SAFETY DATA SHEET

SULFURIC ACID

1. Identification

Product identifier: Sulfuric Acid
Product Code Number: SUAA96
Trade Name: Sulfuric Acid
Synonyms: Sulphuric Acid
Chemical Formula: H2SO4

Product Use: Process chemical, laboratory and scientific research and development
Restrictions on use: None known.

Company Identification: Lab Alley LLC
22111 Highway 71 West, Suite 601
Spicewood, Texas 78669
Tel.: 512-668-9918

24 Hour Emergency Telephone Number:
Infotrac: 800-535-5053

SDS Date of Preparation: 11/8/19

2. Hazard(s) identification

Classification of the Substance or Mixture:
Carcinogen Category 1A
Eye Damage Category 1
Skin Corrosion Category 1A

Label Elements:
Danger!

Hazard Statements:
H314 Causes severe skin burns and eye damage.
H350 May cause cancer.

Precautionary Statements:
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe mist or vapors.
P264 Wash thoroughly after handling.
P280 Wear protective gloves, protective clothing, eye protection and face protection.
P308+P313 IF exposed or concerned: Get medical attention.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P310 Immediately call POISON CENTER or doctor.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P310 Immediately call POISON CENTER or doctor.
P363 Wash contaminated clothing before reuse.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.
P310 Immediately call POISON CENTER or doctor.
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P310 Immediately call POISON CENTER or doctor.
P405 Store locked up.
P501 Dispose of contents and container in accordance with local and national regulations.

Other Hazards: None known

3. Composition/information on ingredients

Ingredient	CAS Number	Percent	Hazardous Chemical
Sulfuric Acid	7664-93-9	35-98%	Yes
Water	7732-18-5	2-65%	No

The specific identity and/or exact percentage of the composition has been withheld as a trade secret.

4. First-aid measures

Inhalation: Immediately remove victim to fresh air. If breathing is difficult, oxygen should be administered by qualified personnel. If breathing has stopped, administer artificial respiration. Get immediate medical attention.
Skin contact: Immediately flush skin with plenty of water for 15 minutes while removing contaminated clothing and shoes. Get immediate medical attention. Launder clothing before re-use. (Discard contaminated shoes).

Eye contact: Immediately flush thoroughly with water for at least 30 minutes, while holding the eye lids open to be sure the material is washed out. Remove contact lenses if present and easy to do. Get immediate medical attention.

Ingestion: Do NOT induce vomiting. Rinse mouth with water. Never give anything by mouth to an unconscious or convulsing person. Keep the victim calm and warm. Get immediate medical attention.

Most important symptoms/effects, acute and delayed: May cause severe eye, skin, respiratory tract irritation and burns. May cause temporary blindness and severe eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Exposure to sulfuric acid mist may cause cancer through all routes of exposure. Risk of cancer depends on extent of exposure and duration.

Indication of immediate medical attention and special treatment, if necessary: Immediate medical attention is required for all routes of exposure.

5. Fire-fighting measures

Suitable (and unsuitable) extinguishing media: Use dry chemical, foam, or carbon dioxide to extinguish. Do not use water since product is water reactive and contact will generate heat and toxic fumes. However, water spray may be used to keep fire exposed containers cool.

Specific hazards arising from the chemical: This product is not flammable or combustible. Sulfuric Acid is a strong dehydrating agent, which may cause ignition of finely divided materials on contact. Sulfuric acid may react with most metals, especially when dilute, to produce extremely flammable and potentially explosive hydrogen gas which can form explosive mixtures with air. Contact between sulfuric acid and water may generate large amounts of heat. Irritating, corrosive and/or toxic gases or fumes will be released during a fire.

Special protective equipment and precautions for fire-Fighters: 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.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Methods and materials for containment and cleaning up: Contain and recover liquid when possible. Do not let product enter drains. 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! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. Handling and storage

Precautions for safe handling: Do not breathe mist or vapor. Use with adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Prevent contact with eye, skin, and clothing. Always wear impervious gloves, chemical safety goggles and protective clothing when handling this material. When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Keep containers closed when not in use.

When diluting, always add acid to water- not water to acid. Adding water to acid generates heat and will cause dangerous boiling and splashing.

