SAFETY DATA SHEET

1. IDENTIFICATION

Product identifier
Product Name High Range Plus COD Reagent 200-15,000 mg/l Range

Other means of identification
Product Code(s) 2415951

Safety data sheet number M00525

UN/ID no UN3264

Component of Kits or Sets

Recommended use of the chemical and restrictions on use
Recommended Use Laboratory Use. Determination of Chemical Oxygen Demand.
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
(970) 669-3050

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

Product Information
Chemical Name Not applicable
Formula Not applicable
CAS No Not applicable
Alternate CAS Number Not applicable
NIOSH (RTECS) Number None reported

2. HAZARDS IDENTIFICATION

Classification

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

Corrosive to metals	Category 1
Acute toxicity - Oral	Category 4
Acute toxicity - Dermal	Category 3
Skin corrosion/irritation	Category 1 Sub-category A
Serious eye damage/eye irritation	Category 1
Skin sensitization	Category 1
Germ cell mutagenicity	Category 1B
Carcinogenicity	Category 1A

Reproductive toxicity	Category 2
Specific target organ toxicity (repeated exposure)	Category 2

Hazards not otherwise classified (HNOC)
Data insufficient for GHS classification but significant enough for mention suggests:
CANCER HAZARD. STRONG INORGANIC ACID MISTS CONTAINING SULFURIC ACID CAN CAUSE CANCER.
Inhalation of low concentrations of sulfuric acid may result in airway irritation such as cough and shortness of breath; high concentrations may result in acute effects such as cough.

Label elements

Signal word - Danger

Hazard statements
H290 - May be corrosive to metals
H302 - Harmful if swallowed
H311 - Toxic in contact with skin
H314 - Causes severe skin burns and eye damage
H317 - May cause an allergic skin reaction
H340 - May cause genetic defects
H350 - May cause cancer
H361 - Suspected of damaging fertility or the unborn child
H373 - May cause damage to organs through prolonged or repeated exposure

Precautionary statements
P201 - Obtain special instructions before use
P280 - Wear protective gloves
P260 - Do not breathe dust/fume/gas/mist/vapors/spray
P310 - Immediately call a POISON CENTER or doctor/physician
P270 - Do not eat, drink or smoke when using this product
P272 - Contaminated work clothing should not be allowed out of the workplace
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
P303 + P361 + P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
P390 - Absorb spillage to prevent material damage

Other Information
Very toxic to aquatic life with long lasting effects

Very toxic to aquatic life

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance
Not applicable

Mixture

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Chemical Family Mixture.

Chemical Name	CAS No	Weight-%	HMRIC #
Sulfuric Acid	7664-93-9	59.78	-
Demineralized Water	7732-18-5	38.91	-
Mercuric Sulfate	7783-35-9	< 1%	-
Silver Sulfate	10294-26-5	0.44	-
Dichromic Acid	13530-68-2	< 1%	-

4. FIRST AID MEASURES

Description of first aid measures

General advice In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

Eye contact IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician immediately.

Skin contact IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician immediately.

Inhalation IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a physician immediately.

Ingestion IF SWALLOWED: Rinse Mouth. Do NOT induce vomiting. Call a physician immediately.

Self-protection of the first aider Use personal protective equipment as required. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Most important symptoms and effects, both acute and delayed

Symptoms See Section 11: TOXICOLOGICAL INFORMATION.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media Caution: Use of water spray when fighting fire may be inefficient.

Flammable properties
Contact with metals may evolve flammable hydrogen gas. During a fire, irritating and highly toxic gases may be generated by

thermal decomposition.

Specific hazards arising from the chemical
The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating and toxic gases and vapors. In the event of fire and/or explosion do not breathe fumes.

Hazardous combustion products This material will not burn.

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective 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.

EC Notice Only persons properly qualified to respond to an emergency involving hazardous substances should respond to a spill involving chemicals. See Section 13, Special Instructions for disposal assistance.

WHMIS Notice Only persons properly qualified to respond to an emergency involving hazardous substances should respond to a spill involving chemicals. See Section 13, Special Instructions for disposal assistance.

