



Safety Data Sheet

1. Product Identifier and Company Identification

Product name : **Sulfuric Acid** (20%-93%)
HBCC SDS number : CS18100
Synonym : H_2SO_4 ; Oil of Vitriol; Spirit of Sulfur; Hydrogen Sulfate; Oleum
Product use and Restrictions : Refer to label or call
Manufacturer : Corporate Headquarters
Contact Address : Hill Brothers Chemical Company
1675 North Main Street
Orange, California 92867
714-998-8800
800-821-7234
Corporate Safety & Compliance
Hill Brothers Chemical Company
7121 West Bell Road, Suite 250
Glendale, Arizona 85308
623-535-9955 - Office
623-535-9944 - Fax

Emergency telephone : 800-424-9300
Number (Chemtrec) : <http://hillbrothers.com>
Website

2. Hazard Identification

Classification : Skin Corrosion/Irritation – Category 1
Serious Eye Damage/Eye Irritation – Category 1
Corrosive to Metals – Category 1

Signal Word : DANGER

Pictogram(s) :



Hazard Statements : H314: Causes severe skin burns and eye damage
H290: May be corrosive to metals

Precautionary Statements

Response : P304 + P340 + P310: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician.
P301 + P310 + P330 + P331: IF SWALLOWED: Immediately call a POISON CENTER or physician.
P303 + P361 + P353 + P363 + P310: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON

CENTER or physician.

P305 + P351 + P338 + P310: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing. Immediately call a POISON CENTER or physician.

- Prevention** : P280: Wear protective gloves. Wear eye or face protection. Wear protective clothing.
P264: Wash hand thoroughly after handling.
- Storage** : P405: Store locked up.
- Disposal** : P501: Dispose of contents and container in accordance with all local, regional, national and international regulations.

3. Composition/Information on Ingredients

CAS Number	Ingredient Name	Weight %
7664-93-9	Sulfuric Acid	20-93%

4. First Aid Measures

- Ingestion** : If liquid sulfuric acid or solutions containing sulfuric acid have been swallowed and the person is conscious, give him 8oz. of water or milk (of water or milk to children under 5), immediately to dilute the sulfuric acid. Do NOT induce vomiting. Do not attempt to make the exposed person vomit. Do not leave victim unattended. GET MEDICAL ATTENTION IMMEDIATELY.
- Inhalation** : If a person breathes in large amounts of sulfuric acid, move the exposed person to fresh air at once. If breathing has stopped, perform artificial respiration. If breathing is difficult, give oxygen. Keep the affected person warm and at rest. GET MEDICAL ATTENTION AS SOON AS POSSIBLE.
- Skin** : If liquid sulfuric acid or solutions containing sulfuric acid get on the skin, immediately flush the contaminated skin with water for at least 15 minutes. If skin surface is damaged, apply a clean dressing. If liquid sulfuric acid or solutions containing sulfuric acid penetrate through the clothing, immediately remove the clothing, shoes and constrictive jewelry under a safety shower and continue to wash the skin for at least 15 minutes. GET MEDICAL ATTENTION IMMEDIATELY.
- Eyes** : If liquid sulfuric acid or solutions containing sulfuric acid get into the eyes, flush eyes immediately with a directed stream of water for at least 30 minutes while forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissue. GET MEDICAL ATTENTION IMMEDIATELY. Contact lenses should not be worn when working with this chemical.
- Medical Conditions** : Persons with pre-existing skin disorders and/or respiratory disorders (e.g. Asthma-like conditions) may be more susceptible to the effects of this material, and may be aggravated by exposure to this material.

