

# SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Revision Date 05/19/2015

Version 1.4

## SECTION 1. Identification

### Product identifier

Product number	104413
Product name	Mercury(II) sulfate solution 200 g/l in diluted sulfuric acid for determination of COD acc. to DIN 38409-H 43-1 (short-term experience)

### Relevant identified uses of the substance or mixture and uses advised against

Identified uses	Reagent for analysis
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### Details of the supplier of the safety data sheet

Company	EMD Millipore Corporation   290 Concord Road, Billerica, MA 01821, United States of America   General Inquiries: +1-978-715-4321   Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5)
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Emergency telephone	800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week
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## SECTION 2. Hazards identification

### GHS Classification

Corrosive to Metals, Category 1, H290  
Acute toxicity, Category 2, Oral, H300  
Acute toxicity, Category 2, Inhalation, H330  
Acute toxicity, Category 1, Dermal, H310  
Skin irritation, Category 2, H315  
Eye irritation, Category 2A, H319  
Specific target organ systemic toxicity - repeated exposure, Category 2, Kidney, H373  
For the full text of the H-Statements mentioned in this Section, see Section 16.

### GHS-Labeling

*Hazard pictograms*



*Signal Word*  
Danger

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### *Hazard Statements*

H290 May be corrosive to metals.

H300 + H310 + H330 Fatal if swallowed, in contact with skin or if inhaled.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H373 May cause damage to organs (Kidney) through prolonged or repeated exposure.

### *Precautionary Statements*

P234 Keep only in original container.

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

P262 Do not get in eyes, on skin, or on clothing.

P264 Wash skin thoroughly after handling.

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

P271 Use only outdoors or in a well-ventilated area.

P280 Wear protective gloves/ eye protection/ face protection.

P284 Wear respiratory protection.

P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.

P302 + P350 IF ON SKIN: Gently wash with plenty of soap and water.

P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 Immediately call a POISON CENTER or doctor/ physician.

P320 Specific treatment is urgent (see supplemental first aid instructions on this label).

P330 Rinse mouth.

P332 + P313 If skin irritation occurs: Get medical advice/ attention.

P337 + P313 If eye irritation persists: Get medical advice/ attention.

P361 Remove/Take off immediately all contaminated clothing.

P390 Absorb spillage to prevent material damage.

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

P406 Store in corrosive resistant stainless steel container with a resistant inner liner.

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

### **Other hazards**

None known.

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## **SECTION 3. Composition/information on ingredients**

Chemical nature	Aqueous solution of inorganic compounds. The percent content of the mercury compound mentioned below refers to the amount of the pure mercury therein.
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### **Hazardous ingredients**

*Chemical Name (Concentration)*

CAS-No.

*mercury(II) sulphate (>= 10 % - < 30 % )*

7783-35-9

Exact percentages are being withheld as a trade secret.

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*sulphuric acid ( $\geq 10\%$  -  $< 30\%$ )*  
7664-93-9

Exact percentages are being withheld as a trade secret.

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### SECTION 4. First aid measures

#### Description of first-aid measures

##### *General advice*

First aider needs to protect himself.

##### *Inhalation*

After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary oxygen. Immediately call in physician.

##### *Skin contact*

After skin contact: wash off with plenty of water. Remove contaminated clothing. Call a physician immediately.

##### *Eye contact*

After eye contact: rinse out with plenty of water. Call in ophthalmologist.

##### *Ingestion*

If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible.

Never give anything by mouth to an unconscious person.

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

Mercury compounds have a cytotoxic and protoplasmatoxic effect. Intoxication symptoms: acute: contact with eye causes severe lesions. Swallowing and inhalation of dusts damages mucous membranes of gastrointestinal and respiratory tract (metallic taste, nausea, vomiting, abdominal pain, bloody diarrhea, intestinal burns, glottal oedema, aspiration pneumonia); drop in blood pressure, cardiac dysrhythmia, circulatory collapse, and renal failure; chronic: inflammation of the mouth with loss of teeth and mercurial line. The principal signs manifest themselves in the CNS (impaired speech, vision, hearing, and sensitivity, loss of memory, irritability, hallucinations, delirium inter alia).

