

1. IDENTIFICATION

Product identifier

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

Other means of identification

Product Code(s) CABDH0402-150

Safety data sheet number M00525

UN/ID no UN3264

Recommended use of the chemical and restrictions on use

Recommended Use Laboratory Use Determination of Chemical Oxygen Demand

Uses advised against No information available

Details of the supplier of the safety data sheet

Initial Supplier Identifier

VWR International
2360 Argentia Road Mississauga, Ontario Canada, L5N 5Z7
Tel: 1-800-932-5000

Manufacturer Address

VWR International LLC
100 Matsonford Rd, Building One, Suite 200
Radnor, PA 19087 USA
Tel: +1 610-386-1700

Emergency telephone number

Emergency Telephone CANUTEC 613-992-4624
Chemtrec 1-800-424-9300

2. HAZARD IDENTIFICATION

Classification

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
Germ cell mutagenicity	Category 1B
Carcinogenicity	Category 1A
Reproductive toxicity	Category 2
Specific target organ toxicity (repeated exposure)	Category 2
Acute aquatic toxicity	Category 1

Chronic aquatic toxicity

Category 1

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

H410 - Very toxic to aquatic life with long lasting effects



Precautionary Statements

P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting

P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]

P363 - Wash contaminated clothing before reuse

P304 + P340 - IF INHALED: Remove person to fresh air and keep 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

P272 - Contaminated work clothing should not be allowed out of the workplace

P302 + P352 - IF ON SKIN: Wash with plenty of water and soap

P362 + P364 - Take off contaminated clothing and wash it before reuse

P201 - Obtain special instructions before use

P280 - Wear protective gloves/protective clothing/eye protection/face protection

P308 + P313 - IF exposed or concerned: Get medical advice/attention

P405 - Store locked up

P273 - Avoid release to the environment

P391 - Collect spillage

P234 - Keep only in original packaging

P390 - Absorb spillage to prevent material damage

P270 - Do not eat, drink or smoke when using this product

P260 - Do not breathe dust/fume/gas/mist/vapors/spray

P501 - Dispose of contents/ container to an approved waste disposal plant

Unknown Acute Toxicity

0 % of the mixture consists of ingredient(s) of unknown toxicity.

0 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity

0 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist)

0 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor)

0 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas)

Other Hazards Known

Not applicable.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance

Not applicable

Mixture

Chemical Family Mixture.

Chemical name	Synonyms	CAS No.	Percent Range	Units	HMIRA #
Sulfuric acid	Oil of vitriol	7664-93-9	50 - 60%	g	-
Sulfuric acid, mercury(2+) salt (1:1)	Mercuric Sulfate Mercury(II) Sulfate	7783-35-9	<1%	g	-
Sulfuric acid, disilver(1+) salt	Silver Sulfate	10294-26-5	<1%	g	-
Chromic acid (H ₂ CrO ₄)	No information available	7738-94-5	<1%	g	-

4. FIRST AID MEASURES

Description of first aid measures

General advice

Show this safety data sheet to the doctor in attendance. IF exposed or concerned: Get medical advice/attention.

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.

Eye contact

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

Skin contact

Get immediate medical advice/attention. Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. May cause an allergic skin reaction.

Ingestion

Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Get immediate medical advice/attention.

Self-protection of the first aider

Avoid contact with skin, eyes or clothing. Wear personal protective clothing (see section 8). Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation.

Most important symptoms and effects, both acute and delayed

Symptoms Burning sensation. Itching. Rashes. Hives.

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 skin contact.

Hazardous combustion products This material will not burn.

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

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

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 Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Attention! Corrosive material. Keep people away from and upwind of spill/leak.

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

Environmental precautions

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

Methods and material for containment and cleaning up

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

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

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

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. Take off contaminated clothing and wash before reuse. 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. Remove contaminated clothing and shoes.