Effects of Overexposure	: May cause severe irritation and burns of the mouth, nose, throat, respiratory and digestive tract, coughing, nausea, vomiting, abdominal pain, chest pain, pneumonitis (inflammation of the fluid in the lungs), pulmonary edema (accumulation of the fluid in the lungs), and perforation of the stomach. Overexposure to acid mists has been reported to cause erosion to tooth enamel.
<u>Summary of Acute Health Hazards</u>	: Concentrated sulfuric acid will effectively remove the elements of water from many organic materials with which it comes in contact. It is even more rapidly injurious to mucous membranes and exceedingly dangerous to the eyes.
Ingestion	: Corrosive. Causes serious burns of the mouth or perforation of the esophagus or stomach. May be fatal if swallowed.
Inhalation	: Corrosive and highly toxic. May be harmful or fatal if inhaled. May cause severe irritation and burns of the nose, throat and respiratory tract.
Skin	: Corrosive. Splashes on the skin will cause severe skin burns. Burning and charring of the skin are a result of the great affinity for, and strong exothermic reaction with, water. Direct contact can be severely irritating to the skin and may result in redness, swelling, burns and severe skin damage.
Eyes	: Corrosive. Direct contact with the liquid or exposure to vapors or mists may cause stinging, tearing, redness, swelling, corneal damage and irreversible eye damage. Splashes in the eyes will cause severe burns. Contact lenses should not be worn when working with this chemical.
Note to Physicians	: Sulfuric acid is reported to cause pulmonary function impairment. Periodic surveillance is indicated. Sulfuric acid may cause acute lung damage. Surveillance of the lungs is indicated. Ingestion may cause gastroesophageal perforation. Perforation may occur within 72 hours, but along with abscess formation, can occur weeks later. Long term complications may include esophageal, gastric or pyloric strictures or stenosis.

Summary of Chronic Health : N/A

5. Fire Fighting Measures

Extinguishing	: Fires involving small amount of combustibles may be smothered with suitable dry chemical, soda ash, lime, sand or CO ₂ . Use water on combustibles burning in vicinity of this material but use care as water applied directly to this acid result in evolution of heat and causes splattering.
Special Exposure Hazards	: Not flammable but highly reactive and capable of igniting finely divided combustible materials on contact. Reacts violently with water and organic materials with evolution of heat. If involved in fire, may release hazardous oxides of sulfur. Vapors are heavier than air and may accumulate in low areas. Containers exposed to extreme heat may rupture due to pressure buildup. Contact with common metals may generate hydrogen, which can

form flammable mixture with air. Fire may produce irritating, corrosive, and/or toxic gases.

**Special Protective
Equipment for
Firefighters**

: Causes severe, deep burns to tissue; very corrosive effect. Sulfuric Acid is extremely slippery. Emergency responders in the danger area should wear bunker gear and self-contained breathing apparatus for fires beyond the incipient stage (29CFR 1910.156). In addition, wear other appropriate protective equipment as conditions warrant (see Section 8). Water reactive. Contact with water may generate heat. Isolate damage area, keep unauthorized personnel out. If tank, railcar, or tank truck is involved in a fire, isolate for ½ mile in all directions. Consider initial evacuation for ½ mile in all directions. Stop spill/release if it can be done with minimal risk. Move undamaged containers from danger area if it can be done with minimal risk. Fires involving small amounts of combustibles may be smothered with suitable dry chemicals. Use water on combustibles burning but avoid using water directly on acid as it results in evolution of heat and causes splattering.

**Fire Fighting
Procedures**

: Extinguish fire using agents suitable for nearby fires. Use water spray only to keep fire-exposed containers cool. No water. In case of fire in the surroundings: powder, foam, carbon dioxide.

NFPA Rating

: Health - 3
Flammability - 0
Instability - 2
Special Hazard: -W-



0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

**Uniform Fire
Code Rating**

: N/A

6. Accidental Release Measures

**Personal
Precautions**

: If sulfuric acid is spilled or leaked, ventilate area. Stay upwind and away from spill release. Avoid discharge into drains, water courses or onto the ground. Persons not wearing protective equipment and clothing should be restricted from areas of spills or leaks until cleanup has been completed.

Emergency Procedures

: Use Caution around spill area, Sulfuric Acid is extremely slippery.

**Methods of
Containment
And Clean-Up**

: Collect spilled or leaked material in the most convenient and safe manner for reclamation or for disposal in a secured sanitary landfill. Sulfuric acid should be absorbed in vermiculite, dry sand, earth, or a similar material. It may also be diluted and neutralized. Add slowly to solution of soda ash and calcium hydroxide aka: slaked lime with stirring.

7. Handling and Storage

Safe Handling

- : Protect against physical damage and water. Keep containers closed. Sulfuric Acid is extremely slippery. Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276.

