

Safety Data Sheet

According to Regulation (EC) No. 1907/2006
OSHA Regulation 29 CFR 1910.1200
Canadian Regulation SOR/88-66

Revision Date: 2013-02-18
Reason for Revision: Regulation (EC) No. 1272/2008 Compliance

SECTION 1: IDENTIFICATION OF THE PRODUCT AND COMPANY

Product Name: Reagent for COD Test (25 vials)
Application: MR COD Analysis: 0 to 1000 mg/L, in Accordance with ISO 15705.

Company Information (USA): Hanna Instruments, Inc.
584 Park East Dr, Woonsocket, Rhode Island, USA 02895

Technical Service Contact Information: 1-800-426-6287 (8:30AM - 5:00PM ET)
+1-401-766-4260 (8:30AM - 5:00PM ET)

USA Emergency Contact Information: 1-800-424-9300 (Chemtrec 24Hr. Emergency)

International Emergency Contact Information: +1-703-527-3887 (Chemtrec 24Hr. Emergency)

E-mail Address: tech@hannainst.com

SECTION 2: HAZARD IDENTIFICATION

Harmful if swallowed. Toxic in contact with skin. Causes severe skin burns and eye damage. Harmful if inhaled. May cause genetic defects. May cause cancer. May damage fertility or the unborn child. Toxic to aquatic life with long lasting effects.

According to Regulation (EC) No. 1272/2008:

Classification: Acute Toxicity, Oral (Category 4)
Acute Toxicity, Dermal (Category 3)
Skin Corrosion (Category 1A)
Acute Toxicity, Inhalation (Category 4)
Carcinogenicity (Category 1B)
Germ Cell Mutagenicity (Category 1B)
Reproductive Toxicity (Category 1B)
Chronic Aquatic Toxicity (Category 2)

Signal Word: **Danger**

Pictograms:



Hazard Statements: H302: Harmful if swallowed.
H311: Toxic in contact with skin.
H314: Causes severe skin burns and eye damage.
H332: Harmful if inhaled.
H340: May cause genetic defects.
H350: May cause cancer.
H360: May damage fertility or the unborn child.
H411: Toxic to aquatic life with long lasting effects.

Precaution Statements: P202: Do not handle until all safety precautions have been read and understood.
P273: Avoid release to the environment.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P308+313: IF exposed or concerned: Get medical advice/attention.
P361: Remove/Take off immediately all contaminated clothing.

According to Directives 67/548/EEC and 1999/45/EC:

Symbol: T: Toxic
C: Corrosive

R-phrases: 23/24/25-33-35-52/53: Toxic by inhalation, in contact with skin and if swallowed. Danger of cumulative effects. Causes severe burns. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S-phrases: 26-30-36/37/39-45: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Never add water to this product. Wear suitable protective clothing, gloves and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

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SECTION 3: COMPOSITION AND COMPONENT INFORMATION

Component:	EC No:	CAS No:	Hazard Class:	Phrases:	Concentration:
Sulphuric acid	231-639-5	7664-93-9	Skin Corr. 1A C	H314 R: 35	> 50% - < 90%
Mercury sulphate	231-992-5	7783-35-9	Acute Tox. 1 Acute Tox. 2 STOT RE 2 Aquatic Acute 1 Aquatic Chronic 1 T+, N	H300, H310, H330, H373, H400, H410 R: 26/27/28-33-50/53	> 0.5 - < 2%
Potassium dichromate	231-906-6	7778-50-9	Ox. Sol. 2 Acute Tox. 2 Acute Tox. 3 Acute Tox. 4 Skin Corr. 1B Skin Sens. 1 Resp. Sens. 1 Muta. 1B Carc. 1B Repr. 1B STOT RE 1 Aquatic Acute 1 Aquatic Chronic 1 T+, N, O	H272, H301, H312, H314, H317, H330, H334, H340, H350, H360FD, H372, H400, H410 R: 8-21-25-26-34-42/43- 45-46-48/23-50/53-60-61	< 0.1%

SECTION 4: FIRST AID MEASURES

- After Inhalation:** Remove to fresh air. Summon doctor.
- After Skin Contact:** Wash affected area with plenty of water. Immediately remove contaminated clothing.
- After Eye Contact:** Rinse out immediately with plenty of water and seek medical advice.
- After Swallowing:** Drink plenty of water (if necessary several liters), avoid vomiting (risk of perforation!). Immediately seek medical advice. Do not attempt to neutralize.
- General Information:** Remove contaminated, soaked clothing immediately and dispose of safely.

