

Material Safety Data Sheet

Sulfuric Acid

ACC# 22350

Section 1 - Chemical Product and Company Identification

MSDS Name: Sulfuric Acid

Catalog Numbers: S71211SC, S71826, S79200, S80213, S80213-1, A298 212, A298212, A300 212, A300 225LB, A300 500, A300 612GAL, A300 700LB, A300212, A300225LB, A300500, A300612GAL, A300700LB, A300C 212, A300C212, A300C212001, A300C212002, A300C212003, A300C212004, A300C212005, A300C212006, A300C212007, A300C212008, A300C212009, A300C212010, A300C212LC, A300FP 500, A300FP500, A300J500, A300P 500, A300P500, A300S 212, A300S 500, A300S212, A300S212LC, A300S500, A300SI 212, A300SI212, A468-1, A468-250, A468-500, A4682, A484 212, A484212, A510-212, A510-500, A510SK212, AC3000S212002, MAR77018068, NC9466102, NC9499595, NC9755547, NC9825433, NC9826713, S71211, S71211MF, S71211MF*, S71211SCMF, S71211SCMF*, S79200MF, S79200MF* DHAZ, S79200MF*DHAZ, S79200SCMF, SA174 212, SA174 4, SA174212, SA1744, SA176 4, SA1764, SA196 500, SA196500

Synonyms: Hydrogen Sulfate; Oil of Vitriol; Vitriol Brown Oil; Matting Acid; Battery Acid; Sulphuric Acid.

Company Identification:

Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410

For information, call: 201-796-7100

Emergency Number: 201-796-7100

For CHEMTREC assistance, call: 800-424-9300

For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
7664-93-9	Sulfuric acid	95-98.0	231-639-5

Hazard Symbols: C

Risk Phrases: 35 8

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: clear colorless - oily liquid. **Danger!** Corrosive. Causes eye and skin burns. May cause severe respiratory tract irritation with possible burns. May cause severe digestive tract irritation with possible burns. Cancer hazard. May cause fetal effects based upon animal studies. May cause kidney damage. May be fatal if

inhaled. May cause lung damage. Hygroscopic. Strong oxidizer. Contact with other material may cause a fire. May cause severe eye, skin and respiratory tract irritation with possible burns.

Target Organs: Kidneys, heart, lungs, respiratory system, cardiovascular system, teeth, eyes.

Potential Health Effects

Eye: Causes severe eye burns. May cause irreversible eye injury. May cause conjunctivitis. May cause permanent corneal opacification.

Skin: Causes skin burns. Continued contact can cause tissue necrosis. May cause skin rash (in milder cases), and cold and clammy skin with cyanosis or pale color.

Ingestion: May cause severe and permanent damage to the digestive tract. Causes gastrointestinal tract burns. May cause systemic toxicity with acidosis.

Inhalation: May cause irritation of the respiratory tract with burning pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary edema. Causes chemical burns to the respiratory tract. Inhalation may be fatal as a result of spasm, inflammation, edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema. Causes corrosive action on the mucous membranes.

Chronic: Prolonged or repeated inhalation may cause kidney and lung damage. Prolonged or repeated skin contact may cause dermatitis. Prolonged or repeated inhalation may cause nosebleeds, nasal congestion, erosion of the teeth, perforation of the nasal septum, chest pain and bronchitis. Prolonged or repeated eye contact may cause conjunctivitis. May cause fetal effects. May cause cancer in humans. Effects may be delayed. Laboratory experiments have resulted in mutagenic effects. May cause ischemic heart lesions.

Section 4 - First Aid Measures

Eyes: Get medical aid immediately. Do NOT allow victim to rub or keep eyes closed. Extensive irrigation with water is required (at least 30 minutes).

Skin: Get medical aid immediately. Immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Destroy contaminated shoes.

