Material Safety Data Sheet

This MSDS has been prepared within the guidelines of the Federal OSHA Hazard Communication Standard, 29CFR 1910.1200.

Product Name: Sulfurous Acid

I. GENERAL INFORMATION

Manufacturer: Sierra Chemical Co.  Emergency Phone: (800) 424-9300
Address: 2302 Larkin Cr.  Information Phone: (775) 358-0888
Sparks, NV 89431  CHEMTREC Phone: (800) 424-9300
Date: 04/22/2010

II. PRODUCT IDENTIFICATION

Synonyms: Sulfur dioxide solution; Sulphurous acid  CAS No.: 7782-99-2
Chemical Formula: SO2 in H2O (6 - 12% solution)  Molecular Weight: 82.07

III. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS No</th>
<th>Percent</th>
<th>Hazardous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfurous Acid</td>
<td>7782-99-2</td>
<td>6 - 12%</td>
<td>Yes</td>
</tr>
</tbody>
</table>

IV. HAZARDS IDENTIFICATION

Emergency Overview

DANGER! CORROSIVE. CAUSES BURNS TO ANY AREA OF CONTACT. HARMFUL IF SWALLOWED OR INHALED.

Potential Health Effects

Inhalation: Mists and vapors cause irritation of respiratory tract. Can cause systemic acidosis or pulmonary edema at moderate concentrations.

Ingestion: Corrosive to the mouth, throat and esophagus, with immediate pain and burning. Uncontrolled vomiting may occur.

Skin Contact: Corrosive. Symptoms of redness, pain, and severe burn can occur.
**Eye Contact:** Corrosive. Contact can cause blurred vision, redness, pain and severe tissue burns.

**Chronic Exposure:** Repeated exposure may cause damage to the tissues of the mucous membranes, upper respiratory tract, eyes and skin.

**Aggravation of Pre-existing Conditions:** Persons with pre-existing skin disorders or impaired respiratory function may be more susceptible to the effects of the substance.

## V. FIRST AID MEASURES

**Inhalation:** Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

**Ingestion:** If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

**Skin Contact:** Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse.

**Eye Contact:** Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

## VI. FIRE FIGHTING MEASURES

**Fire:** Not considered to be a fire hazard. Releases sulfur dioxide upon heating.

**Explosion:** Contact with most metals causes formation of flammable and explosive hydrogen gas.

**Fire Extinguishing Media:** Use any means suitable for extinguishing surrounding fire.

**Special Information:** In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.

## VII. ACCIDENTAL RELEASE MEASURES

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section IX. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover
liquid when possible. Neutralize with alkaline material (soda ash, lime), then absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer!

VIII. HANDLING AND STORAGE

Store in a cool, dry, ventilated storage area with acid resistant floors and good drainage. Protect from physical damage. Keep out of direct sunlight and away from heat, water, and incompatible materials. Do not wash out container and use it for other purposes. When diluting, always add the acid to water; never add water to the acid. When opening metal containers, use non-sparking tools because of the possibility of hydrogen gas being present. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

IX. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Airborne Exposure Limits:
None established for solution.
Sulfur Dioxide [7446-09-5]:
-OSHA Permissible Exposure Limit (PEL):
  2 ppm (TWA)
-ACGIH Threshold Limit Value (TLV):
  2 ppm (TWA), 5 ppm (STEL)

Ventilation System: A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved): For conditions of use where exposure to the substance is apparent and engineering controls are not feasible, consult an industrial hygienist. For emergencies, or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator. WARNING: Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection: Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.
X. PHYSICAL AND CHEMICAL PROPERTIES

Solubility: Miscible in water.  Specific Gravity: 1.03
Boiling Point: No information found.  pH: No information found.
Melting Point: No information found.  Vapor Density (Air=1): No information found.

Vapor Pressure (mm Hg): No information found.
Evaporation Rate (BuAc=1): No information found.
% Volatiles by volume @ 21C (70F): No information found.

XI. STABILITY AND REACTIVITY

Stability: Stable under ordinary conditions of use and storage. Gradually oxidizes in air to sulfuric acid.
Hazardous Decomposition Products: Burning may produce sulfur oxides.
Hazardous Polymerization: Will not occur.
Incompatibilities: Oxidizing agents, alkalis, compounds easily reduced.
Conditions to Avoid: No information found.

XII. TOXICOLOGICAL INFORMATION

No LD50/LC50 information found relating to normal routes of occupational exposure.

Cancer Lists:

<table>
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<tr>
<th>Ingredient</th>
<th>---NTP Carcinogen---</th>
<th>Anticipated</th>
<th>IARC Category</th>
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<tbody>
<tr>
<td>Sulfurous Acid (7782-99-2)</td>
<td>No</td>
<td>No</td>
<td>None</td>
</tr>
</tbody>
</table>
XIII. ECOLOGICAL INFORMATION

Environmental Fate: No information found.

Environmental Toxicity: No information found.

XIV. DISPOSAL CONSIDERATIONS

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

XV. TRANSPORT INFORMATION

Domestic (Land, D.O.T.)
Proper Shipping Name: SULFUROUS ACID
Hazard Class: 8
UN/NA: UN1833
Packing Group: II

XVI. REGULATORY INFORMATION

Federal, State & International Regulations - Part 1

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>---SARA 302---</th>
<th>---SARA 313---</th>
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<td>TPQ</td>
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<td>Sulfurous Acid (7782-99-2)</td>
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Federal, State & International Regulations - Part 2

<table>
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<th>Ingredient</th>
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<th>-TSCA-</th>
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<td>CERCLA</td>
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<tr>
<td>Sulfurous Acid (7782-99-2)</td>
<td>261.33</td>
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</table>

Chemical Weapons Convention: No

TSCA 12(b): No  CDTA: No
Sulfurous Acid

Sierra Chemical Co.  MSDS: Sulfurous Acid

SARA 311/312: Acute: Yes
Chronic: Yes  Fire: No
Pressure: No  Reactivity: No  (Pure / Liquid)

XVII. OTHER INFORMATION

NFPA Ratings: Health: 3  Flammability: 0  Reactivity: 0

Label Hazard Warning: DANGER! CORROSIVE. CAUSES BURNS TO ANY AREA OF CONTACT. HARMFUL IF SWALLOWED OR INHALED.

Label Precautions: Do not breathe vapor or mist. Do not get in eyes, on skin, or on clothing. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.

Label First Aid: In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. In all cases get medical attention immediately.

Disclaimer

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Do not use ingredient information and/or ingredient percentages in this MSDS as a product specification. For product specification information, refer to a Product Specification Sheet and/or a Certificate of Analysis. These can be obtained from your local Sierra Chemical Co. Sales Office.

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