SECTION 5: FIRE-FIGHTING MEASURES

- Suitable Extinguishing Media:**
Water spray, Carbon Dioxide, Dry Chemical Powder, Appropriate Foam.
- Special Risks:**
Non-combustible. Hydrogen may form upon contact with metals (danger of explosion!) Development of hazardous combustion gases or vapors possible in the event of fire. The following may develop in event of fire: Sulfur Oxides, Mercury Vapors
- Special Protective Equipment:**
Do not stay in dangerous zone without suitable chemical protection clothing and self-contained breathing apparatus.
- Additional Information:**
Product itself is non-combustible. Cool container with spray water from a safe distance. Contain escaping vapors with water. Fire residues and contaminated firefighting water must be disposed of in accordance with the local regulations.

SECTION 6: ACCIDENTAL RELEASE MEASURES

- Personal Precautions:**
Take up with liquid-absorbent material. Clean up affected area and dispose according to local regulation.
- Environmental Precautions:**
Do not discharge into the drains/surface waters/groundwater.
- Additional Notes:**
NA

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SECTION 7: HANDLING AND STORAGE

Handling:

Avoid generation of vapors/aerosols. Work under hood.
Do not inhale substance.

Storage:

Tightly closed. In a well-ventilated place at +15 to +25°C. Protect from light. Accessible only for authorized persons.

SECTION 8: EXPOSURE CONTROL/PERSONAL PROTECTION

Type	Value	Source	Type	Value	Source
Mercury(II) Sulfate					
TWA (8hr)	0.025 mg (Hg)/m ³	Belgium	TWA (8hr)	0.025 mg (Hg)/m ³	Canada (Ontario)
TWA (8hr)	0.025 mg (Hg)/m ³	Canada (Quebec)	TWA (8hr)	0.1 mg (Hg)/m ³	France
TWA (8hr)	0.1 mg (Hg)/m ³	Germany	TWA (8hr)	0.1 mg (Hg)/m ³	Greece
TWA (8hr)	0.08 mg (Hg)/m ³	Hungary	TWA (8hr)	0.05 mg (Hg)/m ³	Poland
TWA (8hr)	0.025 mg (Hg)/m ³	Portugal	TWA (8hr)	0.025 mg (Hg)/m ³	Spain
TWA (8hr)	0.01 mg (Hg)/m ³	UK	TWA (8hr)	0.025 mg (Hg)/m ³	USA (ACGIH)
TWA (8hr)	2 mg (Hg)/m ³	USA (OSHA)			
Sulfuric Acid					
TWA (8hr)	1 mg/m ³	Belgium	TWA (8hr)	0.2 mg/m ³	Canada (Ontario)
TWA (8hr)	1 mg/m ³	Canada (Quebec)	TWA (8hr)	1 mg/m ³	France
TWA (8hr)	1 mg/m ³	Greece	TWA (8hr)	1 mg/m ³	Hungary
TWA (8hr)	0.5 mg/m ³	Poland	TWA (8hr)	0.2 mg/m ³	Portugal
TWA (8hr)	0.5 mg/m ³	Romania	TWA (8hr)	1 mg/m ³	Spain
TWA (8hr)	0.2 mg/m ³	USA (ACGIH)	TWA (8hr)	1 mg/m ³	USA (OSHA)

Engineering:

Safety shower and eye wash.

Personal Protective Equipment:

Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled.

Respiratory Protection:

Required when vapors/aerosols are generated. Work under hood.

Protective Gloves:

Rubber or plastic

Eye Protection:

Goggles or face mask

Industrial Hygiene:

Immediately change contaminated clothing and immerse in water. Apply skin-protective barrier cream. Wash hands and face after working with substance. Work under hood. Do not inhale substance. Avoid generation of vapors/aerosols. Under no circumstances eat or drink at workplace.

