



## Sulfuric Acid

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Current Issue Date: May, 2003

### Material Safety Data Sheet

#### 1. PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** Sulfuric Acid

**OTHER/GENERIC NAMES:** Battery acid

**PRODUCT USE:** Industrial

**MANUFACTURER:** General Chemical Corporation

90 East Halsey Road

Parsippany, NJ 07054

#### FOR MORE INFORMATION CALL:

(Monday-Friday, 9:00am-4:30pm)

973-515-1840 **IN CASE OF EMERGENCY CALL:**

(24 Hours/Day, 7 Days/Week)

800-631-8050

#### 2. COMPOSITION/INFORMATION ON INGREDIENTS

##### INGREDIENT NAME CAS NUMBER WEIGHT %

Sulfuric acid 7664-93-9 >51

Water 7732-18-5 Balance

Trace impurities and additional material names not listed above may appear in Section 15 of this MSDS.

These materials may be listed for local "Right-To-Know" compliance and for other reasons.

**OSHA Hazard Communication Standard:** *This product is considered hazardous under the OSHA Hazard Communication Standard.*

#### 3. HAZARDS IDENTIFICATION

**EMERGENCY OVERVIEW:** Oily, colorless to slightly yellow, clear to turbid liquid. Odorless.

Causes severe skin burns. Causes severe eye burns. Causes burns of the mouth, throat, and stomach.

##### POTENTIAL HEALTH HAZARDS

**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 acid 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.

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**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.

**Ingredients found on one of the three OSHA designated carcinogen lists are listed below.**

INGREDIENT NAME NTP STATUS IARC STATUS OSHA LIST

Sulfuric acid Known carcinogen –

sulfuric acid mist

1-Known carcinogen

#### 4. FIRST AID MEASURES

**SKIN:** Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing while washing. Get medical attention immediately.

**EYES:** Immediately flush eyes with large amounts of water for at least 15 minutes. Get immediate medical attention.

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

**INGESTION:** If swallowed, do NOT induce vomiting. Give victim two glasses of water. Call a physician immediately. Never give anything by mouth to an unconscious person.

**ADVICE 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.

##### 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.

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##### UNUSUAL FIRE AND EXPLOSION HAZARDS:

Flammable and potentially explosive hydrogen gas can be generated inside metal drums and storage tanks. Concentrated sulfuric acid can ignite combustible materials on contact.

##### SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS:

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.

#### 6. ACCIDENTAL RELEASE MEASURES

**IN CASE OF SPILL OR OTHER RELEASE:** (See section 8 for recommended personal protective equipment.) 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 sewers.

**Spills and releases may have to be reported to Federal and/or local authorities. See Section 15**

**regarding**

**reporting requirements.**

#### 7. HANDLING AND STORAGE

**NORMAL HANDLING:** (See section 8 for recommended personal protective equipment.)

Avoid contact with skin, eyes and clothing. Avoid breathing mist. Use appropriate personnel protective equipment. Do not add water to acid. When diluting, always add acid to water cautiously and with agitation. Use with adequate ventilation.

##### STORAGE RECOMMENDATIONS:

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

#### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

##### ENGINEERING CONTROLS:

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

**SKIN PROTECTION:** As a minimum, wear acid-resistant, preferably rubber, gloves and apron. Acid resistant boots, trousers and jacket may be used for increased protection.

**EYE PROTECTION:** Wear chemical safety goggles. Add a full faceshield for pouring liquids. Do not wear contact lenses.

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#### **RESPIRATORY**

##### **PROTECTION:**

Generally, none required. If misting conditions prevail, wear a NIOSH-approved acid-mist respirator.

##### **ADDITIONAL**

##### **RECOMMENDATIONS:**

Provide eyewash stations and quick-drench shower facilities in or near areas of use or handling.

##### **EXPOSURE GUIDELINES**

##### **INGREDIENT NAME ACGIH TLV OSHA PEL OTHER LIMIT**

Sulfuric acid 1 mg/m<sup>3</sup> – TWA

3 mg/m<sup>3</sup> – STEL

1 mg/m<sup>3</sup> – TWA 15 mg/m<sup>3</sup> - IDLH

1 = Limit established by General Chemical Corporation.

2 = Workplace Environmental Exposure Level (AIHA).

3 = Biological Exposure Index (ACGIH).

##### **OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:**

None.