Conditions for safe storage, including any incompatibilities: Store in a cool, dry, well ventilated location out of direct sunlight. Keep container tightly closed. Keep out of the reach of children.

8. Exposure controls/personal protection

Chemical Name	Exposure Limits
Sulfuric Acid	0.2 mg/m3 TWA ACGIH TLV (Thoracic fraction) 1 mg/m3 TWA OSHA PEL
Water	None Established

Appropriate engineering controls: A system of local and / or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. 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 protective equipment:

Respiratory protection: If the exposure limit is exceeded and engineering controls are not feasible, a full face piece respirator with an acid gas cartridge and particulate filter (NIOSH type N100 filter) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, Glycerine,

etc.) are present, use a NIOSH type R or P particulate filter. 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 full face shield where splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and chemical properties

Appearance: Clear oily liquid
Odor: Odorless
Odor Threshold: Not determined
pH: 1 N solution (ca. 5% w/w) = 0.3; 0.1 N solution (ca. 0.5% w/w) = 1.2; 0.01 N solution (ca. 0.05% w/w) = 2.1
% Volatiles by volume @ 21°C (70°F): No information found
Melting Point/Freezing Point: 3°C (100%), -32°C (93%), -38°C (78%), -64°C (65%)
Boiling Point / Boiling Range: ca. 290°C (ca. 554°F) (decomposes at 340°C)
Flash Point: Not applicable
Evaporation Rate (BuAC=1): Not determined
Flammability (solid, gas): Not applicable
Upper / Lower Flammability or Explosive Limits: Not applicable
Vapor Pressure (mm Hg): 1 @ 145.8°C (295°F)
Vapor Density (Air=1): 3.4
Relative Density: 1.84 g/cm3 at 25 °C (77 °F)
Solubility: 100 g/l00 ml water @ 100°C (212°F). 1g/13mL cold water
Partition Coefficient: n-octanol / water: No data available
Auto-ignition Temperature: No data available
Decomposition Temperature: No data available
Viscosity: No data available

10. Stability and reactivity

Reactivity: Not available.

Chemical stability: Stable, but reacts violently with water and organic materials with evolution of heat.

Possibility of hazardous reactions: Hazardous polymerization does not occur. Vigorous reactions occur when in contact with incompatible materials.

Conditions to avoid: Exposure to moisture and water vapor. Reacts violently with strong alkaline substances. This product may react with reducing agents. Do not mix with other chemicals.

Incompatible materials: Incompatible with bases. This product may react with reducing agents. Contact with metals may evolve flammable hydrogen gas.

Hazardous decomposition products: Thermal decomposition may release oxides of sulfur.

11. Toxicological information

Potential Health Effects:

Inhalation: Inhalation of mists or vapors may cause severe irritation and burns of the nose, throat and upper respiratory tract. Higher concentrations can cause burns, pulmonary edema and death.

Skin Contact: Symptoms of redness, pain, and severe burn can occur. Circulatory collapse with clammy skin, weak and rapid pulse, shallow respirations, and scanty urine may follow skin contact or ingestion. Circulatory shock is often the immediate cause of death.

Eye Contact: Vapors cause irritation. Splashes cause severe pain, eye damage, and permanent blindness.

Ingestion: Swallowing can cause severe burns of the mouth, throat, and stomach, leading to death. Can cause sore throat, vomiting, diarrhea. Circulatory collapse with clammy skin, weak and rapid pulse, shallow respirations, and scanty urine may follow ingestion or skin contact. Circulatory shock is often the immediate
cause of death.

Chronic Exposure: Prolonged inhalation may cause lung damage. Repeated exposure may cause damage to the tissues of the mucous membranes, upper respiratory tract, eyes and skin. Chronic exposure to mists containing sulfuric acid is a cancer hazard.

Aggravation of Pre-existing Conditions: Persons with pre-existing skin disorders or eye disease may be more susceptible to the effects of this material.

Carcinogenicity: Sulfuric Acid contained in strong inorganic acid mists is listed by IARC as a Category 1 “Carcinogenic to Humans”. None of the other components of this product are listed as a carcinogen or suspected carcinogen by OSHA, IARC, and NTP.

