



Material Safety Data Sheet

SECTION 1 – Chemical Product and Company Identification

MSDS Name: SULFURIC ACID

Formula: H₂SO₄

Molecular Wt: 98.08

Supplier: EPOCH MASTER GLOBAL BUSINESS (JIANGSU)

RM.3-93,TENGFEI BUILDING,NO.88 JIANGMIAO RD., RESEARCH AND
INNOVATION PARK,NANJING ZONE, (JIANGSU) PILOT FREE TRADE ZONE, CHINA

24Hours Emergency Contact: +86-13770711448

Tel: +025-83365586

SECTION 2 – Composition/Information on Ingredients

<i>Chemical Name</i>	<i>Percent</i>	<i>CAS #</i>	<i>EINECS/ELINCS</i>
Sulfuric Acid	98%	7664-93-9	231-639-5
Water	1%-2%	7732-18-5	231-791-2

SECTION 3 – Hazards Identification

EMERGENCY OVERVIEW

Appearance: Clear, colorless to dark brown, odorless, dense, oily liquid.

Hygroscopic. Will not burn. Can decompose at high temperatures forming toxic gases, such as sulphur oxides. Contact with combustible materials may cause fire. Highly reactive. Contact with many organic and inorganic chemicals may cause fire or explosion. Contact with metals liberates flammable hydrogen gas. Reacts violently with water. VERY TOXIC. May be fatal if inhaled or swallowed. CORROSIVE to the eyes, skin and respiratory tract. May cause blindness and permanent scarring. Causes lung injury—effects may be delayed. Strong inorganic acid mists containing sulphuric acid are CARCINOGENIC.

Target Organs: Lungs, teeth, eyes, skin, mucous membranes.

Potential Health Effects

Primary Route(s) of Entry: Inhalation and ingestion. Skin contact. Eye contact.

Effects of Acute Exposure: Corrosive, oxidizing and sulphonating properties on contact. May be fatal by ingestion, inhalation or skin contact.

LD50/LC50: CAS# 7664-93-3: Inhalation, mouse: LC50 = 320 mg/m³/2H,
Inhalation, rat: LC50 = 510 mg/m³/2H Oral, rat: LD50 = 2140 mg/kg.

Eyes: Causes severe eye burns. May cause permanent eye injury, including blindness. Sulphuric acid mists and aerosols are expected to be irritating.

Skin: Causes severe skin burns, blisters, ulcers, and permanent scarring. Extensive



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burns may result in death. High mist or aerosol concentrations may cause redness, irritation and burns to the skin if contact is prolonged. **Ingestion:** May be fatal if swallowed. Causes burns to the lips, tongue, throat, esophagus, and stomach; symptoms may include difficulty swallowing, intense thirst, nausea, vomiting, diarrhea, and in severe cases collapse and death. Aspiration during ingestion or vomiting may cause serious lung injury and death.

Inhalation: May be fatal if inhaled. Causes severe irritation and burns to the respiratory system. May cause pulmonary edema with symptoms including coughing, chest pain and shortness of breath. Symptoms can be delayed for 24-48 hours after exposure and are aggravated by physical exertion.

Effects of Chronic Exposure: Although sulphuric acid is widely used, there is little information on the effects of long-term exposure. Long-term exposure to corrosive materials like sulphuric acid can cause chronic respiratory irritation. Repeated exposure to sulphuric acid aerosols has caused dental erosion. Repeated skin contact with low concentrations can cause dry, red, cracked skin (dermatitis).

SECTION 4 – First Aid Measures

Eyes: Immediately flush eyes with copious amounts of water for at least 30 minutes, holding lids apart to ensure flushing of the entire surface. Do NOT allow victim to rub eyes or keep eyes closed. Get medical aid immediately.

Skin: Get medical aid immediately. Immediately flush skin with copious quantities of soap and water for at least 30 minutes while removing contaminated clothing and shoes. **SPEEDY ACTION IS CRITICAL!** Call a physician.

Ingestion: Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Consult a physician immediately. Never give anything by mouth to an unconscious person.