Storage

- : Hydrogen gas is potentially explosive and special care must be taken when performing maintenance on tanks. To prevent ignition of hydrogen gas generated in metal containers (from metal contact) smoking, open flames and sparks must not be permitted in storage areas. This product has a great affinity for water, abstracting it from the air and also from many organic substances; hence it will char wood, etc. When diluting, the acid should be added to the diluent. Separate from carbides, chlorates, fulminates, nitrates, picrates, powdered metals, and combustible materials. Keep away from strong oxidizing agents including oxygen and chlorine.

Work/Hygienic Practices

- : Avoid contact with the skin and avoid breathing vapors. Do not eat, drink, or smoke in work area. Wash hands before eating, drinking, or using restroom. Do NOT place food, coffee or other drinks in the area where dusting or splashing of solutions is possible.

Ventilation

- : General mechanical ventilation (typically 10 air changes per hour) may be sufficient to keep sulfuric acid vapor concentrations within specified time-weighted TLV range. If general ventilation proves inadequate to maintain safe vapor concentrations, supplemental local exhaust may be required.

8. Exposure Controls/Personal Protection

Occupational Exposure Limits

Chemical Name: Sulfuric Acid				
Exposure Limits (TWAs) in Air				
CAS Number	IDLH	ACGIH TLV	OSHA PEL	STEL
7664-93-9	15 mg/m ³	0.2 mg/m ³	1 mg/m ³	3 mg/m ³
7446-09-5	100 ppm	2 ppm	5 ppm	5 ppm

Protective Equipment

- : Employees should be provided with and required to use impervious clothing, gloves, face shields (eight-inch minimum), and other appropriate protective clothing necessary to prevent any possibility of skin contact with liquid sulfuric acid or solutions containing more than 1% sulfuric acid by weight. Rubber apron, rubber boots, eyewash stations and safety showers must be available in the immediate work area for emergency use.

Eye Protection

- : Employees should be provided with and required to use splash-proof safety goggles where there is any possibility of liquid sulfuric acid or solutions containing sulfuric acid contacting the eyes. Contact lenses should not be worn when working with this chemical.

Respiratory Protection

- : **Personal Protective Measures:** Good industrial hygiene practices recommend that engineering controls be used to reduce environmental concentrations to the permissible exposure level. However, there are some exceptions where respirators may be used to control exposure. Respirators

may be used when engineering and work practice controls are not technically feasible, when such controls are in the process of being installed, or when they fail and need to be supplemented. If the use of respirators is necessary, a NIOSH/MSHA approved air purifying respirator with N95 filter may be used under conditions where airborne concentrations are expected to exceed exposure limits (see Section II). Protection provided by air purifying respirators is limited (see manufacturers respirator selection guide). Use a positive pressure air supplied respirator if there is potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use.

9. Physical and Chemical Properties

Appearance: Colorless to dark brown	Odor: Odorless
Odor Threshold: > 1 mg/m ³	pH: 0.3 (1N Solution)
Melting Point/Freezing Point: 11°C; 51.8°F	Initial Boiling Point/Range: 105-325°C (221-616°F (20-100% H ₂ SO ₄))
Flash Point: Non-flammable	Evaporation Rate (BuAc=1): < 1
Flammability: N/A	Lower/Upper Explosive Limit: N/A
Vapor Pressure (mmHg): < .00120 mm	Vapor Density (Air=1): 3.4
Relative Density: N/A	Solubility in Water: 100%
Partition Coefficient: N/A	Autoignition Temperature: N/A
Decomposition Temperature: N/A	Viscosity: N/A
% Volatiles: Negligible	Specific Gravity (Water=1): See Table Below
Molecular Weight: 98	VOC: N/A

% Acid in Solution	20	30	35	36	40	50	72	75-99
Specific Gravity	1.14-1.15	1.23	1.27	1.27	1.3	1.4	1.63	1.67-1.84
Weight (lb./gallon)	9.5	10.246	10.55	10.6	10.89	11.73	13.6	13.9-15.4

How to detect this compound: Sampling and analyses may be performed by collection of sulfuric acid on a cellulose membrane filter, followed by extraction with distilled water and isopropyl alcohol, treatment with perchloric acid, and titration with barium perchlorate. Also, detector tubes certified by NIOSH under 42 CFR Part 84 or other direct-reading devices calibrated to measure sulfuric acid may be used.