#### Indication of any immediate medical attention and special treatment needed

No information available.

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### SECTION 5. Fire-fighting measures

#### Extinguishing media

##### *Suitable extinguishing media*

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

##### *Unsuitable extinguishing media*

For this substance/mixture no limitations of extinguishing agents are given.

#### Special hazards arising from the substance or mixture

Not combustible.

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Development of hazardous combustion gases or vapors possible in the event of fire.

Fire may cause evolution of:

Sulfur oxides, mercury vapors

### Advice for firefighters

*Special protective equipment for fire-fighters*

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

*Further information*

Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

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## SECTION 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders:

Protective equipment see section 8.

### Environmental precautions

Do not let product enter drains.

### Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up with liquid-absorbent and neutralizing material (e.g. Chemizorb® H<sup>+</sup>, Art. No. 101595). Dispose of properly. Clean up affected area.

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## SECTION 7. Handling and storage

### Precautions for safe handling

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

Observe label precautions.

### Conditions for safe storage, including any incompatibilities

Tightly closed. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

Store at +5°C to +30°C (+41°F to +86°F).

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## SECTION 8. Exposure controls/personal protection

### Exposure limit(s)

#### Ingredients

Basis	Value	Threshold limits	Remarks
<i>mercury(II) sulphate 7783-35-9</i>			
ACGIH	Time Weighted Average (TWA): Skin designation:	0.025 mg/m <sup>3</sup>	Expressed as: as Hg  Can be absorbed through the skin. Expressed as: as Hg
NIOSH/GUIDE	Ceiling Limit Value and Time Period (if specified): Skin designation:	0.1 ppm	Expressed as: as Hg  Can be absorbed through the skin. Expressed as: as Hg
Z1A	Ceiling Limit Value:  Skin designation (Final Rule Limit applies):	0.1 mg/m <sup>3</sup>	Expressed as: as Hg  Can be absorbed through the skin. Expressed as: as Hg
ACGIH	Time Weighted Average (TWA): Skin designation:	0.025 mg/m <sup>3</sup>	Expressed as: as Hg  Can be absorbed through the skin. Expressed as: as Hg
<i>sulphuric acid 7664-93-9</i>			
ACGIH	Time Weighted Average (TWA):	0.2 mg/m <sup>3</sup>	Form of exposure: Thoracic fraction.
NIOSH/GUIDE	Recommended exposure limit (REL):	1 mg/m <sup>3</sup>	
OSHA_TRANS	PEL:	1 mg/m <sup>3</sup>	
Z1A	Time Weighted Average (TWA):	1 mg/m <sup>3</sup>	

### Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

### Individual protection measures

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

### Hygiene measures

Change contaminated clothing and immerse in water. Preventive skin protection Wash hands and face after working with substance.

### Eye/face protection

Safety glasses with side-shields

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## *Hand protection*

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

## *Other protective equipment:*

protective clothing

## *Respiratory protection*

required when vapors/aerosols are generated.

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

## SECTION 9. Physical and chemical properties

Physical state	liquid
Color	colorless
Odor	odorless
Odor Threshold	No information available.
pH	ca. 0.5 at 68 °F (20 °C)
Melting point	No information available.
Boiling point	No information available.
Flash point	No information available.
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	No information available.
Upper explosion limit	No information available.
Vapor pressure	No information available.
Relative vapor density	No information available.
Density	1.3 g/cm <sup>3</sup> at 68 °F (20 °C)
Relative density	No information available.
Water solubility	at 68 °F (20 °C) soluble

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Partition coefficient: n-octanol/water	No information available.
Autoignition temperature	No information available.
Decomposition temperature	No information available.
Viscosity, dynamic	No information available.
Explosive properties	Not classified as explosive.
Oxidizing properties	none
Corrosion	May be corrosive to metals.