Inhalation: This chemical is very toxic. Get medical aid immediately. Remove patient from exposure to fresh air immediately. Administer approved oxygen supply if breathing is difficult. Administer artificial respiration or CPR if breathing has ceased. Call a physician. Symptoms of pulmonary edema can be delayed up to 48 hours after exposure.

Notes to Physician: Treat symptomatically and supportively. Consult a doctor and/or the nearest Poison Control Centre for all exposures.

SECTION 5 – Fire Fighting Measures

General Information: During a fire, irritating/toxic sulphur oxides may be generated. Sulphuric acid reacts violently with water and organic materials



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with the evolution of heat. Fire may result due to the heat generated by contact of concentrated sulphuric acid with combustible materials. Reacts with most metals, especially when diluted with water; this reaction produces highly flammable hydrogen gas that may explode if ignited. Strong dehydrating agent. Containers may explode in the heat of a fire. Firefighter's normal protective clothing (Bunker Gear) will not provide adequate protection. A full-body encapsulating chemical protective suit with positive pressure self-contained breathing apparatus (SCBA) may be necessary.

Extinguishing Media: Use extinguishing media most appropriate for the surrounding fire. Carbon dioxide. Dry chemical power. Do not use water.

Auto-ignition Temperature: Not available.

Flash Point: Not available.

NFPA Rating: Health 3; Flammability 0; Instability 2; Other WATER REACTIVE.

Explosion Limits: Lower: Not available. Upper: Not available.

SECTION 6 – Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Do not touch spilled material. Prevent material from entering confined spaces, sewers or waterways. Keep materials which can burn away from spilled material. Stop or reduce leak if safe to do so.

Steps to be taken in case material is released or spilled: SMALL SPILLS: Soak up spill with absorbent material that does not react with spilled chemical. Put material in suitable, covered, labelled containers. Flush area with water. LARGE SPILLS: Evacuate area. Contact fire and emergency services and supplier for assistance and advice. Contain spill with dry sand, clay, diatomaceous earth, or absorbent material which does not react with spilled material. Cautiously dilute and neutralize with lime or soda ash. Remove liquid by corrosion-resistant pumps or vacuum equipment. Place in suitable, covered, labelled containers. Contaminated absorbent material may pose the same hazards as the spilled product.

Waste disposal method: According to all applicable regulations.

SECTION 7 – Handling and Storage

Handling: This material is a CORROSIVE and VERY TOXIC liquid. Avoid generating vapours or mists. Prevent the release of vapours or mists into the air. Highly reactive. Prevent accidental contact with water. Do not use with incompatible materials such as alkali solutions, carbides, chlorates and nitrates. See Section 10 for more information. Never return contaminated material to its original container. Never add water to a corrosive.

Always add corrosives to COLD water. When mixing with water, stir small amounts



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in slowly. Assume that empty containers contain residues that are hazardous. Use with adequate ventilation.

Storage: Store in a cool, dry, well-ventilated area away from combustible substances. Keep container tightly closed when not in use. Do not store near alkaline or organic substances. Store in a cool place away from heated areas, sparks and flame. Do not add any other material to the container. Do not store in a damp atmosphere. Do not get in eyes, on skin or on clothing. Do not allow smoking and food consumption while handling. Handle in accordance with good storage and handling practices. Do not store near flammable substances. Wash thoroughly after handling.

SECTION 8 – Exposure Control/Personal Protection

Engineering Controls: Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels.

Exposure Limits:

Chemical Name ACGIH NIOSH OSHA

Sulphuric acid 0.2 mg/m³ TWA (thoracic fraction) 1 mg/m³ TWA; 15 mg/m³ IDLH
1 mg/m³ TWA

OSHA Vacated PELs Sulphuric acid: 1 mg/m³ TWA.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133.

Skin: Wear appropriate protective neoprene or polyethylene gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure. Apron or clothing to protect skin. Rubber boots. Sufficient to protect skin.

Respiratory Protection: Follow the OSHA respirator regulations found in 29CFR 1910.134. Always use a NIOSH-approved respirator when necessary.

