1. Product and Company Identification

Material name: Sulfuric Acid  
Version #: 11  
Revision date: 04-19-2011  
CAS #: Mixture  
Product Codes: J.T.Baker: 5030, 5137, 5374, 5802, 5815, 5859, 6163, 6902, 9671, 9673, 9674, 9675, 9681, 9684, 9690, 9691, 9697, 9684, 9690, 9691, 9697, 9864  
Macron: 21201, 2876, 2877, 2878, 2879, 2900, 2904, 3780, 5557, H976, H996, V008, V186, V225, V648, V651  
Synonym(s): Oil of vitriol * Babcock acid * Sulphuric acid  
Manufacturer: Avantor Performance Materials, Inc.  
Address: 222 Red School Lane  
Phillipsburg, NJ 08865  
US  
Customer Service: 800-582-2537  
24 Hour Emergency: 908-859-2151  
Chemtrec: 800-424-9300

2. Hazards Identification

Emergency overview: DANGER  
STRONG INORGANIC ACID MISTS CONTAINING SULFURIC ACID CAN CAUSE CANCER. Risk of cancer depends on duration and level of exposure.  
Corrosive. Causes severe skin and eye burns. Causes digestive tract burns. Mist or vapor extremely irritating to eyes and respiratory tract. Material reacts with water.

OSHA regulatory status: This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

Potential health effects:  
Routes of exposure: Ingestion. Inhalation. Skin contact. Eye contact.  
Eyes: Corrosive. Causes severe eye burns. Vapor or spray may cause eye damage, impaired sight or blindness.  
Skin: Corrosive. Causes severe skin burns.  
Inhalation: Corrosive. May cause damage to mucous membranes in nose, throat, lungs and bronchial system.  
Ingestion: Corrosive. Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus and possibly the digestive tract.  
Target organs: Eyes. Skin. Lungs. Respiratory system.  
Chronic effects: Cancer hazard - can cause cancer. Corrosive. Prolonged contact causes serious tissue damage.  
Potential environmental effects: Harmful to aquatic organisms. The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.

3. Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>Hazardous components</th>
<th>CAS #</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>SULFURIC ACID</td>
<td>7664-93-9</td>
<td>90 - 100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non-hazardous components</th>
<th>CAS #</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>WATER</td>
<td>7732-18-5</td>
<td>2 - 10</td>
</tr>
</tbody>
</table>
4. First Aid Measures

First aid procedures

Eye contact
Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Call a physician or poison control center immediately. In case of irritation from airborne exposure, move to fresh air. Get medical attention immediately.

Skin contact
Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician or poison control center immediately. Wash clothing separately before reuse. Destroy or thoroughly clean contaminated shoes.

Inhalation
Move to fresh air. If breathing stops, provide artificial respiration. If breathing is difficult, give oxygen. Call a physician or poison control center immediately.

Ingestion
Call a physician or poison control center immediately. Do not induce vomiting. If vomiting occurs, the head should be kept low so that stomach vomit doesn't enter the lungs.

Notes to physician
Keep victim under observation. Treat symptomatically.

General advice
In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Show this safety data sheet to the doctor in attendance. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire Fighting Measures

Flammable properties
The product is not flammable. No unusual fire or explosion hazards noted.

Extinguishing media

Suitable extinguishing media
Carbon dioxide (CO2). Dry chemical powder. Foam.

Unsuitable extinguishing media
Do not use water as an extinguisher.

Protection of firefighters

Specific hazards arising from the chemical
Fire may produce irritating, corrosive and/or toxic gases.

Protective equipment and precautions for firefighters
Use water spray to cool unopened containers. Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Cool containers exposed to flames with water until well after the fire is out.

Special protective equipment for fire-fighters
Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Wear self-contained breathing apparatus with a full facepiece operated in the positive pressure demand mode when fighting fires.

Specific methods
In the event of fire and/or explosion do not breathe fumes.

