KRISS | PRODUCTS Water Treatment Engineering

SA - 66 SULFURIC ACID

Safety Data Sheet

Prepared according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Revision date: 07/28/2015 Supersedes: 01/20/2014 Version: 1.0

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Trade name : SA-66 SULFURIC ACID

Product form : Mixture

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Water treatment.

1.3. Details of the supplier of the safety data sheet

Kriss Premium Products, Inc.
3400 East 42nd Street
Minneapolis, MN 55406

1.4. Emergency telephone number

Emergency number : INFORMATION: 612-722-8485
CHEMTREC: (800) 424-9300

SECTION 2: Hazards identification

2.1. Classification of this Product

Substance or mixture corrosive to metals:	Category 1
Skin Corrosion/Irritation:	Category 1A
Serious Eye Damage/Eye Irritation:	Category 1
Carcinogenicity:	Category 1A
Acute Toxicity – Inhalation Vapor:	Category 2
Specific Target Organ Systemic Toxicity (STOT)-Repeated Exposure:	Category 2
Acute Toxicity- Inhalation Dust/Mist:	Category 3

Labels/ Signal Word: Danger

2.2. Hazard Statements

H290: Corrosive to Metals
H314: Causes severe skin burns and eye damage
H330: Fatal if inhaled.
H331: Toxic if inhaled.
H350: May cause cancer.
H372: May cause damage to organs (teeth, respiratory system) through prolonged or repeated exposure (by inhalation).

2.3. Precautionary Statements

P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood.
P234: Keep only in original container.
P260: Do not breathe dust, fume, gas, mist, vapours or spray.
P280: Wear protective gloves/protective clothing/eye protection/face protection
P264: Wash thoroughly after handling.
P271: Use only outdoors or in a well-ventilated area.
P280: Wear gloves, eye and face protection and protective clothing.
P284: Wear respiratory protection.
P301+330+331: IF SWALLOWED: Rinse mouth, Do NOT induce vomiting
P303+361+353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+340: IF INHALED: Remove victim to fresh air and keep at rest in a position of comfortable breathing.
P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.
P310: Immediately call a POISON CENTER or doctor/physician.
P320: Specific treatment is urgent (see First Aid on SDS or on this label).

P363: Wash contaminated clothing before reuse.

P390: Absorb spillage to prevent material damage.

P403+P233: Store in a well-ventilated place. Keep container tightly closed.

P405: Store locked up.

P406: Store in corrosive resistant container with a resistant inner liner.

SECTION 3: Composition/Information on Ingredients

3.1. Chemical Name : Sulfuric Acid
3.2. Synonyms/Common Names : H2S04 ; Oil of Vitriol ; Spirit of Sulfur ; Hydrogen Sulfate ; Oleum
3.3. CAS Number : 7664-93-9

SECTION 4: First Aid Measures

4.1. Ingestion :

If liquid sulfuric acid or solutions containing sulfuric acid have been swallowed and the person is conscious, give him 8 oz. of water or milk (4 oz. 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.

4.2. 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 IMMEDIATELY.

4.3. 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.

4.4. 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.

4.5. Medical Conditions Generally Aggravated by Exposure :

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.

4.6. Summary of Acute Health Hazards :

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.

4.7. Ingestion :

Corrosive. Causes serious burns of the mouth or perforation of the esophagus or stomach. May be fatal if swallowed.

4.8. 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.

4.9. 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.

4.10. 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 work when working with this chemical.

4.11. 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 reportted to cause erosion to tooth enamel.

4.12. Note to Physicians :

Sulfuric acid is reported to cause pulmonary function.

4.13.Product Identifier :

Sulfuric Acid impairment. Periodic surveillance is indicated. Sulfuric acid may cause acut 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.

SECTION 5: Firefighting Measures

5.1. Extinguishing Media: Fires involving small amount of combustibles may be smothered with suitable dry chemical, soda ash, lime, sand or CO2. 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.

5.2. Unusual Fire and Explosion 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.

5.3. Special Firefighting Procedures: 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 un-Authorized 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 water directly on acid as it results in evolution of heat and causes splattering.

5.4. NFPA Rating: Health – 3; Flammability – 0; Instability – 2; Special Hazard: -W-

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

SECTION 6: Accidental Release Measures

6.1. 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.

6.2. Protective Equipment:

Wear appropriate protective equipment including respiratory protection as conditions warrant (see Section 8).

6.3. Emergency Procedures:

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

6.4. Methods of Containment and Clean – up:

Collected 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 verviculite, 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.

SECTION 7: Handling and Storage

7.1. Precautions for Safe Handling:

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.

7.2. Conditions for Safe Storage:

Storage conditions : 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 oxiding agents including oxygen and chlorine.

7.3. Work/ Hygienic Practices

Avoid contact with the skin and void 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.

SECTION 8: Exposure Controls / Personal Protection

			Exposure Limits (TWAs) in Air		
Chemical Name	**CAS Number**	**%**	**ACGIH TLV**	**OSHA PEL**	**STEL**

Sulfurice Acid (H2SO4)	7664-93-9	20-99%	.2 mg/m³	1 mg/m³	3 mg/m³
Sulfur Dioxide	7446-09-5	< 2	2 ppm	5 ppm	5 ppm

*Engineering Controls : See Section 7 : Ventilation

8.1. Personal Protective Measures: Good industrial hygiene practices recommend that engineering controls be used to reduce environmental concentrations to the permissible exposure level. Howevere, 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 Secion 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 1910.34 and ANSI Z88.2 requirements must be followed whenevere workplace conditions warrant a respirator's use.