Personal precautions, protective equipment and emergency procedures

Personal precautions Evacuate personnel to safe areas. Remove all sources of ignition. Do not touch or walk through spilled material. Ventilate affected area. Use personal protective equipment as required.

For emergency responders Use personal protection recommended in Section 8.

Environmental precautions

Environmental precautions Avoid release to the environment. 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. Dike far ahead of liquid spill for later disposal.

Methods for cleaning up Take necessary precautions in observance of pertinent physical hazards. Neutralize spill if necessary. Soak up with inert absorbent material. Take up mechanically, placing in appropriate containers for disposal. Clean contaminated surface thoroughly. Dispose of in accordance with local, state and federal regulations or laws.

Emergency Response Guide Number 154

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Avoid contact with skin, eyes or clothing. Use personal protective equipment as required. Ensure adequate ventilation, especially in confined areas. In case of insufficient ventilation, wear suitable respiratory equipment. Use only with adequate ventilation and in closed systems. Absorb spillage to prevent material damage.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep container tightly closed in a dry and well-ventilated place. Keep out of the reach of children. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep in properly labeled containers. Keep/store only in original container.

Flammability class Not applicable

Incompatible materials May react violently in contact with:. caustics. Incompatible with:. Metals. Incompatible with strong acids and bases. Incompatible with oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines .

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Sulfuric Acid 50 - 60%	TWA: 0.2 mg/m³	TWA: 1 mg/m³ (vacated) TWA: 1 mg/m³	IDLH: 15 mg/m³ TWA: 1 mg/m³
Mercuric Sulfate < 1%	TWA: 0.025 mg/m³ TWA: 0.1 mg/m³ S*	(vacated) Ceiling: 0.1 mg/m³	IDLH: 10 mg/m³ Hg Ceiling: 0.1 mg/m³ Hg TWA: 0.05 mg/m³ except Organo alkyls Hg vapor
Silver Sulfate 0 - 10%	TWA: 0.01 mg/m³	TWA: 0.01 mg/m³ (vacated) TWA: 0.01 mg/m³	IDLH: 10 mg/m³ Ag TWA: 0.01 mg/m³ Ag
Dichromic Acid < 1%	NDF	TWA: 5 µg/m³	TWA: 0.0002 mg/m³ Cr

Chemical Name	Alberta OEL	British Columbia OEL	Manitoba OEL	New Brunswick OEL	New Foundland & Labrador OEL
Sulfuric Acid 50 - 60%	TWA: 1 mg/m³ STEL: 3 mg/m³	TWA: 0.2 mg/m³	TWA: 0.2 mg/m³	TWA: 1 mg/m³ STEL: 3 mg/m³	TWA: 0.2 mg/m³
Mercuric Sulfate < 1%	TWA: 0.025 mg/m³ SKN*	TWA: 0.025 mg/m³ TWA: 0.1 mg/m³ SKN* R	TWA: 0.025 mg/m³ TWA: 0.1 mg/m³ SKN*	TWA: 0.025 mg/m³ SKN*	TWA: 0.025 mg/m³ TWA: 0.1 mg/m³ SKN*
Silver Sulfate 0 - 10%	TWA: 0.01 mg/m³	TWA: 0.01 mg/m³ STEL: 0.03 mg/m³	TWA: 0.01 mg/m³	TWA: 0.01 mg/m³	TWA: 0.01 mg/m³
Dichromic Acid < 1%	TWA: 0.5 mg/m³	NDF	NDF	NDF	NDF

