1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Sulfuric Acid, 93%

Other/Generic Names: Battery acid, sulphuric acid, oil of vitriol, hydrogen sulfate, dihydrogen sulfate

Recommended Use: Industrial.

Manufacturer
General Chemical, LLC
90 East Halsey Road
Parsippany, NJ 07054

General Chemical Performance Products Ltd.
90 East Halsey Road
Parsippany, NJ 07054

Further information
FOR MORE INFORMATION CALL:
Customer Service US ONLY: 800-631-8050
(Monday-Friday, 9:00am - 4:30pm)

Customer Service CANADA ONLY: 866-543-3896
(Monday-Friday, 9:00am - 4:30pm)

Emergency Telephone Number
IN CASE OF EMERGENCY CALL CHEMTREC: 800-424-9300 US ONLY
24 Hours/Day, 7 Days/Week) CANADA ONLY CALL CANUTEC: 613-996-6666
(24 Hours/Day, 7 Days/Week)

2. HAZARDS IDENTIFICATION


OSHA Regulatory Status
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Potential Health Effects

Skin: Causes severe burns.

Eyes: Liquid contact can cause irritation, corneal burns, and conjunctivitis. May result in severe or permanent injury. May cause blindness.

Inhalation: Inhalation of fumes or mist can cause irritation or corrosive burns to the upper respiratory system, including the nose, mouth and throat. May irritate the lungs. May cause pulmonary edema.

Ingestion: Causes burns of the mouth, throat and stomach. May be fatal if swallowed. Hazards are also applicable to dilute solutions.

Delayed Effects: Erosion of teeth, lesions of the skin, tracheo-bronchitis, mouth inflammation, conjunctivitis and gastritis. IARC and NTP have classified "strong inorganic acid mists containing sulfuric acid" as a known human carcinogen. This classification is for inorganic acid mists only and does not apply to sulfuric acid or sulfuric acid solutions. The basis for the classifications rests on several epidemiology studies which have several deficiencies. These studies did not account for exposure to other substances, some known to be animal or potential human carcinogens, social influences (smoking or alcohol consumption) and included small numbers of subjects. Based on the overall weight of evidence from all human and chronic animal studies, no definitive causal relationship between sulfuric acid mist exposure and respiratory tract cancer has been shown.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric acid</td>
<td>7664-93-9</td>
<td>93</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

Eye Contact: Immediately flush eyes with water for at least 15 minutes. Get medical attention immediately.

Skin Contact: Flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately.

Inhalation: Immediately remove to fresh air. If not breathing, give artificial respiration, preferably, mouth-to-mouth. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Do not induce vomiting. Give victim two glasses of water. Get medical attention immediately. Never give anything by mouth to an unconscious person.

Notes to Physician: Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Flammable Properties

Flash Point: Not applicable
FLASH POINT METHOD: Not applicable.
Autoignition Temperature: Not applicable
UPPER FLAME LIMIT (volume % in air): Not applicable
LOWER FLAME LIMIT (volume % in air): Not applicable
FLAME PROPAGATION RATE (solids): Not applicable
OSHA FLAMMABILITY CLASS: Not flammable

Suitable Extinguishing Media
Water spray or fog may be used to knock down corrosive vapor cloud. Water may be applied to the sides of the containers exposed to flames provided the water does not come in contact with the tank contents.

Unsuitable Extinguishing Media
No information available.

Explosion Limits

Hazardous Combustion Products
No information available
Impact sensitivity
No information available
Sensitivity to static discharge
No information available

Specific Hazards Arising from the Chemical
Flammable and potentially explosive hydrogen gas can be generated inside metal drums and storage tanks. Concentrated sulfuric acid can ignite combustible materials on contact.

Protective Equipment and Precautions for Firefighters
Do not use solid water streams near ruptured tanks or spills of sulfuric acid. Acid reacts violently with water and can spatter acid onto personnel. Wear approved positive-pressure self-contained breathing apparatus and protective clothing.

NFPA Health 3 Flammability 0 Instability 2

6. ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILL OR OTHER RELEASE:
Dilute small spills or leaks cautiously with plenty of water. Neutralize residue with sodium bicarbonate or other suitable neutralizing agent. When using carbonates for neutralization, adequate precautions should be taken to minimize hazards from carbon dioxide gas generation. No smoking in spill area. Major spills must be handled by a predetermined plan. Attempt to keep out of sewer.

7. HANDLING AND STORAGE

Handling
Avoid contact with skin, eyes and clothing. Avoid breathing vapor or mist. Wear personal protective equipment. Do not add water to acid. When diluting, always add acid to water cautiously and with agitation. Use with adequate ventilation.

