SAFETY DATA SHEET

1. IDENTIFICATION

Product identifier
Product Name Digestion Solution for COD 3-150 mg/L Range

Other means of identification
Product Code(s) 2125825

Safety data sheet number M00486

UN/ID no UN1830

Recommended use of the chemical and restrictions on use
Recommended Use Determination of Chemical Oxygen Demand. Laboratory Use.
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 +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)

Corrosive to metals	Category 1
Acute toxicity - Oral	Category 4
Acute toxicity - Dermal	Category 3
Skin corrosion/irritation	Category 1
Serious eye damage/eye irritation	Category 1
Skin sensitization	Category 1

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 EUH208 - May produce an allergic reaction

Precautionary statements
P280 - Wear protective gloves/protective clothing/eye protection/face protection
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
P363 - Wash contaminated clothing before reuse
P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention
P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
P390 - Absorb spillage to prevent material damage
P405 - Store locked up
P406 - Store in corrosive resistant stainless steel container with a resistant inliner
P501 - Dispose of contents/ container to an approved waste disposal plant
P310 - Immediately call a POISON CENTER or doctor/physician

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

Chemical Family Mixture.

Percent ranges are used where confidential product information is applicable.

Chemical name	CAS No	Percent Range	HMRIC #
Sulfuric acid	7664-93-9	80 - 90%	-
Mercuric sulfate	7783-35-9	0.1 - 1%	-
Sulfuric acid, disilver(1+) salt	10294-26-5	0.1 - 1%	-
Chromic acid (H2CrO4)	7738-94-5	<0.1%	-

4. FIRST AID MEASURES

Description of first aid measures

General advice See section 8 for PPE that may be required during handling. Do not breathe dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing. In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible). If no local exhaust use approved fume hood and/or respirator. If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician. Remove from exposure, lie down. Immediate medical attention is required. IF IN EYES: Flush eyes for at least 15 minutes. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. May cause allergic skin reaction. Repeated contact may cause allergic reactions in very susceptible persons.

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 First aider: Pay attention to self-protection. Use personal protective equipment as required. Avoid contact with skin, eyes or clothing. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. 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.

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 Causes sensitization.

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

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
Water runoff can cause environmental damage. Dike and collect water used to fight fire.

6. ACCIDENTAL RELEASE MEASURES

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

Personal precautions, protective equipment and emergency procedures

Personal precautions Evacuate personnel to safe areas. 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 Do not allow into any sewer, on the ground or into any body of water. Should not be released into the environment. Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. 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 137

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Absorb spillage to prevent material damage.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep out of the reach of children. Keep container tightly closed in a dry and well-ventilated place. 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

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Sulfuric acid 80 - 90%	TWA: 0.2 mg/m^3	TWA: 1 mg/m^3 (vacated) TWA: 1 mg/m^3	IDLH: 15 mg/m^3 TWA: 1 mg/m^3
Mercuric sulfate	TWA: 0.025 mg/m^3	(vacated) Ceiling: 0.1 mg/m^3	IDLH: 10 mg/m^3 Hg

0.1 - 1%	S*		Ceiling: 0.1 mg/m³ Hg TWA: 0.05 mg/m³ except Organo alkyls Hg vapor
Sulfuric acid, disilver(1+) salt 0.1 - 1%	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
Chromic acid (H2CrO4) <0.1%	NDF	TWA: 5 µg/m³ (vacated) Ceiling: 0.1 mg/m³ Ceiling: 0.1 mg/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 80 - 90%	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 0.1 - 1%	TWA: 0.025 mg/m³ SKN*	TWA: 0.025 mg/m³ SKN* R	TWA: 0.025 mg/m³ SKN*	TWA: 0.025 mg/m³ SKN*	TWA: 0.025 mg/m³ SKN*
Sulfuric acid, disilver(1+) salt 0.1 - 1%	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
Chromic acid (H2CrO4) <0.1%	TWA: 0.05 mg/m³ TWA: 0.5 mg/m³	NDF	NDF	TWA: 0.05 mg/m³	NDF

Chemical name	Northwest Territories OEL	Nova Scotia OEL	Nunavut OEL	Ontario TWA	Prince Edward Island OEL
Sulfuric acid 80 - 90%	TWA: 0.2 mg/m³ STEL: 0.6 mg/m³	TWA: 0.2 mg/m³	TWA: 0.2 mg/m³ STEL: 0.6 mg/m³	TWA: 0.2 mg/m³	TWA: 0.2 mg/m³
Mercuric sulfate 0.1 - 1%	TWA: 0.025 mg/m³ STEL: 0.075 mg/m³ SKN*	TWA: 0.025 mg/m³ SKN*	TWA: 0.025 mg/m³ STEL: 0.075 mg/m³ SKN*	TWA: 0.025 mg/m³ SKN*	TWA: 0.025 mg/m³
Sulfuric acid, disilver(1+) salt 0.1 - 1%	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 80 - 90%	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 0.1 - 1%	TWA: 0.025 mg/m³ SKN*	TWA: 0.025 mg/m³ STEL: 0.075 mg/m³ SKN*	NDF
Sulfuric acid, disilver(1+) salt 0.1 - 1%	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
Chromic acid (H2CrO4) <0.1%	NDF	TWA: 0.05 mg/m³ TWA: 0.5 mg/m³ STEL: 0.15 mg/m³ STEL: 1.5 mg/m³	STEL: 0.1 mg/m³ TWA: 0.1 mg/m³