Chemical Name	Northwest Territories OEL	Nova Scotia OEL	Nunavut OEL	Ontario TWA	Prince Edward Island OEL
Sulfuric Acid 50 - 60%	TWA: 0.2 mg/m³ STEL: 0.6 mg/m³	TWA: 0.2 mg/m³	TWA: 1 mg/m³ STEL: 3 mg/m³	TWA: 0.2 mg/m³	TWA: 0.2 mg/m³
Mercuric Sulfate < 1%	TWA: 0.025 mg/m³ TWA: 0.1 mg/m³ STEL: 0.075 mg/m³ STEL: 0.3 mg/m³ SKN*	TWA: 0.025 mg/m³ TWA: 0.1 mg/m³ SKN*	NDF	TWA: 0.025 mg/m³ TWA: 0.1 mg/m³ SKN*	TWA: 0.025 mg/m³ TWA: 0.1 mg/m³
Silver Sulfate 0 - 10%	TWA: 0.01 mg/m³ STEL: 0.03 mg/m³	TWA: 0.01 mg/m³	TWA: 0.01 mg/m³ STEL: 0.03 mg/m³	TWA: 0.01 mg/m³	TWA: 0.01 mg/m³

Chemical Name	Quebec OEL	Saskatchewan OEL	Yukon OEL
Sulfuric Acid 50 - 60%	TWA: 1 mg/m³ STEL: 3 mg/m³	TWA: 0.2 mg/m³ STEL: 0.6 mg/m³	STEL: 1 mg/m³ TWA: 1 mg/m³
Mercuric Sulfate	TWA: 0.025 mg/m³	TWA: 0.025 mg/m³ TWA: 0.1	NDF

< 1%	SKN*	mg/m³ STEL: 0.075 mg/m³ STEL: 0.3 mg/m³ SKN*	
Silver Sulfate 0 - 10%	TWA: 0.01 mg/m³	TWA: 0.01 mg/m³ STEL: 0.03 mg/m³	STEL: 0.03 mg/m³ TWA: 0.01 mg/m³
Dichromic Acid < 1%	NDF	TWA: 0.5 mg/m³ STEL: 1.5 mg/m³	NDF

Other Information Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

Legend See section 16 for terms and abbreviations

Appropriate engineering controls

Engineering Controls Showers
Eyewash stations
Ventilation systems

Individual protection measures, such as personal protective equipment

Eye/face protection Tight sealing safety goggles. Face protection shield. Avoid contact with eyes. Wear tight sealing safety goggles and/or face protection shield.

Skin and body protection Gloves made of plastic or rubber. Suitable protective clothing. Rubber boots. Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Wear chemical resistant clothing such as gloves, apron, boots or whole bodysuits made from neoprene, as appropriate.

Respiratory protection In case of insufficient ventilation, wear suitable respiratory equipment. Do not breathe gas/fumes/vapor/spray. If no local exhaust use approved fume hood and/or respirator. In case of inadequate ventilation wear respiratory protection.

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Take off all contaminated clothing and wash it before reuse. Wash hands thoroughly after handling. Regular cleaning of equipment, work area and clothing is recommended.

Environmental exposure controls
Prevent product from entering drains. Do not allow into any sewer, on the ground or into any body of water. Local authorities should be advised if significant spillages cannot be contained.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state Liquid

Gas Under Pressure Not classified according to GHS criteria

Appearance Turbid solution
aqueous solution

Color light orange

Odor Odorless

Odor threshold No data available

Property	Values	Remarks • Method
Molecular weight	No data available	

pH	< 0.5	
Melting point/freezing point	-72 °C / -98 °F	
Boiling point / boiling range	99 °C / 210 °F	
Evaporation rate	0.59 (water = 1) Estimation based on theoretical calculation	
Vapor pressure	12.976 mm Hg / 1.73 kPa at 20 °C / 68 °F	Estimation based on theoretical calculation
Vapor density (air = 1)	0.62	
Specific gravity (water = 1 / air = 1)	1.550	
Partition Coefficient (n-octanol/water)	Not applicable	
Soil Organic Carbon-Water Partition Coefficient	Not applicable	
Autoignition temperature	No data available	
Decomposition temperature	No data available	
Dynamic viscosity	~ 2 cP (mPa s) at 20 °C / 68 °F	
Kinematic viscosity	~ 1.29 cSt (mm^2/s) at 20 °C / 68 °F	

Solubility(ies)