Storage
Protect from physical damage. Store in a cool, well-ventilated area away from combustibles and reactive chemicals. Keep out of the sun and away from heat. Keep containers upright. No smoking in storage area.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<table>
<thead>
<tr>
<th>Component</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>Ontario TWAEV</th>
<th>Mexico OEL (TWA)</th>
<th>NIOSH IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric acid 7664-93-9</td>
<td>TWA: 0.2 mg/m³</td>
<td>TWA: 1 mg/m³</td>
<td>TWA: 0.2 mg/m³</td>
<td>TWA: 1 mg/m³</td>
<td>15 mg/m³</td>
</tr>
</tbody>
</table>

Engineering Measures
Sufficient to reduce vapor and acid mists to permissible levels. Packaging and unloading areas and open processing equipment may require mechanical exhaust systems. Corrosion-proof construction recommended. Closed ventilation systems (e.g. vapor hoods) are frequently used in the electronics industry.
Personal Protective Equipment

Eye/face Protection
If there is any probability of contact with liquid or mist, wear chemical safety goggles and full faceshield.

Skin Protection
Wear appropriate personal protective clothing to prevent skin contact. Acid resistant boots, trousers, and jacket may be used for increased protection.

Respiratory Protection
A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 or applicable federal/provincial requirements must be followed whenever workplace conditions warrant respirator use. NIOSH's “Respirator Decision Logic” may be useful in determining the suitability of various types of respirators.

General Hygiene Considerations
To identify additional Personal Protective Equipment (PPE) requirements, it is recommended that a hazard assessment in accordance with the OSHA PPE Standard (29CFR1910.132) be conducted before using this product.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>No information available</td>
</tr>
<tr>
<td>Color</td>
<td>Colorless to light yellow liquid</td>
</tr>
<tr>
<td>Chemical Formula</td>
<td>H2SO4 (various concentrations) in water</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No information available</td>
</tr>
<tr>
<td>Physical State</td>
<td>Liquid</td>
</tr>
<tr>
<td>pH</td>
<td>0.3 (1 N solution @ 25°C (75°F) )</td>
</tr>
<tr>
<td>Flash Point:</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Autoignition Temperature</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Boiling Point/Range</td>
<td>~330 ºC / 626 ºF</td>
</tr>
<tr>
<td>Melting Point/Range</td>
<td>~ -1.1 ºC / 30 ºF</td>
</tr>
<tr>
<td>Flammability Limits in Air</td>
<td>No information available</td>
</tr>
<tr>
<td>Explosive Properties</td>
<td>No information available</td>
</tr>
<tr>
<td>Oxidizing Properties</td>
<td>No information available</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapour Pressure</td>
<td>0.002 mmHg - basis 98% H2SO4 @ 40C (102°F)</td>
</tr>
<tr>
<td>Vapour Density</td>
<td>3.4</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.84 - basis 98% H2SO4 @ 15C (60°F)</td>
</tr>
<tr>
<td>Solubility</td>
<td>No information available</td>
</tr>
<tr>
<td>Partition Coefficient (n-octanol/water)</td>
<td>No information available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>No information available</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>98.08 (H2SO4)</td>
</tr>
<tr>
<td>Water Solubility</td>
<td>100%</td>
</tr>
<tr>
<td>VOC Content(%)</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Chemical Stability
Stable under normal conditions.

Conditions to Avoid
Avoid temperatures greater than 300C: yields sulfur trioxide gas, which is toxic, corrosive, and an oxidizer.

Incompatible Products
Nitro compounds, carbides, dienes, alcohols (when heated): causes explosions. Oxidizing agents, such as chlorates and permanganates: causes fires and possible explosions. Allyl compounds and aldehydes: undergoes polymerization, possibly violent. Alkalies, amines, water, hydrated salts, carboxylic acid anhydrides, nitriles, olefinic organics, glycols, aqueous acids: causes strong exothermic reactions. Carbonates, cyanides, sulfides, sulfites, metals such as copper: yields toxic gases.

Hazardous Decomposition Products
Sulfur trioxide gas.
Possibility of Hazardous Reactions
Will not occur.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

LC50 Inhalation:  
(inhal-rat):  510 mg/m³/2 hr  
(inhl-mouse):  320 mg/m³/2 hr

Component Information

<table>
<thead>
<tr>
<th>Component</th>
<th>LD50 Oral</th>
<th>LD50 Dermal</th>
<th>LC50 Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric acid</td>
<td>2140 mg/kg (Rat)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Irritation
No information available

Corrosivity
No information available.

Sensitization
No information available.

Chronic Toxicity

Carcinogenicity
The table below indicates whether each agency has listed any ingredient as a carcinogen.

<table>
<thead>
<tr>
<th>Component</th>
<th>ACGIH</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric acid</td>
<td>A2</td>
<td>Group 1</td>
<td>Known</td>
<td>X</td>
<td>A2</td>
</tr>
</tbody>
</table>

Mutagenic Effects
No information available.

Reproductive Effects
No information available.

Developmental Effects
No information available.

Teratogenicity
No information available.

Target Organ Effects
No information available.

Other Adverse Effects
DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS: IARC and NTP have classified "strong inorganic acid mists containing sulfuric acid" as known human carcinogens. No definitive causal relationship between sulfuric acid mist exposure and respiratory cancer has been shown.

