Material Safety Data Sheet  
SULPHURIC ACID  
Print Date: March 2004

SECTION 1 – Chemical Product and Company Identification

MSDS Name: SULPHURIC ACID  
MSDS Preparation Date: 02-2004, Supersedes 02-2001, 02-98

Synonyms or Generic ID: Oil of vitriol, hydrogen sulphate, vitriol brown oil, matting acid, battery acid.
SEASTAR™ Product Codes: IQ-03-0500, IQ-03-2500, IQ-03-25SK, BA-03-0250, BA-03-0500, BA-03-1000,  
BA-03-2000  
Canadian TDG Classification: 8 PKG Gr II  
Formula: H₂SO₄  
PIN (UN# / NA#): UN1830  
Molecular Wt: 98.08  
Canadian WHMIS Class: Class E; Class D Div 1 Sub A; Class C.

Supplier: Seastar Chemicals Inc, PO Box 2219, 2045 Mills Road West, Sidney, BC, Canada V8L 3S8  
Tel: (250) 655-5880, Fax: (250) 655-5888

CANUTEC (CAN):  
(613)-996-6666

SECTION 2 – Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Chemical Name</th>
<th>Percent</th>
<th>EINECS/ELINCS</th>
<th>TLV</th>
<th>Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>7664-93-9</td>
<td>Sulphuric Acid</td>
<td>73-98%</td>
<td>231-639-5</td>
<td>1 mg/m³</td>
<td>Corrosive</td>
</tr>
<tr>
<td>7732-18-5</td>
<td>Water</td>
<td>Balance</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

Hazard Symbols: C  
Risk Phrases: 35

SECTION 3 – Hazards Identification

EMERGENCY OVERVIEW
Clear, colourless to dark brown, odourless, dense, oily liquid. Will not burn. Can decompose at high temperatures forming toxic gases, such as sulfur 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 sulfuric acid are CARCINOSTIC. 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 absorption.
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 irreversible eye injury.
Skin: Causes skin burns. Defatting dermatitis with prolonged use.
Ingestion: May cause severe and permanent damage to the digestive tract. Causes burns in mouth, pharynx and gastrointestinal tract. Nausea, Vomiting, Abdominal pain. Corrosive and toxic.

Effects of Chronic Exposure: 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 death. CORROSIVE to body tissues. To the best of our knowledge the chronic toxicity of this substance has not been fully investigated.
SECTION 4 – First Aid Measures

Eyes: Immediately flush eyes and skin with copious amounts of water for at least 15 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 15 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: 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.

Notes to Physician: Treat symptomatically and supportively.

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: 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.


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

Special Fire and Explosion Hazards: Oxidizing material – contributes to combustion of other materials. Reacts violently with water and organic materials with evolution of heat. Emits toxic and corrosive fumes under fire conditions.

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.

Steps to be taken in case material is released or spilled: Evacuate. Wear self-contained breathing apparatus, rubber boots and heavy rubber gloves. Cover with soda ash or lime. Place in a suitable container and mark for disposal. Use non-sparking tools. Ventilate area and wash spill site after material pick-up is complete.

Waste disposal method: According to all applicable regulations.

SECTION 7 – Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before re-use. Use with adequate ventilation. Do not get in eyes, on skin or on clothing.

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

Store in a cool place away from heated areas, sparks and flame. Keep tightly closed. 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 store near organic substances. Do not allow smoking and food consumption while handling. In accordance with good storage and handling practices. Do not store near flammable substances.

Storage Code: White.

SECTION 8 – Exposure Control/Personal Protection

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

Exposure Limits:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>NIOSH</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulphuric acid</td>
<td>1 mg/m³ TWA; 3 mg/m³ STEL</td>
<td>1 mg/m³ TWA</td>
<td>1 mg/m³ TWA</td>
</tr>
</tbody>
</table>

OSHA Vacated PELs Sulphuric acid: 1 mg/m³ TWA.
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. The aquatic toxicity for bluegill in fresh water was 24.5 ppm/24 hr, which was lethal.
Environmental: No information available.
Physical: No information available
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

Proper Shipping Name: SULPHURIC ACID
Hazard Class: 8 UN Number: UN1830 Packing Group: II

SECTION 15 – Regulatory Information

US Federal
TSCA: CAS# 7664-93-9 is listed on the TSCA Inventory.
Health and Safety Reporting List: None of the components are on this list.
Chemical Test Rules: None of the components are on this list.
TSCA Section 12b: None of the components are on this list.
TSCA Significant New Use Rule (SNUR): None of the components are on this list.
SARA Threshold Planning Quantities (TPQ): CAS# 7664-93-9: TPQ = 1000 pounds
SARA Section 313: This material contains Sulphuric acid (CAS# 7664-93-9, 95-98%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

US State
State Right to Know: Sulphuric acid can be found on the following state Right-to-Know lists: New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.
California Prop 65: No information available.
California No Significant Risk Level: No information available.