Conditions for safe storage, including any incompatibilities

Storage Conditions

Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from moisture. Store locked up. Keep out of the reach of children. Store away from other materials.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Limits

Chemical name	Alberta OEL	British Columbia OEL	Manitoba OEL	New Brunswick OEL	New Foundland & Labrador OEL
Sulfuric acid 50 - 60%	TWA: 1 mg/m ³ STEL: 3 mg/m ³	TWA: 0.2 mg/m ³	TWA: 0.2 mg/m ³	TWA: 1 mg/m ³ STEL: 3 mg/m ³	TWA: 0.2 mg/m ³
Sulfuric acid, mercury(2+) salt (1:1) <1%	TWA: 0.025 mg/m ³ SKN*	TWA: 0.025 mg/m ³ SKN* R	TWA: 0.025 mg/m ³ SKN*	TWA: 0.025 mg/m ³ SKN*	TWA: 0.025 mg/m ³ SKN*
Sulfuric acid, disilver(1+) salt <1%	TWA: 0.01 mg/m ³	TWA: 0.01 mg/m ³ STEL: 0.03 mg/m ³	TWA: 0.01 mg/m ³	TWA: 0.01 mg/m ³	TWA: 0.01 mg/m ³
Chromic acid (H ₂ CrO ₄) <1%	TWA: 0.05 mg/m ³ TWA: 0.5 mg/m ³	NDF	NDF	TWA: 0.05 mg/m ³	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/m ³ STEL: 0.6 mg/m ³	TWA: 0.2 mg/m ³	TWA: 0.2 mg/m ³ STEL: 0.6 mg/m ³	TWA: 0.2 mg/m ³	TWA: 0.2 mg/m ³
Sulfuric acid, mercury(2+) salt (1:1) <1%	TWA: 0.025 mg/m ³ STEL: 0.075 mg/m ³ SKN*	TWA: 0.025 mg/m ³ SKN*	TWA: 0.025 mg/m ³ STEL: 0.075 mg/m ³ SKN*	TWA: 0.025 mg/m ³ SKN*	TWA: 0.025 mg/m ³
Sulfuric acid, disilver(1+) salt <1%	TWA: 0.01 mg/m ³ STEL: 0.03 mg/m ³	TWA: 0.01 mg/m ³	TWA: 0.01 mg/m ³ STEL: 0.03 mg/m ³	TWA: 0.01 mg/m ³	TWA: 0.01 mg/m ³

Chemical name	Quebec OEL	Saskatchewan OEL	Yukon OEL
Sulfuric acid 50 - 60%	TWA: 1 mg/m ³ STEL: 3 mg/m ³	TWA: 0.2 mg/m ³ STEL: 0.6 mg/m ³	STEL: 1 mg/m ³ TWA: 1 mg/m ³
Sulfuric acid, mercury(2+) salt (1:1) <1%	TWA: 0.025 mg/m ³ SKN*	TWA: 0.025 mg/m ³ STEL: 0.075 mg/m ³ SKN*	NDF
Sulfuric acid, disilver(1+) salt <1%	TWA: 0.01 mg/m ³	TWA: 0.01 mg/m ³ STEL: 0.03 mg/m ³	STEL: 0.03 mg/m ³ TWA: 0.01 mg/m ³
Chromic acid (H ₂ CrO ₄) <1%	NDF	TWA: 0.05 mg/m ³ TWA: 0.5 mg/m ³ STEL: 0.15 mg/m ³ STEL: 1.5 mg/m ³	STEL: 0.1 mg/m ³ TWA: 0.1 mg/m ³

Chemical name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Sulfuric acid 50 - 60%	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
Sulfuric acid, mercury(2+) salt (1:1) <1%	TWA: 0.025 mg/m ³ S*	(vacated) Ceiling: 0.1 mg/m ³	IDLH: 10 mg/m ³ Hg Ceiling: 0.1 mg/m ³ Hg TWA: 0.05 mg/m ³ except Organo alkyls Hg vapor
Sulfuric acid, disilver(1+) salt <1%	TWA: 0.01 mg/m ³	TWA: 0.01 mg/m ³ (vacated) TWA: 0.01 mg/m ³	IDLH: 10 mg/m ³ Ag TWA: 0.01 mg/m ³ Ag
Chromic acid (H ₂ CrO ₄) <1%	NDF	TWA: 5 µg/m ³ (vacated) Ceiling: 0.1 mg/m ³ Ceiling: 0.1 mg/m ³	TWA: 0.0002 mg/m ³ Cr

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

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

Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Regular cleaning of equipment, work area and clothing is recommended. Avoid contact with skin, eyes or clothing. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash hands before breaks and immediately after handling the product. Contaminated work clothing should not be allowed out of the workplace.