Water solubility

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

Solubility in other solvents

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

Other Information

Metal Corrosivity	Classified as corrosive to metal according to GHS criteria
GHS Metal Corrosivity Classification	Category 1, H290
Steel Corrosion Rate	4.14 mm/yr / 0.16 in/yr
Aluminum Corrosion Rate	99.6 mm/yr / 3.92 in/yr
Bulk density	Not applicable
Explosive properties	Not classified according to GHS criteria.
Explosion data	Not Flammable, but reacts with most metals to form flammable hydrogen gas. During a fire, corrosive and toxic gases may be generated by thermal decomposition.
Upper explosion limit	No data available

Lower explosion limit	No data available
Flammable properties	Contact with metals may evolve flammable hydrogen gas. During a fire, irritating and highly toxic gases may be generated by thermal decomposition.
Flammability Limit in Air	
Upper flammability limit:	No data available
Lower flammability limit:	No data available
Flash point	No data available
Oxidizing properties	Not classified according to GHS criteria.
Reactivity propeties	Not classified as self-reactive, pyrophoric, self-heating or emitting flammable gases in contact with water according to GHS criteria.

10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.

Special dangers of the product
None reported

Possibility of Hazardous Reactions
No information available.

Hazardous polymerization Hazardous polymerization does not occur.

Conditions to avoid
Exposure to light or contamination by organic materials will affect this product's stability. Exposure to air or moisture over prolonged periods.

Incompatible materials
May react violently in contact with:. caustics. Incompatible with:. Metals. Incompatible with strong acids and bases. Incompatible with oxidizing agents.

Hazardous Decomposition Products
Thermal decomposition can lead to release of irritating and toxic gases and vapors.

Explosive properties
Not classified according to GHS criteria. Not Flammable, but reacts with most metals to form flammable hydrogen gas. During a fire, corrosive and toxic gases may be generated by thermal decomposition.

Upper explosion limit No data available

Lower explosion limit No data available

Autoignition temperature

No data available

Sensitivity to Static Discharge
None reported

Sensitivity to Mechanical Impact
None reported

11. TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Product Information	Toxic in contact with skin. Corrosive to skin. Corrosive to eyes. Harmful if swallowed. Harmful by inhalation.
Inhalation	Causes burns. Corrosive by inhalation. Avoid breathing dust/fume/gas/mist/vapors/spray. Harmful by inhalation.
Eye contact	Corrosive to the eyes and may cause severe damage including blindness.
Skin contact	Toxic in contact with skin. Cause severe skin burns and eye damage.
Ingestion	Ingestion causes burns of the upper digestive and respiratory tracts. Harmful if swallowed.
Aggravated Medical Conditions	Preexisting eye disorders. Kidney disorders. Skin disorders. Respiratory disorders. Teeth.
Toxicologically synergistic products	None known.
Toxicokinetics, metabolism and distribution	See ingredients information below.

Chemical Name	Toxicokinetics, metabolism and distribution
Sulfuric Acid (50 - 60%) CAS#: 7664-93-9	The corrosivity of sulfuric acid makes it difficult to asses it's effects on metabolism. Its corrosivity is also the main contributor to acute deaths, therefore it is not classified for acute toxicity.
Mercuric Sulfate (< 1%) CAS#: 7783-35-9	Central nervous system is the most sensitive target for mercury exposure.
Dichromic Acid (< 1%) CAS#: 13530-68-2	Chromium is human carcenogen mostly by inhalation exposure.

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

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral)	825.00 mg/kg

ATEmix (dermal)	809.00 mg/kg
ATEmix (inhalation-dust/mist)	5.76 mg/L
ATEmix (inhalation-vapor)	167.00 mg/L

Ingredient Acute Toxicity Data

Oral Exposure Route

Chemical Name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Dichromic Acid (< 1%) CAS#: 13530-68-2	Rat LD_{50}	80 mg/kg	None reported	None reported	No information available
Chemical Name	**Endpoint type**	**Reported dose**	**Exposure time**	**Toxicological effects**	**Key literature references and sources for data**
Mercuric Sulfate (< 1%) CAS#: 7783-35-9	Mouse LD_{50}	25 mg/kg	None reported	None reported	RTECS (Registry of Toxic Effects of Chemical Substances)