#### **9. PHYSICAL AND CHEMICAL PROPERTIES**

**APPEARANCE:** Colorless to light yellow liquid

**PHYSICAL STATE:** Liquid

**MOLECULAR WEIGHT:** 98.08 (H<sub>2</sub>SO<sub>4</sub>)

**CHEMICAL FORMULA:** H<sub>2</sub>SO<sub>4</sub> (various concentrations) in water

**ODOR:** Odorless

**SPECIFIC GRAVITY (water = 1.0):** 1.842

**SOLUBILITY IN WATER (weight %):** 100%

**pH:** 0.9 (1% solution)

**BOILING POINT:** ~310C (94%)

**MELTING POINT:** ~ -27C (94%)

**VAPOR PRESSURE:** <0.001 mm Hg @ 20C

**VAPOR DENSITY (air = 1.0):** Not applicable

**EVAPORATION RATE:** Not applicable **COMPARED TO:** Not applicable

**% VOLATILES:** Not applicable

**FLASH POINT:** Not applicable

(Flash point method and additional flammability data are found in Section 5.)

#### **10. STABILITY AND REACTIVITY**

##### **NORMALLY STABLE? (CONDITIONS TO AVOID):**

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

##### **INCOMPATIBILITIES:**

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.

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Carbonates, cyanides, sulfides, sulfites, metals such as copper: yields toxic gases.

##### **HAZARDOUS DECOMPOSITION PRODUCTS:**

Sulfur trioxide gas.

##### **HAZARDOUS POLYMERIZATION:**

Will not occur.

#### **11. TOXICOLOGICAL INFORMATION**

##### **IMMEDIATE (ACUTE) EFFECTS:**

LD<sub>50</sub> (oral-rat): 2140 mg/kg

LC<sub>50</sub> (inhl-rat): 510 mg/m<sup>3</sup>/2 hr

LC<sub>50</sub> (inhl-mouse): 320 mg/m<sup>3</sup>/2 hr

##### **DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:**

IARC and NTP have classified "strong inorganic acid mists containing sulfuric acid" as known human carcinogens. The state of California has also listed "strong inorganic acid mists containing sulfuric acid" on the

Proposition 65 list as a cancer causing agent. No definitive causal relationship between sulfuric acid mist exposure and respiratory cancer has been shown.

**OTHER DATA:**

None.

**12.ECOLOGICAL INFORMATION**

24.5 ppm/24 hr./bluegill/lethal/fresh water

42.5 ppm/48 hr./prawn/LC50/salt water

**13.DISPOSAL CONSIDERATIONS**

**RCRA**

**Is the unused product a RCRA hazardous waste if discarded?** Yes

**If yes, the RCRA ID number is:** D002

**OTHER DISPOSAL CONSIDERATIONS:**

The information offered in section 13 is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

**14.TRANSPORT INFORMATION**

**US DOT HAZARD CLASS:** 8, PG II

**US DOT ID NUMBER:** UN1830

**PROPER SHIPPING NAME:** Sulfuric acid

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For additional information on shipping regulations affecting this material, contact the information number found in

Section 1.

**15.REGULATORY INFORMATION**

**TOXIC SUBSTANCES CONTROL ACT (TSCA)**

**TSCA INVENTORY STATUS:** Listed on the TSCA Inventory.

**OTHER TSCA ISSUES:** None.

**SARA TITLE III/CERCLA**

"Reportable Quantities" (RQs) and/or "Threshold Planning Quantities" (TPQs) exist for the following ingredients.

**INGREDIENT NAME SARA/CERCLA RQ (lb) SARA EHS TPQ (lb)**

Sulfuric acid 1000 1000

**Spills or releases resulting in the loss of any ingredient at or above its RQ requires immediate notification**

**to the National Response Center [(800) 424-8802] and to your Local Emergency Planning Committee.**

**SECTION 311 HAZARD CLASS:** Immediate.

**SARA 313 TOXIC CHEMICALS:**

The following ingredients are SARA 313 "Toxic Chemicals" and may be subject to annual reporting requirements.

CAS numbers and weight percents are found in Section 2.

**INGREDIENT NAME COMMENT**

Sulfuric acid None

**STATE RIGHT-TO-KNOW**

In addition to the ingredients found in Section 2, the following are listed for state right-to-know purposes.

**INGREDIENT NAME WEIGHT % COMMENT**

No ingredients listed in this section.

**ADDITIONAL REGULATORY INFORMATION:**

"Strong inorganic acid mists containing sulfuric acid" has been listed on California Proposition 65 as a cancercausing agent.

**WHMIS CLASSIFICATION (CANADA):**

Listed on Canadian DSL and EU EINECS.

**FOREIGN CHEMICAL CONTROL INVENTORY STATUS:**

Listed on the Canadian DSL and EU EINECS.

**16.OTHER INFORMATION**

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**PREVIOUS ISSUE DATE:** November, 2001

**CHANGES TO MSDS FROM PREVIOUS ISSUE DATE ARE DUE TO THE FOLLOWING:**

Addition of Prop 65 listing.

**OTHER INFORMATION:** None