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

Turbid solution
aqueous solution
Odorless

Color

light orange

Odor

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 (mm²/s) at 20 °C / 68 °F

Solubility(ies)

Water solubility

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

Solubility in other solvents

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

Other Information

Metal Corrosivity

Classified as corrosive to metal according to GHS criteria

Steel Corrosion Rate	4.14 mm/yr / 0.16 in/yr
Aluminum Corrosion Rate	99.6 mm/yr / 3.92 in/yr

Volatile Organic Compounds (VOC) Content

Chemical name	CAS No.	Volatile organic compounds (VOC) content	CAA (Clean Air Act)
Sulfuric acid	7664-93-9	No data available	-
Sulfuric acid, mercury(2+) salt (1:1)	7783-35-9	Not applicable	-
Sulfuric acid, disilver(1+) salt	10294-26-5	No data available	-
Chromic acid (H2CrO4)	7738-94-5	No data available	-

Explosive properties

Upper explosion limit	No data available
Lower explosion limit	No data available

Flammable properties

Flash point	No data available
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Flammability Limit in Air	
Upper flammability limit:	No data available
Lower flammability limit:	No data available
Oxidizing properties	No data available.
Bulk density	Not applicable
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

None under normal processing.

Conditions to avoid

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

Incompatible materials

Incompatible materials Oxidizing agent. Acids. Bases.

Hazardous Decomposition Products

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

11. TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Product Information

Inhalation	Corrosive by inhalation. Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate. Inhaled corrosive substances can lead to a toxic edema of the lungs. Pulmonary edema can be fatal.
Eye contact	Causes burns. Corrosive to the eyes and may cause severe damage including blindness. Causes serious eye damage. May cause irreversible damage to eyes.
Skin contact	May cause irritation. May cause sensitization by skin contact. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons. Toxic 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.

Aggravated Medical Conditions Eye disorders. Skin disorders. Respiratory disorders. Preexisting eye disorders. Kidney 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 assess its effects on metabolism. Its corrosivity is also the main contributor to acute deaths, therefore it is not classified for acute toxicity.
Sulfuric acid, mercury(2+) salt (1:1) (<1%) CAS#: 7783-35-9	Central nervous system is the most sensitive target for mercury exposure.
Chromic acid (H ₂ CrO ₄) (<1%) CAS#: 7738-94-5	Chromium is human carcinogen mostly by inhalation exposure.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms Redness. Burning. May cause blindness. Coughing and/ or wheezing. Itching. Rashes. Hives.

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.

0 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity
 0 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist)
 0 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor)
 0 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas)

Acute Toxicity Estimations (ATE)

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

ATEmix (oral)	No information available
ATEmix (dermal)	809.00 mg/kg
ATEmix (inhalation-dust/mist)	5.76 mg/L
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	Reported	Exposure	Toxicological effects	Key literature references and
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	type	dose	time		sources for data
Sulfuric acid, disilver(1+) salt (<1%) CAS#: 10294-26-5	Rat LD ₅₀	> 5000 mg/kg	None reported	None reported	Vendor SDS
Chromic acid (H ₂ CrO ₄) (<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 (50 - 60%) CAS#: 7664-93-9	Rat LD ₅₀	2140 mg/kg	None reported	None reported	IUCLID (The International Uniform Chemical Information Database)
Sulfuric acid, mercury(2+) salt (1:1) (<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
Sulfuric acid, mercury(2+) salt (1:1) (<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 (50 - 60%) CAS#: 7664-93-9	Rat LC ₅₀	0.510 mg/L	None reported	None reported	LOLI