10. Stability and Reactivity

Reactivity	: Sulfuric Acid reacts vigorously, violently or explosively with many organic and inorganic chemicals and with water.
Chemical Stability	: Stable under normal conditions.

Possibility of Hazardous Reactions or Polymerizations	: Hazardous Polymerization will not occur.
Conditions to Avoid	: Temperatures above 150°F. Exposure to moist air or water.
Incompatible Materials	: Contact of acid with organic materials (such as chlorates, carbides, fulminates, and picrates), alkaline materials and water may cause fires and explosions. Contact of acid with metals may form toxic sulfur dioxide fumes and flammable hydrogen gas. Contact with hypochlorites (e.g., chlorine bleach), sulfides, or cyanides will produce toxic gases.
Hazardous Decomposition Products	: Toxic gases and vapors (such as sulfuric acid fume, sulfur dioxide, and carbon monoxide) may be released when sulfuric acid decomposes. Decomposes to water and sulfur trioxide above 644°F.

11. Toxicological Information

Acute and Chronic Effects	: Sulfuric acid mist severely irritates the eyes, respiratory tract, and skin. Concentrated sulfuric acid destroys tissue due to its severe dehydrating action, whereas the dilute form acts as a mild irritant due to acid properties. A worker sprayed in the face with liquid fuming sulfuric acid suffered skin burns of the face and body, as well as pulmonary edema from inhalation. Splashed in the eye, the concentrated acid causes extremely severe damage, often leading to blindness, whereas dilute acid produces more transient effects from which recovery may be complete. Repeated exposure of workers to the mist causes chronic conjunctivitis, tracheobronchitis, stomatitis, and dermatitis, as well as dental erosion. While ingestion of the liquid is unlikely in ordinary industrial use, the highly corrosive nature of the substance may be expected to produce serious mucous membrane burns of the mouth and esophagus.
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Routes of Exposure

Ingestion	: Yes
Inhalation	: Yes
Skin	: Yes
Eyes	: Yes

Symptoms related to Physical, Chemical & Toxicological Characteristics	: Workers exposed to industrial sulfuric acid mist showed a statistical increase in laryngeal cancer. This suggests a possible relationship between carcinogenesis and inhalation of sulfuric acid mist.
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Numerical Measures of Toxicity	: The LC50 of mist of 1-micron particle size for an 8 hour exposure was 50 mg/m ³ for adult guinea pigs and 18 mg/m ³ for young animals. Continuous exposure of guinea pigs to 2 mg/m ³ for 5 days caused pulmonary edema and thickening of the alveolar walls; exposure of guinea pigs to 2 mg/m ³ for 1 hour caused an increase in pulmonary airway resistance from reflex bronchoconstriction. Sequelae were pulmonary fibrosis, residual bronchitis, and pulmonary emphysema; in addition, necrosis of the skin resulted in marked scarring. In human subjects, concentrations of about 5 mg/m ³ were objectionable, usually causing cough, an increase in respiratory rate, and
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impairment of ventilatory capacity. Workers exposed to concentrations of 12.6 to 35 mg/m³ had a markedly higher incidence of erosion and discoloration of teeth than was noted in unexposed individuals.

Chronic Toxicity : N/A

Carcinogenicity :

Product Name: Sulfuric Acid					
ACGIH	IARC	EPA	NIOSH	NTP	OSHA
N/A	N/A	N/A	N/A	N/A	N/A

TARGET ORGANS : N/A

12. Ecological Information

Ecotoxicity : Fish: Bluegill/Sunfish: 49 mg/L; 48 Hr; TLm (tap water @ 20°C)
Fish: Bluegill/Sunfish: 24.5 ppm; 48 Hr; TLm (fresh water)

Persistence and Degradability : Sulfuric acid (98% solution) is soluble in water and remains indefinitely in the environment as sulfate.