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 If no local exhaust use approved fume hood or self-contained breathing apparatus
If no local exhaust use approved fume hood and/or respirator
Showers
Eyewash stations

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear tight sealing safety goggles and/or face protection shield. Avoid contact with eyes.
Skin and body protection	Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.
Respiratory protection	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	Avoid breathing (dust, vapor, mist, gas). Avoid contact with skin, eyes or clothing. Use personal protective equipment as required. Wear suitable gloves and eye/face protection. Wash face, hands and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. Keep away from food, drink and animal feeding stuffs. Regular cleaning of equipment, work area and clothing is recommended. Handle in accordance with good industrial hygiene and safety practice. Avoid prolonged or repeated contact with skin. Take off all contaminated clothing and wash it before reuse.

Environmental exposure controls
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	**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	~ 4 °C / 39 °F	Estimation based on theoretical calculation
Boiling point / boiling range	~ 232 °C / 450 °F	Estimation based on theoretical calculation
Evaporation rate	1.04 (water = 1)	Estimation based on theoretical calculation
Vapor pressure	1.8 mm Hg / 0.24 kPa at 25 °C / 77 °F	Estimation based on theoretical calculation
Vapor density (air = 1)	0.03 (air = 1)	
Specific gravity (water = 1 / air = 1)	1.78	Estimation based on theoretical calculation
Partition Coefficient (n-octanol/water)	Not applicable	
Soil Organic Carbon-Water Partition	Not applicable	

Coefficient

Autoignition temperature No data available

Decomposition temperature 300 °C / 572 °F

Dynamic viscosity ~ 25 cP (mPa s) at 20 °C / 68 °F

Kinematic viscosity ~ 14.045 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
None reported	No information available	No data available	No information available

Other Information

Metal Corrosivity Classified as corrosive to metal according to GHS criteria

GHS Metal Corrosivity Classification Category 1, H290

Steel Corrosion Rate 4.88 mm/yr / 0.19 in/yr

Aluminum Corrosion Rate 55.4 mm/yr / 2.18 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 During a fire, irritating and highly toxic gases may be generated by thermal decomposition. Contact with metals may evolve flammable hydrogen gas.

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

Reactivity propeties
Not classified as self-reactive, pyrophoric, self-heating or emitting flammable gases in contact with water according to GHS criteria

Chemical stability
Stable under recommended storage conditions.

Special dangers of the product
None reported

Possibility of Hazardous Reactions
None under normal processing.

Hazardous polymerization Hazardous polymerization does not occur.

Conditions to avoid
Extremes of temperature and direct sunlight. Incompatible materials.

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

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

NIOSH (RTECS) Number None reported

Information on Likely Routes of Exposure

Product Information	Toxic in contact with skin. Corrosive to skin. Corrosive to eyes. Harmful if swallowed. Skin sensitizer.
Inhalation	Causes burns. Corrosive by inhalation.

Eye contact	Corrosive to the eyes and may cause severe damage including blindness. Causes burns.
Skin contact	Toxic in contact with skin. Cause severe skin burns and eye damage. Causes burns. May cause sensitization by skin contact.
Ingestion	Ingestion causes burns of the upper digestive and respiratory tracts. Harmful if swallowed. Causes burns.
Aggravated Medical Conditions	Eye disorders. Skin disorders. Respiratory disorders.
Toxicologically synergistic products	None known.
Toxicokinetics, metabolism and distribution	See ingredients information below.

Chemical name	Toxicokinetics, metabolism and distribution
Sulfuric acid (80 - 90%) CAS#: 7664-93-9	The corrosivity of sulfuric acid makes it difficult to assess its effects on metabolism. Its corrosivity is also the main contributor to acute deaths, therefore it is not classified for acute toxicity.
Mercuric sulfate (0.1 - 1%) CAS#: 7783-35-9	Central nervous system is the most sensitive target for mercury exposure.
Chromic acid (H2CrO4) (<0.1%) CAS#: 7738-94-5	Chromium is human carcinogen mostly by inhalation exposure.