6. Accidental Release Measures

Personal precautions
Wear appropriate protective equipment and clothing during clean-up. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained.

Environmental precautions
Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

Methods for containment
Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Prevent entry into waterways, sewer, basements or confined areas.
Methods for cleaning up

Large Spills: Dike far ahead of spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills in original containers for re-use. Clean up in accordance with all applicable regulations. Neutralize spill area and washings with soda ash or lime. Collect in a non-combustible container for prompt disposal.

J. T. Baker NEUTRASORB® acid neutralizers are recommended for spills of this product.

7. Handling and Storage

Handling

Do not get in eyes, on skin, on clothing. Do not taste or swallow. Wash thoroughly after handling. Do not eat, drink or smoke when using the product. Use caution when combining with water; DO NOT add water to acid, ALWAYS add acid to water while stirring to prevent release of heat, steam and fumes.

Storage

Do not store in metal containers. Keep tightly closed in a dry, cool and well-ventilated place.

8. Exposure Controls / Personal Protection

Occupational exposure limits

<table>
<thead>
<tr>
<th>ACGIH Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>SULFURIC ACID (7664-93-9)</td>
<td>TWA</td>
<td>0.2000 mg/m³</td>
<td>Thoracic fraction.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>U.S. - OSHA Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SULFURIC ACID (7664-93-9)</td>
<td>PEL</td>
<td>1.0000 mg/m³</td>
</tr>
</tbody>
</table>

Engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Personal protective equipment

Eye / face protection

Wear safety glasses with side shields (or goggles) and a face shield.

Skin protection

Wear appropriate chemical resistant clothing. Wear appropriate chemical resistant gloves.

Respiratory protection

If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Respirator type: Chemical respirator with acid gas cartridge.

General hygiene considerations

Provide eyewash station and safety shower. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

General

Wear chemical protective equipment that is specifically recommended by the manufacturer. Launder contaminated clothing before reuse.

9. Physical & Chemical Properties

Appearance

Aqueous solution.

Color

Clear.

Odor

Odorless.

Odor threshold

Not available.

Physical state

Liquid.

Form

Liquid.

pH

0.3 (1 N sol)
<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melting point</td>
<td>3°C (100%), -32°C (93%)</td>
</tr>
<tr>
<td>Freezing point</td>
<td>3°C (100%), -32°C (93%)</td>
</tr>
<tr>
<td>Boiling point</td>
<td>638.6 °F (337 °C) (98%)</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not available.</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not available.</td>
</tr>
<tr>
<td>Flammability limits in air, upper, % by volume</td>
<td>Not available.</td>
</tr>
<tr>
<td>Flammability limits in air, lower, % by volume</td>
<td>Not available.</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>0 kPa</td>
</tr>
<tr>
<td>Vapor density</td>
<td>3.4</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>1.84 (98%)</td>
</tr>
<tr>
<td>Relative density</td>
<td>Not available.</td>
</tr>
<tr>
<td>Solubility (water)</td>
<td>Miscible. Miscible.</td>
</tr>
<tr>
<td>Partition coefficient (n-octanol/water)</td>
<td>Not available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>Not available.</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>644 °F (340 °C)</td>
</tr>
</tbody>
</table>

### 10. Chemical Stability & Reactivity Information

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical stability</td>
<td>Material is stable under normal conditions. Material reacts with water.</td>
</tr>
<tr>
<td>Conditions to avoid</td>
<td>Moisture. Heat.</td>
</tr>
<tr>
<td>Hazardous decomposition products</td>
<td>Sulphur oxides. Irritating and/or toxic fumes and gases may be emitted upon the products decomposition.</td>
</tr>
<tr>
<td>Possibility of hazardous reactions</td>
<td>Hazardous polymerization does not occur.</td>
</tr>
</tbody>
</table>