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

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Sulfuric acid (50 - 60%) 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

If available, see data below

Aspiration toxicity

If available, see data below

Kinematic viscosity

~ 1.29 cSt (mm²/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 (50 - 60%) CAS#: 7664-93-9	Existing human experience	Human	None reported	None reported	Corrosive to skin	HSDB (Hazardous Substances Data Bank)
Sulfuric acid, mercury(2+) salt (1:1) (<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 (<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 (50 - 60%) CAS#: 7664-93-9	Existing human experience	Human	None reported	None reported	Corrosive to eyes	HSDB (Hazardous Substances Data Bank)
Sulfuric acid, mercury(2+) salt (1:1) (<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 (<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
Respiratory Sensitization Exposure Route

No data available.
No data available.

Ingredient Sensitization Data

Skin Sensitization Exposure Route
Respiratory Sensitization Exposure Route

If available, see data below.
If available, see data below.

Chronic Toxicity Information

Product Specific Target Organ Toxicity Repeat Dose Data

Oral Exposure Route
Dermal Exposure Route
Inhalation (Dust/Mist) Exposure Route
Inhalation (Vapor) Exposure Route
Inhalation (Gas) Exposure Route

No data available.
No data available.
No data available.
No data available.
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

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Sulfuric acid (50 - 60%) 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 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
Sulfuric acid	7664-93-9	A2	Group 1	Known	X
Sulfuric acid, mercury(2+) salt (1:1)	7783-35-9	-	Group 3	-	-
Sulfuric acid, disilver(1+) salt	10294-26-5	-	-	-	-
Chromic acid (H ₂ CrO ₄)	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

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 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 (50 - 60%) CAS#: 7664-93-9	Cytogenetic analysis	Hamster ovary	4 mmol/L	None reported	Positive test result for mutagenicity	No information available

Product Germ Cell Mutagenicity *in vivo* 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
No data available

Ingredient Germ Cell Mutagenicity *in vivo* Data

Oral Exposure Route
Dermal Exposure Route
Inhalation (Dust/Mist) Exposure Route
Inhalation (Vapor) Exposure Route
Inhalation (Gas) Exposure Route

If available, see data below
If available, see data below
If available, see data below
If available, see data below
If available, see data below

Product Reproductive Toxicity Data

Oral Exposure Route
Dermal Exposure Route
Inhalation (Dust/Mist) Exposure Route
Inhalation (Vapor) Exposure Route
Inhalation (Gas) Exposure Route

No data available
No data available
No data available
No data available
No data available

Ingredient Reproductive Toxicity Data

Oral Exposure Route
Inhalation (Dust/Mist) Exposure Route
Inhalation (Vapor) Exposure Route

If available, see data below
If available, see data below
If available, see data below

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Sulfuric acid (50 - 60%) CAS#: 7664-93-9	Rabbit TC _{Lo}	.02 mg/L	7 hours	Specific Developmental Abnormalities Musculoskeletal system	No information available

Inhalation (Gas) Exposure Route

If available, see data below

12. ECOLOGICAL INFORMATION

Ecotoxicity

Very toxic to aquatic life with long lasting effects

Product Ecological Data

Aquatic toxicity

Fish
Crustacea
Algae

No data available
No data available
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 (<1%) CAS#: 10294-26-5	96 hours	<i>Pimephales promelas</i>	LC ₅₀	0.0012 mg/L	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)
Chromic acid (H ₂ CrO ₄) (<1%) CAS#: 7738-94-5	96 hours	None reported	LC ₅₀	0.0031 mg/L	CEPA (Canadian Environmental Protection Agency)

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 (<1%) CAS#: 10294-26-5	48 Hours	<i>Daphnia magna</i>	LC ₅₀	0.00022 mg/L	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)

Algae

If available, see ingredient data below

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 (<1%) CAS#: 10294-26-5	Inorganics	Yes	No	Yes
Chromic acid (H ₂ CrO ₄) (<1%) CAS#: 7738-94-5	Inorganics	Yes	No	Yes

Persistence and degradability

Product Biodegradability Data

No data available.

