Material Safety Data Sheet
Sulfuric acid solutions 10N (5M) approximately 40%

MSDS# 40076

Section 1 - Chemical Product and Company Identification

MSDS Name: Sulfuric acid solutions 10N (5M) approximately 40%
Catalog Numbers: SA200-1, SA200-1LC, SA213
Synonyms: Hydrogen Sulfate; Oil of Vitrol; Vitrol Brown Oil; Matting Acid; Battery Acid

Company Identification:
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
For information in the US, call: 201-796-7100
Emergency Number US: 201-796-7100
CHEMTREC Phone Number, US: 800-424-9300

Section 2 - Composition, Information on Ingredients

Risk Phrases: 35
CAS#: 7664-93-9
Chemical Name: Sulfuric acid
%: 40
EINECS#: 231-639-5
Hazard Symbols: C

Risk Phrases:
CAS#: 7732-18-5
Chemical Name: Water
%: 60
EINECS#: 231-791-2
Hazard Symbols:

Text for R-phrases: see Section 16
Risk Phrases: 35
Hazard Symbols: C

Section 3 - Hazards Identification

EMERGENCY OVERVIEW


Potential Health Effects
Eye: Causes severe eye burns. May cause irreversible eye injury.
Skin: Causes skin burns.
Ingestion: May cause severe and permanent damage to the digestive tract. Causes gastrointestinal tract burns.
Inhalation: Harmful if inhaled. May cause severe irritation of the respiratory tract with sore throat, coughing, shortness of
breath and delayed lung edema. Causes chemical burns to the respiratory tract.

Chronic:
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.

Section 4 - First Aid Measures

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

Skin: Get medical aid immediately. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. SPEEDY ACTION IS CRITICAL! 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 and move to fresh air immediately. If not breathing, give artificial respiration. 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:

Section 5 - Fire Fighting Measures

General Information: 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. Contact with water can cause violent liberation of heat and splattering of the material.

Extinguishing Media: Do NOT use water directly on fire. Use water spray to cool fire-exposed containers. Use dry chemical to fight fire.

Autoignition Temperature: Not applicable.

Flash Point: None.

Explosion Limits:

| Lower: | Not available |
| Upper: | Not available |

NFPA Rating: ; Special Hazard: -W-

Section 6 - Accidental Release Measures

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

Spills/Leaks: Clean up spills immediately, observing precautions in the Protective Equipment section. Cover with sand, dry lime or soda ash and place in a closed container for disposal.

Section 7 - Handling and Storage

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

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.

Section 8 - Exposure Controls, Personal Protection

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>NIOSH</th>
<th>OSHA - Final PELs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric acid</td>
<td>0.2 mg/m3</td>
<td>1 mg/m3 TWA</td>
<td>1 mg/m3 TWA</td>
</tr>
<tr>
<td>(thoracic)</td>
<td>mg/m3 IDLH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(fraction)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>none listed</td>
<td>none listed</td>
<td>none listed</td>
</tr>
</tbody>
</table>

OSHA Vacated PELs: Sulfuric acid: 1 mg/m3 TWA Water: None listed

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

Exposure Limits

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 gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to minimize contact with skin.

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: clear, colorless

Odor: odorless

pH: 0.03 (1N Solution)

Vapor Pressure: < .00120 mm Hg

Vapor Density: Not available

Evaporation Rate: >1 (Butyl Acetate =1)

Viscosity: Not available

Boiling Point: 105 - 325 deg C

Freezing/Melting Point: 11 deg C (51.80°F)

Decomposition Temperature: Not available

Solubility in water: Soluble

Specific Gravity/Density: 1.1-1.3

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: Not available

Hazardous Decomposition Products: Oxides of sulfur.

Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#: CAS# 7664-93-9: WS5600000
CAS# 7732-18-5: ZC0110000

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;

**LD50/LC50**: Inhalation, rat: LC50 = 510 mg/m3;
Oral, rat: LD50 = 2140 mg/kg;

RTECS:

**CAS# 7732-18-5**: Oral, rat: LD50 = >90 mL/kg;

Sulfuric acid - ACGIH: A2 - Suspected Human Carcinogen (contained in strong inorganic acid mists)
California: carcinogen, initial date 3/14/03 (Strong inorganic acid mists containing sulfuric acid). NTP:
Carcinogenicity:
Known carcinogen (Strong inorganic acid mists containing s). IARC: Group 1 carcinogen
Water - Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.

Other:
See actual entry in RTECS for complete information.

Ecotoxicity:
Not available

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

US DOT
Shipping Name: SULFURIC ACID
Hazard Class: 8
UN Number: UN2796
Packing Group: II

Canada TDG
Shipping Name: SULFURIC ACID
Hazard Class: 8
UN Number: UN1830
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
CAS# 7732-18-5: Not available

Canada
CAS# 7664-93-9 is listed on Canada's DSL List
CAS# 7732-18-5 is listed on Canada's DSL List
Canadian WHMIS Classifications: C, D1A, E
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.
CAS# 7664-93-9 is listed on Canada's Ingredient Disclosure List
CAS# 7732-18-5 is not listed on Canada's Ingredient Disclosure List.

US Federal
TSCA
CAS# 7664-93-9 is listed on the TSCA Inventory.
CAS# 7732-18-5 is listed on the TSCA Inventory.
The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantibility or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential, or exemplary damages howsoever arising, even if the company has been advised of the possibility of such damages.