European/International Regulations
European Labelling in Accordance with EC Directives:
Hazard Symbols: XI
Risk Phrases: R 36/38 irritating to eyes and skin.
Safety Phrases: S 2 Keep out of reach of children.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S30 Never add water to this product.

Seastar Chemicals Inc
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: colorless
Odor: odorless
pH: 0.3 (1N Solution)
Vapor Pressure: <0.00120 mm Hg
Vapor Density: 1.2 kg/m³
Evaporation Rate: Slower than ether.
Viscosity: Negligible.
Boiling Point: 554°F
Freezing/Melting Point: 50.6°F
Decomposition Temperature: 340°C
Solubility: Soluble in water and ethanol.
Specific Gravity/Density: 1.841
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 Triperchlorate, Ammonium Peroxide, Aniline + Glycol + Nitrobenzene, Benzyl Alcohol, Bromates + Metals, tert-Butyl-m-xylene + Nitric Acid, 1-Chloro-2,3-epoxypropane, Bromine Pentfluoride, n-Butylaldehyde, Cesium Acetylene Carbide, 4-Chloronitrobenzene + sulphur trioxide, Copper, Dichloromethane + Ethanol + Nitrate or Nitrite, 2-Cyano-4-nitrobenzenediazonium hydroxide sulphonate, 2-Cyano-2-propanol, Chlorine Trifluoride, Chlorosulfonic Acid (Cyanides), Cyclopentadiene, Cyclopentaneone oxime, 1,3-Diazidobenzene, Diethylamine, Cuprous Nitride, Diisobutylene, Ethylchlorohydride, Ethylene Cyanhydrin, Ethylene Diamine, Ethylene Glycol, Dimethylnitroantraquinone, 4-Dimethylaminobenzaldehyde, 2,5-Dinitro-3-Methylbenzoic acid + Sodium Azide, 1,5-Dinitronaphthalene + Sulphur, Ethylated nonylphenol, Fulminates, Halides, Hexafluorobenzene, Hexylammonium, Hexylenimine, Other Acids, Iodine Heptfluoride, Metals, Isoprene, Hydrofluoric acid, Hydrogen peroxide, Metal acetylides or carbides, Metal Chlorates, Metal Perchlorates, 4-Methoxyprididine, Nitramide, Nitric Acid + Organic materials, Nitric Acid + Toluene, Nitrile, Nitroaryl bases and derivatives, Nitrobenzene, 3-Nitrobenzenesulfonic Acid, Nitromethane, N-Nitromethane, 4-Nitrotoluene, Permananates, Phosphorus, Phosphorus (III) Oxide, Poly(silylene), Mercui Nitride, Mesityl Oxide, P-Nitrotoluene, Pentasilver Trihydroxydiaminophosphate, Perchlorates, Permananates + Benzene, Phosphorus Isocyanate, Plicates, Potassium 1-Butoxide, Potassium 3-Propynol, Potassium Chlorote, beta-Propiolactone, Propylene Oxide, Pyridine, Ruybidium Acetylene Carbide and Sodium, Silver Permananates, Silver Peroxydichromate, Sodium, Sodium Carbonate, Sodium Tetrahydroborate, Sodium Thiocyanate, Sucrose, Tetramethylbenzenes, 1,2,4,5-Tetrazine, Thallium (I) azidodithiocarbamate, 1,3,5-Trinitrosochexahydro-1,3,5-triazine, Water, and Zinc Iodide. Carbonates, sulfides, sulphites, carbides, chlorates.
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

LD50/LC50: CAS# 7644-93-9 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: Not listed.
California: Not listed.
NIOSH: Not listed.
NTP: Not listed.
OSHA: Select carcinogen.
IARC: Group 1 carcinogen.
Epidemiology: Workers exposed to industrial sulfuric acid mist showed a statistical increase in laryngeal, nasal, sinus and lung cancer. These data suggest a possible relationship between carcinogenesis and inhalation of sulfuric acid mist.
**WGK (Water Danger/Protection):** No information available.

**Canadian DSL/NDSL:** CAS# 7664-93-9 is listed on Canada’s DSL/NDSL List.
**Canadian WHMIS Classification:** This product has a WHMIS classification of C, D1A, E.
**Canada Ingredient Disclosure List:** 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-NETHERLANDS: TWA 1 mg/m³
- OEL-THE PHILIPPINES: TWA 1 mg/m³
- OEL-POLAND: TWA 1 mg/m³
- OEL-RUSSIA: TWA 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
- OES-United Kingdom: TWA 1 mg/m³ TWA

**SECTION 16 – Other Information**

The statements contained herein are offered for informational purposes only and are based upon technical data. Seastar Chemicals Inc believes them to be accurate but does not purport to be all-inclusive. The above-stated product is intended for use only by persons having the necessary technical skills and facilities for handling the product at their discretion and risk. Since conditions and manner of use are outside our control, we (Seastar Chemicals Inc) make no warranty of merchantability or any such warranty, express or implied with respect to information and we assume no liability resulting from the above product or its use. Users should make their own investigations to determine suitability of information and product for their particular purposes.