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### SECTION 10. Stability and reactivity

#### Reactivity

has a corrosive effect

#### Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

#### Possibility of hazardous reactions

Violent reactions possible with:

Water, Alkali metals, alkali compounds, Ammonia, Alkaline earth metals, alkaline earth compounds, alkalines, Metals, metal alloys, combustible substances, organic solvent, halogenates, permanganates, acids

Gives off hydrogen by reaction with metals.

#### Conditions to avoid

no information available

#### Incompatible materials

Metals

#### Hazardous decomposition products

in the event of fire: See section 5.

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### SECTION 11. Toxicological information

#### Information on toxicological effects

*Likely route of exposure*

Eye contact, Skin contact

*Target Organs*

Eyes

Skin

Respiratory system

teeth

Mucous membranes

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### *Acute oral toxicity*

Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.

Acute toxicity estimate: 47.71 mg/kg

Calculation method

### *Acute inhalation toxicity*

Symptoms: Possible damages: mucosal irritations

Acute toxicity estimate: 0.49 mg/l; 4 h ; dust/mist

Calculation method

### *Acute dermal toxicity*

absorption

Acute toxicity estimate : 47.7 mg/kg

Calculation method

### *Skin irritation*

Severe irritations

Mixture causes skin irritation.

### *Eye irritation*

Damage to: Cornea

Mixture causes serious eye irritation.

### *Specific target organ systemic toxicity - single exposure*

The substance or mixture is not classified as specific target organ toxicant, single exposure.

### *Specific target organ systemic toxicity - repeated exposure*

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

### *Aspiration hazard*

Regarding the available data the classification criteria are not fulfilled.

## **Carcinogenicity**

IARC	Group 1: Carcinogenic to humans
	sulphuric acid 7664-93-9
OSHA	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
NTP	Known carcinogen.
	sulphuric acid 7664-93-9
ACGIH	A2: Suspected human carcinogen
	sulphuric acid 7664-93-9

## **Further information**

Further toxicological data:

After a latency period:



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Circulatory collapse

Other information

Mercury compounds have a cytotoxic and protoplasmatoxic effect. Intoxication symptoms: acute: contact with eye causes severe lesions. Swallowing and inhalation of dusts damages mucous membranes of gastrointestinal and respiratory tract (metallic taste, nausea, vomiting, abdominal pain, bloody diarrhea, intestinal burns, glottal oedema, aspiration pneumonia); drop in blood pressure, cardiac dysrhythmia, circulatory collapse, and renal failure; chronic: inflammation of the mouth with loss of teeth and mercurial line. The principal signs manifest themselves in the CNS (impaired speech, vision, hearing, and sensitivity, loss of memory, irritability, hallucinations, delirium inter alia).

Danger of cumulative effects.

Further data:

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

### Ingredients

#### *mercury(II) sulphate*

*Acute inhalation toxicity*

Acute toxicity estimate: 0.051 mg/l; dust/mist

Expert judgment

#### *sulphuric acid*

*Germ cell mutagenicity*

*Genotoxicity in vitro*

Ames test

Salmonella typhimurium

Result: negative

(HSDB)

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## SECTION 12. Ecological information

### Ecotoxicity

No information available.

### Persistence and degradability

No information available.

### Bioaccumulative potential

No information available.

### Mobility in soil

No information available.

#### *Additional ecological information*

Biological effects:

Harmful effect due to pH shift.

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.

Further information on ecology

Discharge into the environment must be avoided.