Ventilation: Use only in a chemical fume hood.

Other Protective Equipment: Make eye bath and emergency shower available.

SECTION 9 – Physical and Chemical Properties

Physical State: Liquid

Appearance: Colourless

Odour: Odourless

pH: 0.3 (1 N solution); 1.2 (0.1 N solution); 2.1 (0.01 N solution)

Vapour Pressure: Less than 0.04 kPa (0.3 mm Hg) at 25 °C

Vapour Density: 3.38 (air = 1)

Evaporation Rate: Slower than ether.

Viscosity: Negligible.



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Boiling Point: 93% (w/w): 279 °C (534.2 °F); 98% (w/w): 310-340 °C (590-644 °F); 100% (w/w): 290 °C (554.0 °F)

Freezing/Melting Point: 93% (w/w): -32 °C (-25.6 °F); 98% (w/w): 3 °C (37.4 °F); 100% (w/w): 10.4-10.5 °C (50.6-50.9 °F)

Decomposition Temperature: 340 °C

Solubility: Soluble in water, in all proportions with generation of much heat. Soluble in all proportions in ethanol (decomposes).

Specific Gravity/Density: 93% (w/w): 1.8 g/cm³; 98% (w/w): 1.844 g/cm³; 100% (w/w): 1.839 g/cm³ @ 15 °C

Molecular Formula: H₂SO₄

Molecular Weight: 98.0716

SECTION 10 – Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.

Conditions to Avoid: Incompatible materials, contact with water, metals, excess heat, combustible materials, organic materials, oxidizers, amines, bases.

Incompatibilities with Other Materials: Acetic anhydride, Acetone cyanhydrin, Acetone + Nitric acid, Acetone + Potassium dichromate, Acetonitrile + Sulphur trioxide, Acrolein, Acrylonitrile, Alcohols + Hydrogen peroxide, Allyl alcohol, Allyl and Aldehyde compounds, Allyl chloride, 2-Aminoethanol, Ammonium hydroxide, Ammonium iron(III) sulfate dodecahydrate, Ammonium triperchromate, Aniline + Glycerol + Nitrobenzene, Benzyl alcohol, Bromates + Metals, tert-Butyl-m-xylene + Nitric acid, 1-Chloro-2,3-epoxypropane, Bromine pentafluoride, n-Butyraldehyde, Cesium acetylene carbide, 4-Chloronitrobenzene + Sulphur trioxide, Copper, Dichloromethane + Ethanol + Nitrate/nitrite, 2-Cyano-4-nitrobenzenediazonium hydrogen sulphate, 2-Cyano-2-propanol, Chlorine trifluoride, Chlorosulfonic acid (Cyanides), Cyclopentadiene, Cyclopentanone oxime, 1,3-Diazidobenzene, Diethylamine, Cuprous nitride, Diisobutylene, Ephchlorohydrin, Ethylene cyanohydrin, Ethylene diamine, Ethylene glycol, Dimethoxydinitroanthraquinone, 4-Dimethylaminobenzaldehyde, 2,5-Dinitro-3-methylbenzoic acid + Sodium azide, 1,5-Dinitronaphthalene + Sulphur, Ethoxylated nonylphenol, Fulminates, Halides, Hexalithium disilicide, Ethylenimine, Other acids, Iodine heptafluoride, Metals, Isoprene, Hydrofluoric acid, Hydrogen peroxide, Metal acetylides or carbides, Metal chlorates, Metal perchlorates, 4-Methuylpyridine, Nitramide, Nitric acid + Organic materials, Nitric acid + Toluene, Nitrites, Nitroaryl bases and derivatives, Nitrobenzene, 3-Nitrobenzenesulfonic acid, Nitromethane, N-Nitromethylamine, 4-Nitrotoluene, Permanganates, Phosphorus, Phosphorus(III) oxide, Poly(silylene), Mercuric nitride, Mesityl oxide, P-Nitrotoluene, Pentasilver trihydroxydiaminophosphate,