SECTION 9: PHYSICAL/CHEMICAL PROPERTIES

Appearance:	Yellow-orange liquid with undissolved solid	Odor:	Odorless	Density at 20°C:	~ 1.7 g/cm ³
Melting Point:	NA	Boiling Point:	ND	Solubility:	Soluble (development of heat)
pH at 20°C:	< 0.5	Explosion Limit:	NA	Flash Point:	NA
Thermal Decomp.:	> 338°C				

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SECTION 10: STABILITY AND REACTIVITY

Conditions to be Avoided:

Strong Heating

Hazardous Polymerization:

Will not occur.

Further Information:

Hygroscopic. Has a corrosive effect. Incompatible with metals.

Hazardous Decomposition Products:

In the event of fire: See section 5.

Substances to be Avoided:

Combustible substances, water, metals, metal alloys, alkali metals, alkali compounds, alkali hydroxides, alkali oxides, alkaline earth compounds, alkalis, ammonia, nitrates, sodium carbonate, lithium silicide, halogen-halogen compounds, salts of oxyhalogenic acids, bromates, chromates/perchromates, perchlorates, perchloric acid, permanganates, permanganic acid, organic nitro compounds, nonmetals, nonmetallic oxides, picrates, hydrogen peroxide, nitramide, mercury nitride, ammonium iron (III) sulfate dodecahydrate

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SECTION 11: TOXICOLOGICAL INFORMATION

Product Toxicity

Quantitative data on the toxicity of this product is not available.

Potential Health Effects:

- Inhalation:** After inhalation of aerosols: damage to the affected mucous membranes.
- Skin Contact:** Severe burns with formation of scabs.
- Eye Contact:** Burns, corneal lesion.
- Ingestion:** Severe pain (risk of perforation!), nausea, vomiting and diarrhea.
- Further Data:** The product should be handled with the usual care when dealing with chemicals.

Component Toxicity

Acute Toxicity:

Mercury(II) Sulfate

- LD50:** Oral - Rat - 57 mg/kg
- LD50:** Dermal - Rat - 625 mg/kg

Sulfuric Acid

- LC50:** Inhalation - Rat - 510 mg/m³
- LD50:** Oral - Rat - 2140 mg/kg

Chronic Toxicity:

Sulfuric Acid

NTP: Known to be carcinogenic to humans

Additional Data:

APPLICABLE TO MAIN COMPONENT:

The following applies to Mercury (II) sulphate, as the pure substance:

Sign and symptoms of exposure

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. Inhalation may result in spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. Exposure to mercury compounds can cause tremors, loss

of appetite, weight loss, anuria, and uremia. Mercury accumulates in almost all tissues, especially in the brain, liver, and kidneys. Ingestion can cause: tremors, incoordination, insomnia, irritability, fatigue, anxiety, anorexia, hallucinations, headache, depression, severe stomatitis, nausea, vomiting, diarrhea, metallic taste, muscle weakness, loosening of the teeth, pain and numbness in the extremities, nephritis, peripheral neuropathy, collapse, and possibly death.

Target organ information

Blood. Kidneys. Liver. Nerves. Bones. Spleen.

Chronic exposure - carcinogen

Result: This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification. - The following applies to Sulfuric acid, as the pure substance:

Acute toxicity

LC50 Inhalation, Rat: 510 mg/kg/2h.

LD50 Oral, Rat: 2140 mg/kg

Specific symptoms in animal studies:

Eye irritation test (rabbit): burns.

Skin irritation test (rabbit): burns.

Toxicological values are not available due to other dangerous properties of the substance. Subacute to chronic toxicity

Applicable to partial component(s):

Bacterial mutagenicity: Ames test: negative.

No teratogenic effect in animal experiments.

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SECTION 12: ECOLOGICAL INFORMATION

Quantitative data on the toxicity of this product is not available.

APPLICABLE TO MAIN COMPONENT:

The following applies to Mercury (II) sulphate, as the pure substance:

Ecotoxic effects:

Biological effects:

Highly toxic for aquatic organisms. May cause long-term adverse effects in the aquatic environment.

Concentration in organisms possible.

Fish toxicity: P.promelas LC 50 : 0.19 mg/L /96 h.

L.idus LC 50 : 0.05 mg/L /48 h (Hg(II)ions).

Daphnia toxicity: Daphnia magna EC 50 : 0.0052 mg/L /48 h (Hg(II)ions).

Maximum permissible toxic concentration: algae: M.aeruginosa EC 5 : 0.005 mg/L.

Sc.quadricauda EC 5 : 0.07 mg/L.