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## Ingredients

### *mercury(II) sulphate*

#### *Toxicity to fish*

LC50 Pimephales promelas (fathead minnow): 0.19 mg/l; 96 h (Hommel)

#### *Toxicity to algae*

IC50 *M.aeruginosa*: 0.005 mg/l(maximum permissible toxic concentration) (Hommel)

#### *M-Factor*

1

### *sulphuric acid*

#### *Toxicity to daphnia and other aquatic invertebrates*

static test EC50 *Daphnia magna* (Water flea): > 100 mg/l; 48 h

OECD Test Guideline 202

Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

## SECTION 13. Disposal considerations

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

## SECTION 14. Transport information

### Land transport (DOT)

UN number	UN 2922
Proper shipping name	CORROSIVE LIQUID, TOXIC, N.O.S. (CONT. SULPHURIC ACID, MERCURY SULPHATE)
Class	8 (6.1)
Packing group	II
Environmentally hazardous	--

### Air transport (IATA)

UN number	UN 2922
Proper shipping name	CORROSIVE LIQUID, TOXIC, N.O.S. (CONT. SULPHURIC ACID, MERCURY SULPHATE)
Class	8 (6.1)
Packing group	II
Environmentally hazardous	--

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**Special precautions for user** no

## Sea transport (IMDG)

**UN number** UN 2922

**Proper shipping name** CORROSIVE LIQUID, TOXIC, N.O.S. (CONT. SULPHURIC ACID, MERCURY SULPHATE)

**Class** 8 (6.1)

**Packing group** II

**Environmentally hazardous** --

**Special precautions for user** yes

EmS F-A S-B

Segregation Group 0001 Acids

0011 Mercury and mercury compounds

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## SECTION 15. Regulatory information

### United States of America

#### SARA 313

The following components are subject to reporting levels established by SARA Title III, Section 313:

##### *Ingredients*

sulphuric acid	7664-93-9	13.64 %
mercury(II) sulphate	7783-35-9	15.5 %

#### SARA 302

The following components are subject to reporting levels established by SARA Title III, Section 302:

##### *Ingredients*

sulphuric acid	7664-93-9
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### Clean Water Act

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

#### *Ingredients*

sulphuric acid

mercury(II) sulphate

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

#### *Ingredients*

sulphuric acid

mercury(II) sulphate

This product contains the following toxic pollutants listed under the U.S. Clean Water Act Section 307

#### *Ingredients*

mercury(II) sulphate

### DEA List I

Not listed

### DEA List II

Listed

#### *Ingredients*

sulphuric acid

7664-93-9

## US State Regulations

### Massachusetts Right To Know

#### *Ingredients*

mercury(II) sulphate

sulphuric acid

### Pennsylvania Right To Know

#### *Ingredients*

mercury(II) sulphate

sulphuric acid

### New Jersey Right To Know

#### *Ingredients*

mercury(II) sulphate

sulphuric acid

### California Prop 65 Components

WARNING: This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.

#### *Ingredients*

mercury(II) sulphate

### California Prop 65 Components

WARNING: this product contains a chemical known in the State of California to cause cancer.

#### *Ingredients*

sulphuric acid

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## Notification status

TSCA:	All components of the product are listed in the TSCA-inventory.
DSL:	All components of this product are on the Canadian DSL.

## SECTION 16. Other information

### Training advice

Provide adequate information, instruction and training for operators.

### Labeling

#### Hazard pictograms



#### Signal Word

Danger

#### Hazard Statements

H290 May be corrosive to metals.

H300 + H310 + H330 Fatal if swallowed, in contact with skin or if inhaled.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H373 May cause damage to organs (Kidney) through prolonged or repeated exposure.

H411 Toxic to aquatic life with long lasting effects.

#### Precautionary Statements

##### Prevention

P273 Avoid release to the environment.

P280 Wear protective gloves/ protective clothing.

##### Response

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

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.

P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.

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## Full text of H-Statements referred to under sections 2 and 3.

H290	May be corrosive to metals.
H300	Fatal if swallowed.
H310	Fatal in contact with skin.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H373	May cause damage to organs through prolonged or repeated exposure.

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

Used abbreviations and acronyms can be looked up at [www.wikipedia.org](http://www.wikipedia.org).

Revision Date 05/19/2015

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The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

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