Ingredient Biodegradability Data

Chemical name	Test method	Biodegradation	Exposure time	Results
Sulfuric acid, mercury(2+) salt (1:1) (<1%) CAS#: 7783-35-9	Inorganic Salt	None reported	None reported	Not readily biodegradable
Sulfuric acid, disilver(1+) salt (<1%) CAS#: 10294-26-5	Inorganic Salt	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
Sulfuric acid, mercury(2+) salt (1:1) (<1%) CAS#: 7783-35-9	None reported	None reported	None reported	BCF > 1000	Has the potential to bioaccumulate
Sulfuric acid, disilver(1+) salt (<1%) CAS#: 10294-26-5	None reported	8 days	<i>Oncorhynchus mykiss</i>	BCF = 2.5	Does not have the potential to bioaccumulate

Mobility

Soil Organic Carbon-Water Partition Coefficient Not applicable

Water solubility

<u>Water solubility classification</u>	<u>Water solubility</u>	<u>Water Solubility Temperature</u>
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

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.

14. TRANSPORT INFORMATION

Transport Canada

UN/ID no UN3264
 Proper shipping name Corrosive liquid, acidic, inorganic, n.o.s.
 DOT Technical Name Sulfuric acid, Chromic acid (H₂CrO₄)
 Hazard Class 8
 Packing Group II
 Description UN3264, Corrosive liquid, acidic, inorganic, n.o.s. (Sulfuric acid, Chromic acid (H₂CrO₄)), 8, II
 Emergency Response Guide Number 154

TDG

UN/ID no UN3264
 Proper shipping name Corrosive liquid, acidic, inorganic, n.o.s.
 TDG Technical Name Sulfuric acid, Chromic acid (H₂CrO₄)
 Hazard Class 8
 Packing Group II
 Description UN3264, Corrosive liquid, acidic, inorganic, n.o.s. (Sulfuric acid, Chromic acid (H₂CrO₄)), 8, II

IATA

UN/ID no UN3264
 Proper shipping name Corrosive liquid, acidic, inorganic, n.o.s.
 IATA Technical Name Sulfuric acid, Chromic acid (H₂CrO₄)
 Hazard Class 8
 Packing Group II
 ERG Code 8L
 Special precautions for user A3, A803
 Description UN3264, Corrosive liquid, acidic, inorganic, n.o.s. (Sulfuric acid, Chromic acid (H₂CrO₄)), 8, II

IMDG

UN/ID no UN3264
 Proper shipping name Corrosive liquid, acidic, inorganic, n.o.s.
 IMDG Technical Name Sulfuric acid, Chromic acid (H₂CrO₄)
 Hazard Class 8
 Packing Group II
 EmS-No F-A, S-B

Special precautions for user
Description

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 UN3264, Corrosive liquid, acidic, inorganic, n.o.s. (Sulfuric acid, Chromic acid (H₂CrO₄)), 8,
 II, Marine Pollutant

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

Regulatory information

National Inventories

DSL/NDSL Complies

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

International Inventories

TSCA Complies
EINECS/ELINCS Complies
ENCS Complies
IECSC Complies
KECL Complies
PICCS Complies
TCSI Complies
AICS Complies
NZIoC Complies

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
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

Canada - CEPA - Mercury Containing Products

Chemical name	Canada - CEPA - Mercury Containing Products
Sulfuric acid, mercury(2+) salt (1:1) CAS#: 7783-35-9	Applies

International Regulations

Ozone-depleting substances (ODS) Not applicable

Persistent Organic Pollutants Not applicable

Export Notification requirements

Chemical name	Export Notification requirements
Sulfuric acid, mercury(2+) salt (1:1) - 7783-35-9	Rotterdam

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 SKN*
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		

Issue Date 28-Jun-2017

Revision Date 05-Apr-2018

Revision Note

SDS sections updated
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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