Further ecologic data:

The following applies to the matter contained in inorganic Hg compounds in general (tested with mercury(II) chloride): Leuciscus idus LC 50 : 0.5 mg/L (48h), Daphnia magna EC 50 : 0.005-3.6 mg/L (48h), Chlorella pyrenoidosa EC 50 : 0.3 mg/L (5h), Pseudomonas fluorescens IC 50 : 0.005 mg/L.

The toxicity of mercury(II) ions for water organisms depends on the water hardness [source: IPCS].

APPLICABLE TO PARTIAL COMPONENT:

The following applies to Sulfuric acid, as the pure substance:

Biologic degradation:

Methods for the determination of biodegradability are not applicable to inorganic substances.

Behavior in environmental compartments:

Concentration in organisms is not to be expected.

Ecotoxic effects:

Quantitative data on the ecological effect of this product are not available.

Further ecologic data:

The following applies to sulfuric acid: biological effects: harmful effect on aquatic organisms. Harmful effect due to pH shift. Toxic effect on fish and algae. Caustic even in diluted form. Does not cause biological oxygen deficit. Endangers drinking water supplies if allowed to enter soil and/or waters in large quantities. Neutralization possible in waste water treatment plants.

Daphnia toxicity: Daphnia magna EC 50 : 29 mg/L/24 h (calculated on the pure substance).

Further Data: DO NOT ALLOW TO ENTER WATERS, WASTE WATERS, OR SOIL!

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal: Chemical residues are generally classified as special waste and thus covered by local regulations. Contact local authorities or disposal companies for advice. Handle contaminated packaging in the same way as the substance itself.

SECTION 14: TRANSPORTATION INFORMATION

	Land (ADR/RID):	Sea (IMDG):	Air (ICAO/IATA):
UN No.:	2922	2922	2922
Proper Shipping Name:	Corrosive liquid, toxic, n.o.s. (sulphuric acid, mercuric sulphate mixture)	Corrosive liquid, toxic, n.o.s. (sulphuric acid, mercuric sulphate mixture)	Corrosive liquid, toxic, n.o.s. (sulphuric acid, mercuric sulphate mixture)
Class (Sub Risk):	8 (6.1)	8 (6.1)	8 (6.1)
Packing Group:	II	II	II

SECTION 15: REGULATORY INFORMATION

Complies with European Regulations (EC) No. 1907/2006 and No. 1272/2008.

Complies with European Council Directives 67/548/EEC and 1999/45/EC.

Complies with OSHA Regulation 29 CFR 1910.1200.

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H272: May intensify fire; oxidizer.
H300: Fatal if swallowed.
H301: Toxic if swallowed.
H310: Fatal in contact with skin.
H312: Harmful in contact with skin.
H314: Causes severe skin burns and eye damage.
H317: May cause an allergic skin reaction.
H330: Fatal if inhaled.
H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H340: May cause genetic defects.
H350: May cause cancer.
H360FD: May damage fertility. May damage the unborn child.
H372: Causes damage to organs through prolonged or repeated exposure.
H373: May cause damage to organs through prolonged or repeated exposure.
H400: Very toxic to aquatic life.
H410: Very toxic to aquatic life with long lasting effects.
R8: Contact with combustible material may cause fire.
R21: Harmful in contact with skin.
R25: Toxic if swallowed.
R26: Very toxic by inhalation.
R26/27/28: Very toxic by inhalation, in contact with skin and if swallowed.
R33: Danger of cumulative effects.
R34: Causes burns.
R35: Causes severe burns.
R42/43: May cause sensitization by inhalation and skin contact.
R45: May cause cancer.
R46: May cause heritable genetic damage.
R48/23: Toxic: danger of serious damage to health by prolonged exposure through inhalation.
R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R60: May impair fertility.
R61: May cause harm to the unborn child.

Revision Information

Revision Date: 2013-02-18
Supersedes edition of: 2012-05-31
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Compliance

Legend

NA: Not Applicable
ND: Not Determined

THE INFORMATION CONTAINED HEREIN IS BASED ON THE PRESENT STATE OF OUR KNOWLEDGE. IT CHARACTERIZES THE PRODUCT WITH REGARD TO THE APPROPRIATE SAFETY PRECAUTIONS. IT DOES NOT REPRESENT A GUARANTEE OF THE PROPERTIES OF THE PRODUCT.