Dermal Exposure Route

Chemical Name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Mercuric Sulfate (< 1%) CAS#: 7783-35-9	None reported	None reported	None reported	None reported	No information available
Dichromic Acid (< 1%) CAS#: 13530-68-2	None reported	None reported	None reported	None reported	No information available
Chemical Name	**Endpoint type**	**Reported dose**	**Exposure time**	**Toxicological effects**	**Key literature references and sources for data**
Mercuric Sulfate (< 1%) CAS#: 7783-35-9	Rat LD_{50}	625 mg/kg	None reported	None reported	RTECS (Registry of Toxic Effects of Chemical Substances)

Inhalation (Dust/Mist) Exposure Route

Chemical Name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Mercuric Sulfate (< 1%) CAS#: 7783-35-9	None reported	None reported	None reported	None reported	No information available
Dichromic Acid (< 1%) CAS#: 13530-68-2	None reported	None reported	None reported	None reported	No information available

Inhalation (Vapor) Exposure Route No data available

Inhalation (Gas) Exposure Route No data available

Product Skin Corrosion/Irritation Data
No data available.

Ingredient Skin Corrosion/Irritation Data

Chemical Name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
Sulfuric Acid (50 - 60%) CAS#: 7664-93-9	Existing human experience	Human	None reported	None reported	Corrosive to skin	HSDB (Hazardous Substances Data Bank)

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

Ingredient Eye Damage/Eye Irritation Data

Chemical Name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
Sulfuric Acid (50 - 60%) CAS#: 7664-93-9	Existing human experience	Human	None reported	None reported	Corrosive to eyes	HSDB (Hazardous Substances Data Bank)
Silver Sulfate (0 - 10%) CAS#: 10294-26-5	Standard Draize Test	Rabbit	180 mg	None reported	Corrosive to eyes	ECHA (The European Chemicals Agency)

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 No data available.

Respiratory Sensitization Exposure Route No data available.

Chronic Toxicity Information

Product Repeat Dose 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 Repeat Dose 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

Inhalation (Gas) Exposure Route No data available

Chemical Name	CAS No	ACGIH	IARC	NTP	OSHA
Sulfuric Acid	7664-93-9	A2	1	X	X
Mercuric Sulfate	7783-35-9	-	3	-	-
Silver Sulfate	10294-26-5	-	-	-	-
Dichromic Acid	13530-68-2	-	Group 1	Known	X

Legend

ACGIH (American Conference of Governmental Industrial Hygienists)	A2 - Suspected Human Carcinogen
IARC (International Agency for Research on Cancer)	Group 1 - Carcinogenic to Humans Not classifiable as a human carcinogen
NTP (National Toxicology Program)	Known - Known Carcinogen
OSHA (Occupational Safety and Health Administration of the US Department of Labor)	X - Present

Product Carcinogenicity Data No data available

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

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

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

Ingredient Germ Cell Mutagenicity *invitro* **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 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

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 No data available

Dermal Exposure Route No data available

Inhalation (Dust/Mist) Exposure Route No data available

Inhalation (Vapor) Exposure Route

Inhalation (Gas) Exposure Route No data available

12. ECOLOGICAL INFORMATION

Ecotoxicity Very toxic to aquatic life with long lasting effects.

Product Ecological Data

Aquatic toxicity

Fish No data available

Crustacea No data available

Algae No data available

Terrestrial toxicity

Soil No data available

Vertebrates No data available

Invertebrates No data available

Ingredient Ecological Data

Aquatic toxicity

Fish

Chemical Name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Silver Sulfate (0 - 10%) CAS#: 10294-26-5	96 hours	*Pimephales promelas*	LC_{50}	0.0012 mg/L	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)
Dichromic Acid (< 1%) CAS#: 13530-68-2	96 hours	None reported	LC_{50}	0.0031 mg/L	CEPA (Canadian Environmental Protection Agency)