Bioaccumulative Potential :

Product/Ingredient	Log _{pow}	BCF	Potential
-	-	-	-

Sulfuric acid (98% solution) has low potential for bioaccumulation.

Mobility in Soil : Sulfuric acid (98% solution) is soluble in water and has high mobility in soil. During transport through the soil, sulfuric acid (98% solution) will dissolve some of the soil material; in particular, the carbonate based materials. The acid will be neutralised to some degree with adsorption of the proton also occurring on clay materials. However, significant amounts of acid are expected to remain for transport down towards the ground water table. Upon reaching the ground water table, the acid will continue to move, now in the direction of the ground water flow. Lime addition may be required to rectify low pH resulting from sulfuric acid (98% solution) spillages.

13. Disposal Considerations

Disposal of Container : Sulfuric acid may be placed in sealed containers or absorbed in vermiculite, dry sand, earth, or a similar material and disposed. Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification. of in a secured sanitary landfill. It may also be diluted and neutralized. Check with your Federal, State, and Local authorities as neutralized sulfuric acid may be allowed to be flushed down the drain. Empty containers must be handled with care due to material residue.

14. Transport Information

UN# : UN2796, (with not more than 51% acid)
UN1830, (with more than 51% acid)
Proper Shipping Name : Sulfuric Acid
Hazard Class/Division : 8
Packing Group : II
Marine Pollutant : No
Special Provisions : UN2796: A3, A7, B2, B25, IB2, N6, N34, T8, TP2
UN1830: A3, A7, B3, B83, B84, IB2, N34, T8, TP2
Emergency Response : UN2796: 2012 ERG, Guide 157, pages 252-253
Guidebook UN1830: 2012 ERG, Guide 137, pages 212-213
Placard Advisory :



15. Regulatory Information

SARA 302 Extremely Hazardous Substance (EHS) : **Sulfuric Acid:** CAS #7664-93-9
Threshold Planning Quantity (TPQ) = 1000 lbs. (454 kgs.) (85 gals.)

SARA 304 Extremely Hazardous Substance (EHS) : Reportable Quantity (RQ) = 500 lbs. (227 kgs.) (42.5 gals.)
Sulfuric Acid: CAS #7664-93-9
Reportable Quantity (RQ) = 1000 lbs. (454 kgs.) (85 gals.)

SARA 311/312 Hazard Classification :

Sara 311/312 Hazards				
Acute	Chronic	Flammability	Pressure	Reactivity
Yes	Yes	No	No	Yes

SARA 313 Supplier Notification : **Sulfuric Acid** is only subject to the requirements of the SARA 313 Supplier Notification when in aerosol form.

CERCLA Hazardous Substance : **Sulfuric Acid:** CAS #7664-93-9
1000 lbs. (454 kgs.) (85 gals.) Reportable Quantity (RQ)

Clean Air Act (CAA) : This product is not listed as a pollutant under the US Clean Air Act, Section 12 (40 CFR 61)

California Prop 65 : This product does not contain any chemicals known to the state of California to cause cancer.

Label Warning : Corrosive

EPA Registration : None

16. Other Information

Revision date : 04/15/2015

Supersedes : 09/28/2011

First Issue : 01/02/1986

Chemical Family/Type : Inorganic Acid

Section(s) changed since last revision : MSDS to First Issue SDS Conversion

IMPORTANT! Read this SDS before use or disposal of this product. Pass along the information to employees and any other persons who could be exposed to the product to be sure that they are aware of the information before use or other exposure. This SDS has been prepared in accordance with the Globally Harmonized System of Chemical and Labeling of Chemicals (GHS) Fifth Edition and the OSHA Hazard Communication Standard [29 CFR 1910.1200]. The SDS information is based on sources believed to be reliable. Available data, safety standards, and government regulations are subject to change and the conditions of handling and use, or misuse are beyond our control; **Hill Brothers Chemical Company** makes no warranty, either expressed or implied, with respect to the completeness or continuing accuracy of the information contained herein and disclaims all liability for reliance thereon. Additional information may be necessary or helpful for specific conditions and circumstances of use. It is the user's responsibility to determine the suitability of this product and to evaluate risks and exercise appropriate precautions for protection of employees and others prior to use.