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

Inhalation: Get medical aid immediately. Remove from exposure to fresh air immediately. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

Notes to Physician: Monitor arterial blood gases, chest x-ray, and pulmonary function tests if respiratory tract irritation or respiratory depression is evident. Treat dermal irritation or burns with standard topical therapy. Effects may be delayed. Do NOT use sodium bicarbonate in an attempt to neutralize the acid.

Antidote: Do NOT use oils or ointments in eye.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Strong oxidizer. Contact with combustible materials may cause a fire. Wear appropriate protective clothing to prevent contact with skin and eyes. Wear a self-contained breathing apparatus (SCBA) to prevent contact with thermal decomposition products. Will react with water to form toxic and corrosive fumes. Contact with water can cause violent liberation of heat and splattering of the material. Some oxidizers may react explosively with hydrocarbons(fuel). Contact with metals may evolve flammable hydrogen gas. May accelerate burning if involved in a fire. Containers may explode when heated or if contaminated with water. Runoff from fire control or dilution water may cause pollution.

Extinguishing Media: Do NOT use water directly on fire. Use carbon dioxide or dry chemical. Do NOT get water inside containers. Contact professional fire-fighters immediately. Cool containers with flooding quantities of water until well after fire is out.

Section 6 - Accidental Release Measures

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

Spills/Leaks: Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Provide ventilation. Use water spray to reduce vapors, do not put water directly on leak, spill area or inside container. Cover with dry earth, dry sand, or other non-combustible material followed with plastic sheet to minimize spreading and contact with water. Keep combustibles (wood, paper, oil, etc.,) away from spilled material.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Do not get in eyes, on skin, or on clothing. Keep container tightly closed. Do not ingest or inhale. Do not allow contact with water. Use only in a chemical fume hood. Discard contaminated shoes. Keep from contact with moist air and steam.

Storage: Do not store near combustible materials. Keep container closed when not in use. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep away from water. Corrosives area. Do not store near alkaline substances. Store protected from moisture.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use only under a chemical fume hood.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Sulfuric acid	(1 mg/m ³) TWA; (3 mg/m ³) STEL	1 mg/m ³ TWA 15 mg/m ³ IDLH	1 mg/m ³ TWA

OSHA Vacated PELs: Sulfuric 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 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

Section 9 - Physical and Chemical Properties

Physical State: Liquid

Appearance: clear colorless - oily liquid

Odor: odorless

pH: 0.3 (1N Solution)

Vapor Pressure: 1 mm Hg @ 145.8 C

Vapor Density: 3.38

Evaporation Rate: Slower than ether.

Viscosity: 21 mPas @ 25 C

Boiling Point: 340 deg C

Freezing/Melting Point: 10.35 deg C

Autoignition Temperature: Not available.

Flash Point: Not available.

Decomposition Temperature: 340 deg C

NFPA Rating: (estimated) Health: 3; Flammability: 0; Reactivity: 2

Explosion Limits, Lower: Not available.

Upper: Not available.

Solubility: Soluble.

Specific Gravity/Density: 1.841

Molecular Formula: H₂SO₄

Molecular Weight: 98.0716

Section 10 - Stability and Reactivity

Chemical Stability: Combines vigorously with water with the evolution of heat. Reported to have exploded when in a sealed container. This was most likely due to pressure of hydrogen by reduction of water.

Conditions to Avoid: Incompatible materials, ignition sources, metals, excess heat, combustible materials, organic materials, reducing agents, exposure to moist air or water, oxidizers, amines, bases.

Incompatibilities with Other Materials: Bases, strong dehydrating agents, organic materials, finely powdered metals, moisture, carbides, chlorates, cyanides (e.g. potassium cyanide, sodium cyanide), azides, fulminates, picrates, nitrates,

alkali halides, zinc, iodides, permanganates, hydrogen peroxides, perchlorates, nitromethane, phosphorus, nitrites, cyclopentadiene, cyclopentanone oxime, nitroaryl amines, lithium silicides, iron, mercuric nitride, benzene, potassium chlorates, steel, cesium acetylene carbide, trihydroxydiamino phosphate, phosphorus trioxide, reducing agents.