Chemical Name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Sulfuric Acid (50 - 60%) CAS#: 7664-93-9	96 hours	*Lepomis macrochirus*	LC_{50}	> 16 mg/L	IUCLID (The International Uniform Chemical Information Database)
Mercuric Sulfate (< 1%) CAS#: 7783-35-9	7 days	*Oncorhynchus gorbuscha*	LC_{50}	0.14 mg/L	EPA (United States Environmental Protection Agency)
Chemical Name	**Exposure time**	**Species**	**Endpoint type**	**Reported dose**	**Key literature references and sources for data**
Silver Sulfate (0 - 10%) CAS#: 10294-26-5	217 days	*Salmo trutta*	EC_{10}	0.00019 mg/L	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)

Crustacea

Chemical Name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Silver Sulfate (0 - 10%) CAS#: 10294-26-5	48 Hours	*Daphnia magna*	LC_{50}	0.00022 mg/L	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)
Chemical Name	**Exposure time**	**Species**	**Endpoint type**	**Reported dose**	**Key literature references and sources for data**
Sulfuric Acid (50 - 60%) CAS#: 7664-93-9	48 hours	*Crangon crangon*	EC_{50}	> 70 mg/L	IUCLID (The International Uniform Chemical Information Database)
Silver Sulfate (0 - 10%) CAS#: 10294-26-5	48 hours	*Ceriodaphnia dubia*	EC_{50}	0.0045 mg/L	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)

Algae

Chemical Name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Mercuric Sulfate (< 1%) CAS#: 7783-35-9	14 days	*Pseudokirchnerella subcapitata*	EC_{50}	0.033 mg/L	EPA (United States Environmental Protection Agency)

Terrestrial toxicity

Soil No data available

Vertebrates No data available

Invertebrates No data available

Other Information

Canadian Environmental Protection Act (CEPA) - Domestic Substances List (DSL): Environmentally Hazardous Substances Categorizations

Persistence and degradability
None known.

Product Biodegradability Data
If available, see ingredient data below.

Ingredient Biodegradability Data
Test data reported below

Chemical Name	Test method	Biodegradation	Exposure time	Results
Mercuric Sulfate (< 1%) CAS#: 7783-35-9	None reported	None reported	None reported	Not readily biodegradable
Silver Sulfate (0 - 10%) CAS#: 10294-26-5	Inorganic Salt	None reported	None reported	Not readily biodegradable

Bioaccumulation
If available, see ingredient data below.

Product Bioaccumulation Data If available, see ingredient data below.

Ingredient Bioaccumulation Data

Chemical Name	Test method	Exposure time	Species	Bioconcentration factor (BCF)	Results
Mercuric Sulfate (< 1%) CAS#: 7783-35-9	None reported	None reported	None reported	BCF > 1000	Has the potential to bioaccumulate
Silver Sulfate (0 - 10%) CAS#: 10294-26-5	None reported	8 days	*Oncorhynchus mykiss*	BCF = 2.5	Does not have the potential to bioaccumulate

Additional information

Product Information

Partition Coefficient (n-octanol/water) Not applicable

Ingredient Information

Chemical Name	Partition Coefficient (n-octanol/water)	Method
Silver Sulfate (0 - 10%) CAS#: 10294-26-5	log K_{ow} > 6.18	Estimation through KOWWIN v1.68 part of the Estimation Programs Interface (EPI) Suite™

Mobility
If available, see ingredient data below.

Product Information

Soil Organic Carbon-Water Partition Coefficient Not applicable

Ingredient Information

Chemical Name	Soil Organic Carbon-Water Partition Coefficient	Method
Silver Sulfate	log K_{oc} > 4.83	No information available

(0 - 10%) CAS#: 10294-26-5		

Additional information

Water solubility

Product Information

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

Ingredient Information

Chemical Name	Water solubility classification	Water solubility	Water solubility temperature °C	Water solubility temperature °F
Sulfuric Acid (50 - 60%) CAS#: 7664-93-9	Soluble	> 1000 mg/L	25 °C	77 °F
Silver Sulfate (0 - 10%) CAS#: 10294-26-5	Soluble	8000 mg/L	20 °C	68 °F
Dichromic Acid (< 1%) CAS#: 13530-68-2	Soluble	> 1000 mg/L	25 °C	77 °F

Other adverse effects
Contains a substance with an endocrine-disrupting potential.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal of wastes Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated packaging Do not reuse container.