Reproductive Effects: Reproductive harm is not expected from this product.

Mutagenic Effects: Not expected to cause mutagenic activity.

Acute Toxicity:
Sulfuric Acid: Oral rat LD50-2140 mg/kg, Inhalation rat LC50-375 mg/m3/4hr

12. Ecological information

Ecotoxicity:

Product	Species	Test Results
Sulfuric Acid:		
	Bluegill	16 mg/L 96 Hr LC50
	Water flea	>100 mg/L 48 Hr EC50

This product may be hazardous for the environment due to its low pH. Releases to the environment should be avoided.

Persistence and degradability: Sulfuric acid is an inorganic compound and not subject to biodegradation.

Bioaccumulative potential: No further relevant information available.

Mobility in soil: This product is water soluble and will move readily in soil and water.

Other adverse effects: None known.

13. Disposal considerations

Disposal instructions: Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Neutralize and flush solution into sewer connected to wastewater treatment system in compliance with applicable laws and regulations. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations: Not available.

Hazardous waste code D002: Waste Corrosive material [pH <=2 or =>12.5, or corrosive to steel] Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see:
Disposal instructions). Taking into account local regulations the product may be disposed of as waste water after neutralisation.

Contaminated packaging: Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transportation Information

	UN Number	Proper shipping name	Hazard Class	Packing Group	Environmental Hazard
US DOT	UN1830	SULFURIC ACID*	8	II	Not applicable
IMDG	UN1830	SULFURIC ACID	8	II	Not applicable
IATA	UN1830	SULFURIC ACID	8	II	Not applicable

*** Hazardous Substance (49CFR172.101):** Sulfuric Acid (RQ 1,000 lbs)- (1,052 lbs. product)

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code: Not applicable

Special Precautions for User: Not applicable

15. Regulatory information

US federal regulations:

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.
US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Not on regulatory list.
CERCLA Hazardous Substance List (40 CFR 302.4)
This product has a Reportable Quantity (RQ) of 1,052 lbs. (based on the RQ for Sulfuric Acid of 1,000 lbs present at 35-95%). Releases above the RQ must be reported to the National Response Center. Many states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.

Superfund Amendments and Reauthorization Act of 1986 (SARA)
Hazard categories:
SARA 311/312
Refer to Section 2 for OSHA Hazard Classification.

Section 313 Toxic Chemicals: This product contains the following chemicals subject to SARA Title III Section 313 Reporting requirements: None

SARA 302 Extremely hazardous substance
Sulfuric Acid (1,000 lbs)

Other federal regulations:

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Not regulated.
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.
Clean Water Act (CWA) Section 112(r) (40 CFR 68.130)
Hazardous substance
Safe Drinking Water Act (SDWA)

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number
SULFURIC ACID (CAS 7664-93-9) 6552
Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))
SULFURIC ACID (CAS 7664-93-9) 20 %WV
DEA Exempt Chemical Mixtures Code Number
SULFURIC ACID (CAS 7664-93-9) 6552
Food and Drug Administration (FDA)
Not regulated.

US state regulations California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This product can expose you to chemicals including Sulfuric Acid, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

US. Massachusetts RTK - Substance List:
SULFURIC ACID (CAS 7664-93-9)
US. New Jersey Worker and Community Right-to-Know Act:
SULFURIC ACID (CAS 7664-93-9) 500 LBS
US. Pennsylvania RTK - Hazardous Substances
SULFURIC ACID (CAS 7664-93-9)
US. Rhode Island RTK
SULFURIC ACID (CAS 7664-93-9)
US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT):
Listed substance: Strong inorganic acid mists containing sulfuric acid.

International Inventories:

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
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 this product complies with the inventory requirements administered by the governing country(s)

16. Other information

Date of Current Revision: 11/8/19
Revision Summary: Updated all sections.
Date of Previous Revision: 2/13/19

Disclaimer - The information in the SDS is based on the data available at the time. While believed to be accurate, Lab Alley LLC does not claim it to be all inclusive. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. It is not intended to provide product performance or applicability information, and no express or implied warranty of any kind is made with respect to the product, the underlying product data, or the information contained herein. We will not provide advice on such matters, or be responsible for any injury or damage resulting from the use of the product described herein.