8.2. Protective Clothing: 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.

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

8.4. Other Protective Clothing or Equipment: Rubber apron, rubber boots, eyewash station and safety showers must be available in the Immediate work area for emergency use.

SECTION 9: Physical and Chemical Properties:

9.1. Information on Basic Physical and Chemical properties

Appearance	:	Colorless to dark brown
Odor	:	Odorless
Odor Threshold	:	> 1 mg/ m³
pH	:	.3 (1N Solution)
Melting Point	:	11˚C
Freezing Point	:	51˚F
Initial Boiling Point/ Range	:	105-325˚C (221-616˚F) (20 – 100% H2SO4)
Flash Point	:	Non-flammable
Evaporation Rate (N-Butyl Acetate = 1)	:	< 1
Flammability	:	N/A
Upper/ Lower 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

% Acid in Solution	20	30	35	36	40	50	72	75-99
Specific Gravity	1.09-1.10	1.2-1.3	1.3	1.3	1.3	1.4	1.6-1.7	1.6-1.84
Weight/ Gallon in lbs	9.08-9.17	10-10.83	10.83	10.83	10.83	11.67	13.33-14.17	15.2

9.2. Molecular Weight: 98 **% Volatiles:** Negligible

9.3. 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.

SECTION 10: Stability and Reactivity

10.1. Reactivity, Chemical Stability, Possibility of Hazardous Reactions or Polymerization:

Sulfuric Acid reacts vigorously, violently, or explosively with many organic and inorganic chemicals and with water. Hazardous polymerization will not occur

10.2. Conditions to Avoid :

Temperatures above 150˚F. Exposure to moist air or water.

10.3. Incompatibilities 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.

10.4. 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.

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SECTION 11: Toxicological Information

11.1. Routes of Exposure:

Sulfuric Acid can affect the body if it is inhaled or if it comes in contact with the eyes or skin. It can also affect the body if it is swallowed. Points of Attack: Sulfuric Acid attacks the respiratory system, eyes, skin, teeth, and lung.

11.2. Symptoms related to physical, chemical, and 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.

11.3. 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.

11.4. 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 impairment of ventilatory capacity. Workers exposed to concentrations of 12.6 to 35 mg/ m^3 had a markedly higher incidence of erosion and discoloration of teeth than was noted in unexposed individuals.

11.5. Carcinogenicity Lists:

ACGIH: Suspected Human Carcinogen (Sulfuric Acid contained in strong inorganic acid mists)

National Toxicology Program (NTP): Known carcinogen (listed as 'Strong inorganic acid mists containing Sulfuric Acid).

International Agency for Research on Cancer (IARC) Monograph: Group 1 carcinogen (Sulfuric Acid)

Occupational Safety & Health Administration (OSHA) Regulated: Yes

Warning:

This product contains Sulfuric Acid, listed as 'Strong inorganic acid mists contain', a chemical known to the State of California to cause cancer.

SECTION 12: Ecological Information

12.1. 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)

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

12.3. Bioaccumulative Potential : Sulfuric acid (98% solution) has low potential for bioaccumulation.

12.4. Mobility in Soil : Sulfuric acid (98% solution) is soluble in water and has high mobility in soil. During transport through the 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 neutralized to some degree with absorption of the proton also occuring 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 the sulfuric acid (98% solution) spillages.

SECTION 13: Disposal Considerations :

13.1. Waste Treatment Methods:

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 hazardoud 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. Empty containers must be handled with care due to material residue.

SECTION 14: Transport Information

UN#: UN1830 (with more than 51% acid)
UN/ DOT Proper Shipping Name: Sulfuric Acid
Transport Hazard Class: 8
Packing Group: II

Label Required: CORROSIVE
Marine Pollutant: Yes
Transport in Bulk: N/A
Special Precautions: N/A

SECTION 15: Regulatory Information

15.1. Sulfuric Acid:

Section 302 Extremely Hazardous Substance (EHS): CAS # 7664-93-9. 1000 pounds (454 Kilograms) (85 Gallons) Threshold Planning Quantity (TPQ)

Section 304 Extremely Hazardous Substance (EHS): CAS # 7664-93-9. 1000 pounds (454 Kilograms) (85 Gallons) Reportable Quantity (RQ)

CERCLA Hazardous Substance: CAS # 7664-93-9. 1000 pounds (454 Kilograms) (85 Gallons) Reportable Quantity (RQ)

SARA 313: This material contains 20-99% Sulfuric Acid (CAS# 7664-93-9), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373. Sulfuric Acid (acid aerosols including mists, vapors, gas, fog, and other airborne Forms of any particle size).

15.2. Sulfur Dioxide:

Section 302 Extremely Hazardous Substance (EHS): CAS # 7446-09-5. 500 pounds (227 Kilograms) (42.5 Gallons) Threshold Planning Quantity (TPQ)

Section 304 Extremely Hazardous Substance (EHS): CAS # 7446-09-5. 500 pounds (227 Kilograms) (42.5 Gallons) Reportable Quantiy (RQ)

SECTION 16: Other Information

16.1. Chemical Family/ Type: Inorganic Acid
16.2. Sections Changed since last Revision: MSDS to First Issue SDS Conversion

*****IMPORTANT!*****

Read this MSDS 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 MSDS has been prepared according to the OSHA Hazard Communication Standard [29 CFR 1910.1200]. The MSDS information is based on sources believed to be reliable. However, since data, safety standards, and government regulations are subject to change and the conditions of handling and use, or misuse are beyond our control, **Kriss Premium Products** 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. Also, 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 prior to use, and then to exercise appropriate precautions for protection of employees and others.