US EPA Waste Number D002

Special instructions for disposal Dispose of all mercury contaminated material at an E.P.A. hazardous waste facility. Dispose of material in an E.P.A. approved hazardous waste facility.

14. TRANSPORT INFORMATION

DOT

UN/ID no UN3264
Proper shipping name Corrosive Liquid, Acidic, Inorganic, N.O.S.
DOT Technical Name (Sulphuric Acid/Chromic Acid Solution)
Hazard Class 8
Packing Group II
Marine pollutant This product contains a chemical which is listed as a severe marine pollutant according to DOT.
Emergency Response Guide Number 154

TDG

UN/ID no	UN3264
Proper shipping name	Corrosive Liquid, Acidic, Inorganic, N.O.S.
Hazard Class	8
Packing Group	II
Marine pollutant	This product contains a chemical which is listed as a severe marine pollutant according to TDG. Lead compounds.

IATA

UN/ID no	UN3264
Proper shipping name	Corrosive Liquid, Acidic, Inorganic, N.O.S.
Hazard Class	8
Packing Group	II
ERG Code	154

IMDG

UN/ID no	UN3264
Proper shipping name	Corrosive Liquid, Acidic, Inorganic, N.O.S.
Hazard Class	8
Packing Group	II
Marine pollutant	This material meets the definition of a marine pollutant

15. REGULATORY INFORMATION

National Inventories

TSCA	Complies
DSL/NDSL	Complies
INSQ	Does not comply

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
INSQ - National Inventory of Chemical Substances in Mexico

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 %
Sulfuric Acid (CAS #: 7664-93-9)	1.0
Dichromic Acid (CAS #: 13530-68-2)	0.1

SARA 311/312 Hazard Categories

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

CWA (Clean Water Act)

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

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Sulfuric Acid 7664-93-9	1000 lb	-	-	X
Mercuric Sulfate 7783-35-9	10 lb	X	-	X
Silver Sulfate 10294-26-5	-	X	-	-
Dichromic Acid 13530-68-2	-	X	-	-

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Sulfuric Acid 7664-93-9	1000 lb	1000 lb	RQ 1000 lb final RQ RQ 454 kg final RQ
Mercuric Sulfate 7783-35-9	10 lb	-	RQ 10 lb final RQ RQ 4.54 kg final RQ

U.S. - DEA (Drug Enforcement Administration) List I & List II

Chemical Name	U.S. - DEA (Drug Enforcement Administration) - List I or Precursor Chemicals	U.S. - DEA (Drug Enforcement Administration) - List II or Essential Chemicals
Sulfuric Acid (50 - 60%) CAS#: 7664-93-9	Not Listed	50 gallon Export Volume (Exports, transshipments and international transactions to designated countries)

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals

Chemical Name	California Proposition 65
Sulfuric Acid (CAS #: 7664-93-9)	Carcinogen
Mercuric Sulfate (CAS #: 7783-35-9)	Developmental
Dichromic Acid (CAS #: 13530-68-2)	Carcinogen Developmental Female Reproductive Male Reproductive

IMERC: Contains Mercury Dispose of in accordance with local, state and federal regulations or laws.

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Sulfuric Acid 7664-93-9	X	X	X
Mercuric Sulfate 7783-35-9	X	X	X
Silver Sulfate 10294-26-5	X	-	X
Dichromic Acid 13530-68-2	X	-	X

U.S. EPA Label Information
EPA Pesticide Registration Number Not applicable

Canada - CEPA - Mercury Containing Products

Chemical Name	Canada - CEPA - Mercury Containing Products
Mercuric Sulfate CAS#: 7783-35-9	Applies

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

Special Comments
This product contains mercury and may be subject to reporting and recordkeeping requirements

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 - See section 8 for more information

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)
X	Listed	Vacated	te 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

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Revision Date	13-Jun-2016
Revision Note	New SDS

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