Material Safety Data Sheet

Sulfuric acid 90-98%
MSDS# 22350

Section 1 - Chemical Product and Company Identification

MSDS Name: Sulfuric acid 90-98%
Catalog Numbers:

Synonyms:
Hydrogen sulfate; Oil of vitriol; Vitriol brown oil; Mattling acid; Battery acid; Sulphuric acid; Electrolyte acid; Dihydrogen sulfate; Spirit of sulfur; Chamber acid.

Company Identification: Fisher Scientific UK
Bishop Meadow Road, Loughborough
Leics. LE11 5RG
For information in Europe, call: (01509) 231166
Emergency Number, Europe: 01509 231166

Section 2 - Composition, Information on Ingredients

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CAS#: 7664-93-9
Chemical Name: Sulfuric acid
%: 90-98
EINECS#: 231-639-5
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Hazard Symbols: C
Risk Phrases: 35

Section 3 - Hazards Identification

EMERGENCY OVERVIEW
Causes severe burns. Hygroscopic (absorbs moisture from the air).

Potential Health Effects

Eye:
Causes severe eye burns. May cause irreversible eye injury. May cause blindness. May cause permanent corneal opacification. The severity of injury depends on the concentration of the solution and the duration of exposure.

Skin:
Causes skin burns. The severity of injury depends on the concentration of the solution and the duration of exposure.

Ingestion:
May cause severe and permanent damage to the digestive tract.

Causes gastrointestinal tract burns.

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. Because its vapor pressure is negligible, it exists in the air only as a mist or spray. Exposure may impair lung function and cause mucostasis (reduced mucous clearance).

**Chronic:**

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. Effects may be delayed. Workers chronically exposed to sulfuric acid mists may show various lesions of the skin, tracheobronchitis, stomatitis, conjunctivitis, or gastritis. Occupational exposure to strong inorganic acid mists containing sulfuric acid is carcinogenic to humans.

**Section 4 - First Aid Measures**

**Eyes:**

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid immediately.

**Skin:**

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid immediately. Wash clothing before reuse.

**Ingestion:**

If swallowed, do NOT induce vomiting. Get medical aid immediately. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person.

**Inhalation:**

POISON material. If inhaled, get medical aid immediately. Remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

**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.

**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. Use water spray to keep fire-exposed containers cool. Substance is noncombustible. Contact with water can cause violent liberation of heat and splattering of the material. Contact with metals may evolve flammable hydrogen gas. Runoff from fire control or dilution water may cause pollution. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Strong dehydrating agent, which may cause ignition of finely divided materials on contact. Oxides of sulfur may be produced in fire.

**Extinguishing Media:**

Use extinguishing media most appropriate for the surrounding fire. Do NOT get water inside containers. If water is used, care should be
taken, since it can generate heat and cause spattering if applied directly to sulfuric acid.

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. Carefully scoop up and place into appropriate disposal container. Provide ventilation. Do not get water inside containers. Cover with dry earth, dry sand, or other non-combustible material followed with plastic sheet to minimize spreading and contact with water.

Section 7 - Handling and Storage

Handling:
Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Do not allow water to get into the container because of violent reaction. Do not get in eyes, on skin, or on clothing. Keep container tightly closed. Discard contaminated shoes. Use only with adequate ventilation. Do not breathe spray or mist. Do not use with metal spatula or other metal items. Inform laundry personnel of contaminant's hazards.

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. Do not store near alkaline substances. Store protected from moisture. Ideally, sulfuric acid should be stored in isolation from all other chemicals in an approved acid or corrosives safety cabinet.

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 adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits. Use a corrosion-resistant ventilation system.