Product Acute Toxicity Data Test data reported below

Oral Exposure Route

Endpoint type	Reported dose	Toxicological effects	Key literature references and sources for data
Rat LD_{50}	360 mg/kg	**Behavioral** Salivation Sedation Vocalization **Chronic** Death **Eye** Ptosis **Gastrointestinal** Corrosion of the stomach Enteritis of the intestines **Liver** Adhesion of the liver to the stomach **Lungs, Thorax, or Respiration** Congestion of the lungs Respiratory depression Nasal discharge **Skin and Appendages** Piloerection	Outside testing

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

Acute Toxicity Estimations (ATE)

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

ATEmix (dermal)	610.00 mg/kg
ATEmix (inhalation-dust/mist)	6.11 mg/L

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
Sulfuric acid, disilver(1+) salt (0.1 - 1%) CAS#: 10294-26-5	Rat LD_{50}	> 5000 mg/kg	None reported	None reported	Vendor SDS
Chromic acid (H_2CrO_4) (<0.1%) CAS#: 7738-94-5	Rat LD_{50}	80 mg/kg	None reported	**Lungs, Thorax, or Respiration** Cyanosis **Gastrointestinal** Hypermotility Diarrhea **Skin and Appendages** Other changes	RTECS (Registry of Toxic Effects of Chemical Substances)
Chemical name	**Endpoint type**	**Reported dose**	**Exposure time**	**Toxicological effects**	**Key literature references and sources for data**
Sulfuric acid (80 - 90%) CAS#: 7664-93-9	Rat LD_{50}	2140 mg/kg	None reported	None reported	IUCLID (The International Uniform Chemical Information Database)
Mercuric sulfate (0.1 - 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 If available, see data below

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Mercuric sulfate (0.1 - 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 If available, see data below

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

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Sulfuric acid (80 - 90%) CAS#: 7664-93-9	Rat LC_{50}	0.510 mg/L	None reported	None reported	LOLI

Inhalation (Gas) Exposure Route No data available

Product Specific Target Organ Toxicity Single Exposure Data

Oral Exposure Route

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

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Sulfuric acid (80 - 90%) CAS#: 7664-93-9	Human TD_{Lo}	0.144 mg/L	5 minutes	**Lungs, Thorax, or Respiration** Dyspnea	RTECS (Registry of Toxic Effects of Chemical Substances)

Inhalation (Gas) Exposure Route No data available

Aspiration toxicity
If available, see data below

Kinematic viscosity ~ 14.045 cSt (mm^2/s)

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
Sulfuric acid (80 - 90%) CAS#: 7664-93-9	Existing human experience	Human	None reported	None reported	Corrosive to skin	HSDB (Hazardous Substances Data Bank)
Mercuric sulfate (0.1 - 1%) CAS#: 7783-35-9	Existing human experience	Human	None reported	None reported	Skin irritant	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)
Sulfuric acid, disilver(1+) salt (0.1 - 1%) CAS#: 10294-26-5	Standard Draize Test	Rabbit	500 mg	4 hours	Not corrosive or irritating to skin	ECHA (The European Chemicals Agency)

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

Sulfuric acid (80 - 90%) CAS#: 7664-93-9	Existing human experience	Human	None reported	None reported	Corrosive to eyes	HSDB (Hazardous Substances Data Bank)
Mercuric sulfate (0.1 - 1%) CAS#: 7783-35-9	Existing human experience	Human	None reported	None reported	Eye irritant	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)
Sulfuric acid, disilver(1+) salt (0.1 - 1%) 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 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 No data available

Dermal Exposure Route No data available

Inhalation (Dust/Mist) Exposure Route No data available

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

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Sulfuric acid (80 - 90%) CAS#: 7664-93-9	Human TC_{Lo}	.003 mg/L	168 days	**Musculoskeletal** Changes in teeth and supporting structures	RTECS (Registry of Toxic Effects of Chemical Substances)

Inhalation (Gas) Exposure Route No data available

Chemical name	CAS No	ACGIH	IARC	NTP	OSHA
Sulfuric acid	7664-93-9	A2	Group 1	Known	X
Mercuric sulfate	7783-35-9	-	Group 3	-	-
Sulfuric acid, disilver(1+) salt	10294-26-5	-	-	-	-
Chromic acid (H2CrO4)	7738-94-5	-	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 Group 3 - 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** If available, see data below

Chemical name	Test	Cell Strain	Reported dose	Exposure time	Results	Key literature references and sources for data
Sulfuric acid (80 - 90%) CAS#: 7664-93-9	Cytogenetic analysis	Hamster ovary	4 mmol/L	None reported	Positive test result for mutagenicity	No information 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 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 If available, see data below

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Sulfuric acid (80 - 90%) CAS#: 7664-93-9	Rabbit TC_{Lo}	.02 mg/L	7 hours	**Specific Developmental Abnormalities** Musculoskeletal system	No information available

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 If available, see ingredient data below

Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Sulfuric acid, disilver(1+) salt (0.1 - 1%) 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)
Chromic acid (H2CrO4) (<0.1%) CAS#: 7738-94-5	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 (80 - 90%) CAS#: 7664-93-9	96 hours	*Lepomis macrochirus*	LC_{50}	> 16 mg/L	IUCLID (The International Uniform Chemical Information Database)
Mercuric sulfate (0.1 - 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**
Sulfuric acid, disilver(1+) salt (0.1 - 1%) 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 If available, see ingredient data below

Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Sulfuric acid, disilver(1+) salt (0.1 - 1%) 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 (80 - 90%) CAS#: 7664-93-9	48 hours	*Crangon crangon*	EC_{50}	> 70 mg/L	IUCLID (The International Uniform Chemical Information Database)
Sulfuric acid, disilver(1+) salt (0.1 - 1%) 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 If available, see ingredient data below

Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Mercuric sulfate (0.1 - 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				
Chemical name	**Category**	**Persistent**	**Bioaccumulation**	**Inherently Toxic to Aquatic Organisms**
Sulfuric acid, disilver(1+) salt (0.1 - 1%) CAS#: 10294-26-5	Inorganics	Yes	No	Yes

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 (0.1 - 1%) CAS#: 7783-35-9	Inorganic Salt	None reported	None reported	Not readily biodegradable
Sulfuric acid, disilver(1+) salt (0.1 - 1%) 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 No data available

Chemical name	Test method	Exposure time	Species	Bioconcentration factor (BCF)	Results
Mercuric sulfate (0.1 - 1%) CAS#: 7783-35-9	None reported	None reported	None reported	BCF > 1000	Has the potential to bioaccumulate
Sulfuric acid, disilver(1+) salt (0.1 - 1%) 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
Mercuric sulfate (0.1 - 1%) CAS#: 7783-35-9	log K_{ow} ~ 0	No information available
Sulfuric acid, disilver(1+) salt (0.1 - 1%) CAS#: 10294-26-5	log K_{ow} > 6.18	Estimation through KOWWIN v1.68 part of the Estimation Programs Interface (EPI) Suite™

Mobility
Mobility in soil: High 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
Mercuric sulfate (0.1 - 1%) CAS#: 7783-35-9	log K_{oc} ~ 0	No information available
Sulfuric acid, disilver(1+) salt (0.1 - 1%) CAS#: 10294-26-5	log K_{oc} > 4.83	No information available

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 CAS#: 7664-93-9	Soluble	> 1000 mg/L	25 °C	77 °F
Sulfuric acid, disilver(1+) salt CAS#: 10294-26-5	Soluble	8000 mg/L	20 °C	68 °F
Chromic acid (H2CrO4) CAS#: 7738-94-5	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, D007, D009, D011
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

U.S. DOT

UN/ID no	UN1830
Proper shipping name	Sulphuric Acid
Hazard Class	8
Packing Group	II
Emergency Response Guide Number	137

TDG

UN/ID no	UN1830
Proper shipping name	Sulphuric Acid
Hazard Class	8
Packing Group	II

IATA

UN/ID no	UN1830
Proper shipping name	Sulphuric Acid
Hazard Class	8
Packing Group	II
ERG Code	137

IMDG

UN/ID no	UN1830
Proper shipping name	Sulphuric Acid
Hazard Class	8
Packing Group	II
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 %
Sulfuric acid (CAS #: 7664-93-9)	1.0
Mercuric sulfate (CAS #: 7783-35-9)	1.0
Sulfuric acid, disilver(1+) salt (CAS #: 10294-26-5)	1.0
Chromic acid (H2CrO4) (CAS #: 7738-94-5)	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
Sulfuric acid, disilver(1+) salt 10294-26-5	-	X	-	-
Chromic acid (H2CrO4) 7738-94-5	10 lb	X	-	-

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

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

Chemical name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
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
Chromic acid (H2CrO4) 7738-94-5	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 (80 - 90%) 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
Mercuric sulfate (CAS #: 7783-35-9)	Developmental
Chromic acid (H2CrO4) (CAS #: 7738-94-5)	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
Sulfuric acid, disilver(1+) salt 10294-26-5	X	-	X
Chromic acid (H2CrO4) 7738-94-5	X	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

Additional information

Global Automotive Declarable Substance List (GADSL)

Chemical name	Global Automotive Declarable Substance List Classifications	Global Automotive Declarable Substance List Thersholds
Mercuric sulfate 7783-35-9	Prohibited Substance (LR) Declarable Substance (LR)	0.0 % 0.1 %
Chromic acid (H2CrO4) 7738-94-5	Declarable Substance (LR) Prohibited Substance (LR)	0.0 % 0.1 %

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)
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	24-May-2016
Revision Date	25-Aug-2017
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