Hazardous Decomposition Products: Oxides of sulfur, irritating and toxic fumes and gases.

Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:

CAS# 7664-93-9: WS5600000

LD50/LC50:

CAS# 7664-93-9:

Draize test, rabbit, eye: 250 ug Severe;

Inhalation, mouse: LC50 = 320 mg/m³/2H;

Inhalation, rat: LC50 = 510 mg/m³/2H;

Oral, rat: LD50 = 2140 mg/kg;

Carcinogenicity:

CAS# 7664-93-9:

ACGIH: A2 - Suspected Human Carcinogen (contained in strong inorganic acid mists)

OSHA: Select carcinogen

IARC: Group 1 carcinogen

Epidemiology: No data available.

Teratogenicity: No data available.

Reproductive Effects: No data available.

Neurotoxicity: No data available.

Mutagenicity: No data available.

Other Studies: No data available.

Section 12 - Ecological Information

Ecotoxicity: Fish: Bluegill/Sunfish: 49 mg/L; 48Hr; TLm (tap water @ 20C)

Fish: Bluegill/Sunfish: 24.5 ppm; 48Hr; TLm (fresh water)

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	IATA	RID/ADR	IMO	Canada TDG
Shipping Name:	SULFURIC ACID				SULFURIC ACID
Hazard Class:	8				8(9.2)
UN Number:	UN1830				UN1830
Packing Group:	II				II

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 7664-93-9 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

SARA

Section 302 (RQ)

CAS# 7664-93-9: final RQ = 1000 pounds (454 kg)

Section 302 (TPQ)

CAS# 7664-93-9: TPQ = 1000 pounds; RQ = 1000 pounds

SARA Codes

CAS # 7664-93-9: acute, chronic, reactive.

Section 313

This material contains Sulfuric acid (CAS# 7664-93-9, 95 98 0%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act:

This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depletors. This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

CAS# 7664-93-9 is listed as a Hazardous Substance under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 7664-93-9 can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

C

Risk Phrases:

R 35 Causes severe burns.

R 8 Contact with combustible material may cause fire.

Safety Phrases:

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 30 Never add water to this product.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

WGK (Water Danger/Protection)

CAS# 7664-93-9: 2

Canada

CAS# 7664-93-9 is listed on Canada's DSL List. CAS# 7664-93-9 is listed on Canada's DSL List.

This product has a WHMIS classification of E, D1A.

CAS# 7664-93-9 is listed on Canada's Ingredient Disclosure List.

Exposure Limits

CAS# 7664-93-9: OEL-ARAB Republic of Egypt:TWA 1 mg/m³ OEL-AUSTRALIA:TWA 1 mg/m³ OEL-BELGIUM:TWA 1 mg/m³;STEL 3 mg/m³ OEL-CZECHOSLOVAKIA:TWA 1 mg/m³;STEL 2 mg/m³ OEL-DENMARK:TWA 1 mg/m³ OEL-FINLAND:TWA 1 mg/m³;STEL 3 mg/m³;Skin OEL-FRANCE:TWA 1 mg/m³;STEL 3 mg/m³ OEL-GERMANY:TWA 1 mg/m³ OEL-HUNGARY:STEL 1 mg/m³ OEL-JAPAN:TWA 1 mg/m³ OEL-THE NETHERLANDS:TWA 1 mg/m³ OEL-THE PHILIPPINES:TWA 1 mg/m³ OEL-POLAND:TWA 1 mg/m³ OEL-RUSSIA:STEL 1 mg/m³;Skin OEL-SWEDEN:TWA 1 mg/m³;STEL 3 mg/m³ OEL-SWITZERLAND:TWA 1 mg/m³;STEL 2 mg/m³ OEL-THAILAND:TWA 1 mg/m³ OEL-TURKEY:TWA 1 mg/m³ OEL-UNITED KINGDOM:TWA 1 mg/m³ OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV

Section 16 - Additional Information

MSDS Creation Date: 4/22/1999

Revision #7 Date: 11/20/2000

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