Exposure Limits
CAS# 7664-93-9:
United States OSHA: 1 mg/m3 TWA
Belgium - TWA: 1 mg/m3 VLE
Belgium - STEL: 3 mg/m3 VLE
France - VME: 1 mg/m3 VME
France - VLE: 3 mg/m3 VLE
Japan: 1 mg/m3 Ceiling
Malaysia: 1 mg/m3 TWA
Netherlands: 1 mg/m3 MAC
Spain: 1 mg/m3 VLA-ED
Spain: 3 mg/m3 VLA-EC

Personal Protective Equipment

Eyes:
Wear chemical splash goggles and face shield.

Skin:
Wear neoprene gloves, apron, and/or clothing. Viton gloves are recommended.

Clothing:
Wear appropriate protective clothing to prevent skin exposure.

Respirators:
Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Color: oily - clear colorless to yellow
Odor: odorless
pH: 0.3 (1N solution)
Vapor Pressure: Not applicable
Viscosity: 21 mPas @ 25 C
Boiling Point: 290 - 338 deg C
Freezing/Melting Point: 10 deg C (50.00 F)
Autoignition Temperature: Not available.
Flash Point: Not applicable.
Explosion Limits: Lower: Not available
Explosion Limits: Upper: Not available
Decomposition Temperature: Not applicable.
Solubility in water: Soluble with much heat
Specific Gravity/Density: 1.84
Molecular Formula: H2SO4
Molecular Weight: 98.07

Section 10 - Stability and Reactivity

Chemical Stability:
Sulfuric acid reacts vigorously, violently or explosively with many organic and inorganic chemicals and with water.
Conditions to Avoid:
Excess heat, exposure to moist air or water, Note: Use great caution in mixing with water due to heat evolution that causes explosive spattering. Always add the acid to water, never the reverse.

Incompatibilities with Other Materials
Metals, oxidizing agents, reducing agents, bases, acrylonitrile, chlorates, finely powdered metals, nitrates, perchlorates, permanganates, epichlorohydrin, aniline, carbides, fulminates, picrates, organic materials, flammable liquids.

Hazardous Decomposition Products
Oxides of sulfur.

Hazardous Polymerization
Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 7664-93-9: WS5600000
LD50/LC50:
RTECS: CAS# 7664-93-9: Draize test, rabbit, eye: 250 ug
Severe; Inhalation, mouse: LC50 = 320 mg/m3/2H; Inhalation, mouse: LC50 = 320 mg/m3; Inhalation, rat: LC50 = 510 mg/m3/2H; Inhalation, rat: LC50 = 510 mg/m3; Oral, rat: LD50
= 2140 mg/kg;.

Other:

Carcinogenicity:

Sulfuric acid -
  ACGIH: A2 - Suspected Human Carcinogen (contained in strong inorganic acid
California: carcinogen, initial date 3/14/03 (Strong inorganic acid mists contain
  NTP: Known carcinogen (Strong inorganic acid mists containing s).
  IARC: Group 1 carcinogen

Other:
See actual entry in RTECS for complete information.

Ecotoxicity:

Fish: Bluegill/Sunfish: 49 mg/L; 48Hr; TLm (tap water @ 20°C)
Fish: Bluegill/Sunfish: 24.5 ppm; 48Hr; TLm (fresh water)

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

IATA
  Shipping Name: SULPHURIC ACID
  Hazard Class: 8
  UN Number: 1830
  Packing Group: II

IMO
  Shipping Name: SULPHURIC ACID
  Hazard Class: 8
  UN Number: 1830
  Packing Group: II

RID/ADR
  Shipping Name: SULPHURIC ACID
  Hazard Class: 8
  UN Number: 1830
  Packing Group: II

USA RQ: CAS# 7664-93-9: 1000 lb final RQ; 454 kg final RQ

European/International Regulations
  European Labeling in Accordance with EC Directives
  Hazard Symbols: C
  Risk Phrases:
    R 35 Causes severe burns.
  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

US Federal
  TSCA
  CAS# 7664-93-9 is listed on the TSCA Inventory.

MSDS Creation Date:
4/22/1999
Revision #14 Date
6/07/2006
Revisions were made in Sections: 9
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