### 11. Toxicological Information

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicological data</td>
<td></td>
</tr>
<tr>
<td>Product</td>
<td></td>
</tr>
<tr>
<td>Sulfuric Acid (Mixture)</td>
<td></td>
</tr>
<tr>
<td>Components</td>
<td></td>
</tr>
<tr>
<td>SULFURIC ACID (7664-93-9)</td>
<td></td>
</tr>
<tr>
<td>Sensitization</td>
<td>Not a skin sensitizer.</td>
</tr>
<tr>
<td>Acute effects</td>
<td>Strongly corrosive. May cause deep tissue damage. Vapors are corrosive. After some hours, injured persons may develop serious shortness of breath and lung edema.</td>
</tr>
<tr>
<td>Local effects</td>
<td>Causes severe burns.</td>
</tr>
<tr>
<td>Chronic effects</td>
<td>Corrosive. Prolonged contact causes serious tissue damage.</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Contains a substance which may cause cancer by inhalation. Suspected to increase risk of cancer.</td>
</tr>
</tbody>
</table>

### ACGIH Carcinogens

- **SULFURIC ACID (CAS 7664-93-9)**: A2 Suspected human carcinogen.

### IARC Monographs. Overall Evaluation of Carcinogenicity

- **SULFURIC ACID (CAS 7664-93-9)**: 1 Carcinogenic to humans.
US NTP Report on Carcinogens: Known carcinogen

SULFURIC ACID (CAS 7664-93-9) Known carcinogen.

Skin corrosion/irritation
Corrosive to skin and eyes.

Epidemiology
No epidemiological data is available for this product.

Mutagenicity
No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Neurological effects
No data available for this product.

Reproductive effects
Contains no ingredient listed as toxic to reproduction

Teratogenicity
No data available to indicate product or any components present at greater than 0.1% may cause birth defects.

Symptoms and target organs
Corrosive effects.

Further information
Danger of very serious irreversible effects. Symptoms may be delayed.

12. Ecological Information

Ecotoxicological data

<table>
<thead>
<tr>
<th>Product</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric Acid (Mixture)</td>
<td>LC50 Fish: 44.56 mg/l 96.00 hours estimated</td>
</tr>
</tbody>
</table>

Components

| SULFURIC ACID (7664-93-9)       | LC50 Western mosquitofish (Gambusia affinis): 42 mg/l 96.00 hours |

Ecotoxicity
Harmful to aquatic life. The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.

Persistence and degradability
Expected to be readily biodegradable.

Partition coefficient (n-octanol/water)
Not available

13. Disposal Considerations

Waste codes
D002: Waste Corrosive material [pH <=2 or =>12.5, or corrosive to steel]

Disposal instructions
Dispose of this material and its container to hazardous or special waste collection point. Incinerate the material under controlled conditions in an approved incinerator. All wastes must be handled in accordance with local, state and federal regulations.

Contaminated packaging
Since emptied containers retain product residue, follow label warnings even after container is emptied. Offer rinsed packaging material to local recycling facilities.

14. Transport Information

DOT

Basic shipping requirements:

<table>
<thead>
<tr>
<th>UN number</th>
<th>Proper shipping name</th>
<th>Hazard class</th>
<th>Packing group</th>
<th>Additional information:</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN1830</td>
<td>Sulfuric acid</td>
<td>8</td>
<td>II</td>
<td></td>
</tr>
</tbody>
</table>

Special provisions
A3, A7, B3, B83, B84, IB2, N34, T8, TP2, TP12

Basic shipping requirements:

<table>
<thead>
<tr>
<th>Labels required</th>
<th>Packaging exceptions</th>
<th>Packaging non bulk</th>
<th>Packaging bulk</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>154</td>
<td>202</td>
<td>242</td>
</tr>
</tbody>
</table>
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IATA
Basic shipping requirements:
UN number 1830
Proper shipping name Sulphuric acid with more than 51% acid
Hazard class 8
Packing group II
Additional information:
ERG code 8L

IMDG
Basic shipping requirements:
UN number 1830
Proper shipping name SULPHURIC ACID with more than 51% acid
Hazard class 8
Packing group II

