MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name **Sulfuric Acid**

Version # 09

Revision date 08-25-2011

CAS # Mixture

Product Codes **J.T.Baker: 5030, 5137, 5374, 5802, 5815, 5859, 6163, 6902, 9671, 9673, 9674, 9675, 9681, 9684, 9690, 9691, 9697, 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 information

Avantor Performance Materials, Inc.
3477 Corporate Parkway
Suite #200
Center Valley, PA 18034 US
24 Hour Emergency 908-859-2151
Chemtrec 800-424-9300
Customer Service 855-282-6867

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.

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

Hazardous components	CAS #	Percent
SULFURIC ACID	7664-93-9	60 - 100

Non-hazardous components	CAS #	Percent
WATER	7732-18-5	2 - 7

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 for firefighters	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.
Fire fighting equipment/instructions	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.
Specific methods	In the event of fire and/or explosion do not breathe fumes.

6. Accidental Release Measures

Personal precautions	Keep unnecessary personnel away. 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

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

8. Exposure Controls / Personal Protection

Occupational exposure limits

Canada - British Columbia

Components	Type	Value
SULFURIC ACID (7664-93-9)	TWA	0.2000 mg/m3

Canada - Ontario

Components	Type	Value	Form
SULFURIC ACID (7664-93-9)	TWA	0.2000 mg/m3	Thoracic fraction.

Canada - Quebec

Components	Type	Value
SULFURIC ACID (7664-93-9)	STEL	3.0000 mg/m3
	TWA	1.0000 mg/m3

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

Provide eyewash station and safety shower. 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)
Melting point	3°C (100%), -32°C (93%)
Freezing point	3°C (100%), -32°C (93%)
Boiling point	638.6 °F (337 °C) (98%)
Flash point	Not available.
Evaporation rate	Not available.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Vapor pressure	0 kPa
Vapor density	3.4
Specific gravity	1.84 (98%)
Relative density	Not available.
Solubility (water)	Miscible. Miscible.
Partition coefficient (n-octanol/water)	Not available
Auto-ignition temperature	Not available.
Decomposition temperature	644 °F (340 °C)

10. Chemical Stability & Reactivity Information

Chemical stability	Material is stable under normal conditions. Material reacts with water.
Conditions to avoid	Moisture. Heat.
Incompatible materials	Water. Cyanides. Strong oxidizing agents. Strong reducing agents. Metals. Halogens. Organic compounds. Potassium.
Hazardous decomposition products	Sulphur oxides. Irritating and/or toxic fumes and gases may be emitted upon the products decomposition.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Toxicological data

Product	**Test Results**
Sulfuric Acid (Mixture)	Acute Inhalation LC50 Rat: 368 mg/l estimated
	Acute Oral LD50 Rat: 2271 mg/kg estimated
Components	**Test Results**
SULFURIC ACID (7664-93-9)	Acute Inhalation LC50 Rat: 347 mg/l 1.00 Hours
	Acute Oral LD50 Rat: 2140 mg/kg

Acute effects	Strongly corrosive. May cause deep tissue damage. Vapors are corrosive. After some hours, injured persons may develop serious shortness of breath and lung edema.
Sensitization	Not a skin sensitizer.
Local effects	Causes severe burns.
Chronic effects	Corrosive. Prolonged contact causes serious tissue damage.
Carcinogenicity	Contains a substance which may cause cancer by inhalation. Suspected to increase risk of cancer.

IARC Monographs. Overall Evaluation of Carcinogenicity

SULFURIC ACID (CAS 7664-93-9)	1 Carcinogenic to humans.

Neurological effects	No data available for this product.
Mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
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.
Epidemiology	No epidemiological data is available for this product.
Further information	Danger of very serious irreversible effects. Symptoms may be delayed.

12. Ecological Information

Ecotoxicological data

Product	**Test Results**
Sulfuric Acid (Mixture)	LC50 Fish: 44.56 mg/l 96.00 hours estimated
Components	**Test Results**
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	Not available

13. Disposal Considerations

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.
Waste from residues / unused products	Dispose of in accordance with local 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

TDG

Proper shipping name	SULFURIC ACID with more than 51 per cent acid; or SULPHURIC ACID with more than 51 per cent acid
Hazard class	8
UN number	UN1830
Packing group	II

TDG

15. Regulatory Information

Canadian regulations

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS status

Controlled

WHMIS classification

D1A - Immediate/Serious-VERY TOXIC
D2A - Other Toxic Effects-VERY TOXIC
E - Corrosive

WHMIS labeling

Inventory status

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

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

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. Other Information

NFPA ratings

Health: 3
Flammability: 0
Instability: 1
Special hazards: W

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Issue date	08-25-2011
This data sheet contains changes from the previous version in section(s):	Chemical Stability & Reactivity Information: Incompatible materials