT INFORMATION

**U.S. DOT**

| | |
|---|---|
| **UN/ID no** | UN2810 |
| **Proper shipping name** | Toxic, Liquid, Organic, N.O.S. |
| **DOT Technical Name** | (Thioglycolic acid /ammonium thioglycolate solution) |
| **Hazard Class** | 6.1 |
| **Packing Group** | III |

**TDG**

| | |
|---|---|
| **UN/ID no** | UN2810 |
| **Proper shipping name** | Toxic, Liquid, Organic, N.O.S. |
| **TDG Technical Name** | (Thioglycolic acid /ammonium thioglycolate solution) |
| **Hazard Class** | 6.1 |
| **Packing Group** | III |

**IATA**

| | |
|---|---|
| **UN/ID no** | UN2810 |
| **Proper shipping name** | Toxic, Liquid, Organic, N.O.S. |
| **IATA Technical Name** | (Thioglycolic acid /ammonium thioglycolate solution) |
| **Hazard Class** | 6.1 |
| **Packing Group** | III |

**IMDG**

| | |
|---|---|
| **UN/ID no** | UN2810 |
| **IMDG Technical Name** | (Thioglycolic acid /ammonium thioglycolate solution) |
| **Hazard Class** | 6.1 |

| | |
|---|---|
| **Packing Group** | III |

**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** | Does not comply |
| **IECSC** | Complies |
| **KECL** | Complies |
| **PICCS** | Does not comply |
| **TCSI** | Complies |
| **AICS** | Does not comply |
| **NZIoC** | Complies |

**EINECS/ELINCS** - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
**ENCS** - Japan Existing and New Chemical Substances
**IECSC** - China Inventory of Existing Chemical Substances
**KECL** - Korean Existing and Evaluated Chemical Substances
**PICCS** - Philippines Inventory of Chemicals and Chemical Substances
**TCSI** - Taiwan Chemical Substances Inventory
**AICS** - Australian Inventory of Chemical Substances
**NZIoC** - New Zealand Inventory of Chemicals

### US Federal Regulations

**SARA 313**
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

**SARA 311/312 Hazard Categories**

| | |
|---|---|
| **Acute health hazard** | Yes |
| **Chronic Health Hazard** | Yes |
| **Fire hazard** | No |
| **Sudden release of pressure hazard** | No |
| **Reactive Hazard** | No |

**CWA (Clean Water Act)**
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

**CERCLA**
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and

Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

## US State Regulations

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

**IMERC:** Not applicable

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

| Chemical name | New Jersey | Massachusetts | Pennsylvania |
|---|---|---|---|
| Thioglycolic acid<br>68-11-1 | X | X | X |

**U.S. EPA Label Information**

## 16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION

**Special Comments**
None

**Additional information**

**Global Automotive Declarable Substance List (GADSL)**
Not applicable

**NFPA and HMIS Classifications**

| NFPA | Health hazards - 3 | Flammability - 0 | Instability - 0 | Physical and chemical properties - |
|---|---|---|---|---|
| HMIS | Health hazards - 2<br>- * | Flammability - 0 | Physical hazards - 0 | Personal protection - X |

**Key or legend to abbreviations and acronyms used in the safety data sheet**

| | |
|---|---|
| *NIOSH IDLH* | *Immediately Dangerous to Life or Health* |
| ACGIH | ACGIH (American Conference of Governmental Industrial Hygienists) |
| *NDF* | *no data* |

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

| | | | |
|---|---|---|---|
| TWA | TWA (time-weighted average) | STEL | STEL (Short Term Exposure Limit) |
| MAC | Maximum Allowable Concentration | Ceiling | Ceiling Limit Value |
| X | Listed | Vacated | These values have no official status. The only binding levels of contaminants are those listed in the final OSHA PEL. These lists are for reference purposes only. Please note that some reference state regulations of these "liberated" exposure limits in their state regulations. |

| | | | |
|---|---|---|---|
| SKN* | Skin designation | SKN+ | Skin sensitization |
| RSP+ | Respiratory sensitization | ** | Hazard Designation |
| C | Carcinogen | R | Reproductive toxicant |
| M | mutagen | | |

| | |
|---|---|
| **Prepared By** | Hach Product Compliance Department |
| **Issue Date** | 25-Oct-2018 |
| **Revision Date** | 25-Oct-2018 |
| **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.**

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**End of Safety Data Sheet**