15. Regulatory Information

US federal regulations
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

US EPCRA (SARA Title III) Section 302 - Extremely Hazardous Spill: Reportable quantity
SULFURIC ACID (CAS 7664-93-9) 1000 LBS

US EPCRA (SARA Title III) Section 302 - Extremely Hazardous Substance: Threshold Planning Quantity
SULFURIC ACID (CAS 7664-93-9) 1000 LBS

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration
SULFURIC ACID (CAS 7664-93-9) 1.0 %

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance
SULFURIC ACID (CAS 7664-93-9) Listed.

CERCLA (Superfund) reportable quantity
SULFURIC ACID: 1000.0000

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

Section 311 hazardous chemical
Yes

Inventory status
Country(s) or region Inventory name On inventory (yes/no)*
Australia Australian Inventory of Chemical Substances (AICS) Yes
<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory</td>
<td>Yes</td>
</tr>
<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*A “Yes” indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

**State regulations**

WARNING: This product contains a chemical known to the State of California to cause cancer.

**US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance**

SULFURIC ACID (CAS 7664-93-9) Listed.

**US - California Proposition 65 - CRT: Listed date/Carcinogenic substance**


**US - New Jersey Community RTK (EHS Survey): Reportable threshold**

SULFURIC ACID (CAS 7664-93-9) 500 LBS

**US - Pennsylvania RTK - Hazardous Substances: Listed substance**

SULFURIC ACID (CAS 7664-93-9) Listed.

**Saf-T-Data**

Health: 3 - Severe (Poison)
Flammability: 0 - None
Reactivity: 2 - Moderate
Contact: 4 - Extreme (Corrosive)
Lab Protective Equip: D - GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES
Storage Color Code: W - White (Corrosive)

**16. Labeling Info**

**Label Hazard Warning**

DANGER

STRONG INORGANIC ACID MISTS CONTAINING SULFURIC ACID CAN CAUSE CANCER. Risk of cancer depends on duration and level of exposure. Corrosive. Causes severe skin and eye burns. Causes digestive tract burns. Mist or vapor extremely irritating to eyes and respiratory tract. Material reacts with water.

**Label Precautions**

Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Use only with adequate ventilation. Keep container closed. Wash thoroughly after handling. DO NOT allow water to come into contact with this material.

**Label First Aid**

Immediately flush eyes with plenty of water for at least 15 minutes. Immediately flush skin with plenty of water. If gas/fume/vapor/dust/mist from the material is inhaled, remove the affected person immediately to fresh air. Get medical attention immediately. IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Do not use mouth-to-mouth method if victim ingested the substance.

**17. Other Information**

**NFPA ratings**

Health: 3
Flammability: 0
Instability: 1
Special hazards: W
The information presented in this Material Safety Data Sheet (MSDS/SDS) was prepared by technical personnel based on data that they believe in their good faith judgment is accurate. However, the information provided herein is provided “as is,” and Avantor Performance Materials makes and gives no representations or warranties whatsoever, and expressly disclaims all warranties regarding such information and the product to which it relates, whether express, implied, or statutory, including without limitation, warranties of accuracy, completeness, merchantability, non-infringement, performance, safety, suitability, stability, and fitness for a particular purpose, and any warranties arising from course of dealing, course of performance, or usage of trade. This MSDS/SDS is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product, and is not intended to be comprehensive as to the manner and conditions of use, handling, storage, or disposal of the product. Individuals receiving this MSDS/SDS must always exercise their own independent judgment in determining the appropriateness of such issues. Accordingly, Avantor Performance Materials assumes no liability whatsoever for the use of or reliance upon this information. No suggestions for use are intended as, and nothing herein shall be construed as, a recommendation to infringe any existing patents or to violate any federal, state, local, or foreign laws. Avantor Performance Materials reminds you that it is your legal duty to make all information in this MSDS/SDS available to your employees.

Issue date

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