Endocrine Disruptor Information

12. ECOLOGICAL INFORMATION

Ecotoxicity
Contains no substances known to be hazardous to the environment or not degradable in waste water treatment plants.

<table>
<thead>
<tr>
<th>Component</th>
<th>Freshwater Algae</th>
<th>Freshwater Fish</th>
<th>Microtox</th>
<th>Water Flea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric acid</td>
<td></td>
<td>LC50&gt; 500 mg/L</td>
<td></td>
<td>EC50 = 29 mg/L 24 h</td>
</tr>
</tbody>
</table>

Persistence and Degradability
No information available.

Bioaccumulation
No information available.
Mobility in Environmental Media
No information available

Other adverse effects
24.5 ppm/24 hr./bluegill/lethal/fresh water;
42.5 ppm/48 hr./prawn/LC50/salt water

13. DISPOSAL CONSIDERATIONS

Waste Disposal Methods
Dispose of in accordance with local regulations.

Contaminated Packaging
Empty containers should be taken for local recycling, recovery or waste disposal.

US EPA Waste Number
No information available

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric acid - 7664-93-9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

14. TRANSPORT INFORMATION

DOT
Proper Shipping Name: Sulfuric acid
Hazard Class: 8
UN-No: UN1830
Packing Group: PGII

TDG
Hazard Class: 8
UN-No: UN1830
Packing Group: PGII

15. REGULATORY INFORMATION

International Inventories

TSCA: Complies
DSL: Complies
NDSL: Does not Comply
EINECS/ELINCS: Complies
ENCS: Complies
CHINA: Complies
KECL: Complies
PICCS: Complies
AICS: Complies

U.S. Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and and Title 40n of the Code of Federal Regulations, Part 372:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>Weight %</th>
<th>SARA 313 - Threshold Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric acid</td>
<td>7664-93-9</td>
<td>93</td>
<td>1.0</td>
</tr>
</tbody>
</table>
SARA 311/312 Hazardous Categorization

<table>
<thead>
<tr>
<th>Category</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic Health Hazard</td>
<td>No</td>
</tr>
<tr>
<td>Acute Health Hazard</td>
<td>Yes</td>
</tr>
<tr>
<td>Fire Hazard</td>
<td>No</td>
</tr>
<tr>
<td>Sudden Release of Pressure Hazard</td>
<td>No</td>
</tr>
<tr>
<td>Reactive Hazard</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Clean Water Act

<table>
<thead>
<tr>
<th>Component</th>
<th>CWA - Reportable Quantities</th>
<th>CWA - Toxic Pollutants</th>
<th>CWA - Priority Pollutants</th>
<th>CWA - Hazardous Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric acid</td>
<td>1000 lb</td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

CERCLA

<table>
<thead>
<tr>
<th>Component</th>
<th>Hazardous Substances RQs</th>
<th>CERCLA EHS RQs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric acid</td>
<td>1000 lb</td>
<td>1000 lb</td>
</tr>
</tbody>
</table>

U.S. State Regulations

California Proposition 65
This product contains the following Proposition 65 chemicals:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>California Prop. 65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric acid</td>
<td>7664-93-9</td>
<td>Carcinogen</td>
</tr>
</tbody>
</table>

State Right-to-Know

<table>
<thead>
<tr>
<th>Component</th>
<th>Massachusetts</th>
<th>New Jersey</th>
<th>Pennsylvania</th>
<th>Illinois</th>
<th>Rhode Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric acid</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Other International Regulations

Mexico - Grade
No information available

Canada
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS Hazard Class
D1A  Very toxic materials
E  Corrosive material
16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>Prepared By</th>
<th>Kaci Rosario, Product Safety Supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation Date</td>
<td>June 25, 2009</td>
</tr>
<tr>
<td>Revision Date</td>
<td></td>
</tr>
<tr>
<td>Revision Summary</td>
<td>Changes made to sections 2, 4, 5, 8, 10 and 16.</td>
</tr>
</tbody>
</table>

Disclaimer

All information, statements, data, advice and/or recommendations, including, without limitation, those relating to storage, loading/unloading, piping and transportation (collectively referred to herein as "information") are believed to be accurate and reliable. However, no representation or warranty, express or implied, is made as to its completeness, accuracy, fitness for a particular purpose or any other matter, including, without limitation, that the practice or application of any such information is free of patent infringement or other intellectual property misappropriation. General Chemical, LLC, is not engaged in the business of providing technical, operational, engineering or safety information for a fee, and therefore, any such information provided herein has been furnished as an accommodation and without charge. All information provided herein is intended for use by persons having requisite knowledge, skill and experience in the chemical industry. General Chemical, LLC, shall not be responsible or liable for the use, application or implementation of the information, provided herein, and all such information is to be used at the risk, and in the sole judgement and discretion, of such persons, their employees, advisors and agents.

End of MSDS