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Perchlorates, Permanganates + Benzene, Phosphorus isocyanate, Picrates, Potassium t-butoxide, Potassium, 3-Propynol, Potassium chlorate, beta-Propiolactone, Propylene oxide, Pyridine, Rubidium acetylene carbide and Sodium, Silver permanganates, Silver peroxochromate, Sodium, Sodium carbonate, Sodium tetrahydroborate, Sodium thiocyanate, Sucrose, Tetramethylbenzenes, 1,2,4,5-Tetrazine, Thallium(I) azidodithiocarbonate, 1,3,5-Trinitrosohexahydro-1,3,5-triazine, Water, Zinc Iodide. Carbonates, sulfides, sulphites, carbides, chlorates.

Warning: *It is fairly easy to produce the dangerous anhydrous perchloric acid from either its salts or its aqueous solutions by heating with high boiling acids and dehydrating agents such as sulphuric acid and phosphorus pentoxide.*

Hazardous Decomposition Products: Oxides of sulphur.

Hazardous Polymerization: Has not been reported.

Reaction Product(s): Hydrogen is generated by the action of the acid on most metals.

SECTION 11 – Toxicological Information

RTECS: CAS# 7664-93-9: WS5600000.

LD50/LC50: CAS# 7664-93-9: Inhalation, mouse: LC50 = 320 mg/m³/2H. Inhalation, rat: LC50 = 51 mg/m³/2H. Oral, rat: LD50 = 2140 mg/kg.

Carcinogenicity: CAS# 7664-93-9: Workers exposed to industrial sulphuric acid mist showed a statistical increase in laryngeal, nasal, sinus, and lung cancer. These data suggests a possible relationship between carcinogenesis and inhalation of sulphuric acid mist. CA Prop 65: Not listed. OSHA: Select carcinogen. NTP: Known human carcinogen. NIOSH: Not listed. IARC: Group 1 carcinogen.

Epidemiology: Standard Draize test: Eye, rabbit – 250 µg, severe reaction.

Reproductive: Specific developmental abnormalities: musculoskeletal system, Inhalation-rabbit TCLo = 20 mg/m³/7H (female 6-18D post).

Teratogenicity: No human information available.

Mutagenicity: Cytogenetic analysis: Ovary, hamster – 4 mmol/L.

Neurotoxicity: No information available.

SECTION 12 – Ecological Information

Ecotoxicity: Sulphuric acid is harmful to aquatic life in very low concentrations. It may be dangerous if it enters water intakes. Zebrafish: LC50 = 82 mg/L/24H. Mosquito fish: LC50 = 42 mg/L/96H. Prawn: LC50 = 42.5 ppm/48H (salt water).

Environmental: No information available. **Physical:** No information available.



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Other: No information available.

SECTION 13 – Disposal Considerations

Dispose of in a manner consistent with federal, provincial/state/territorial, and local regulations.

RCRA D-Maximum Concentration of Contaminants: None of the components are on this list.

RCRA D Series – Chronic Toxicity Reference Levels: None of the components are on this list.

RCRA F Series Wastes: None of the components are on this list.

RCRA P Series Wastes: None of the components are on this list.

RCRA U Series Wastes: None of the components are on this list.

RCRA Substances Banned from Land Disposal: None of the components are on this list.

SECTION 14 – Transport Information

Shipping Name and Description: SULFURIC ACID with more than 98 per cent acid

UN Number: UN1830

Class: 8

Packing Group/Category: II

Dangerous Goods Code: Not available

Package mark: corrosive substances

Transport Note:---

SECTION 15 – Regulatory Information

Dangerous Chemicals Regulations (PRC State Council Decree No. 344)

Implementing Rules of Safety Management Regulations of Dangerous Chemicals Goods ([1992] No. 677 PRC Ministry of Chemical Industry)

Chemicals Regulations for Safe Use in the Workplace ([1996] No. 423 Ministry of Labor)

Classification and Signs of Commonly used dangerous chemicals (GB13690-92)

SECTION 16 – Other Information

Filling date: Jul.20,2017

Filing department: Technical Department

Check department: Department of Safety and Environment Protection

Revised comment: Version 2