

Material Safety Data Sheet

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Version 1.5

According to 91/155/EEC

1 - Product and Company Information

Product Name SULFURIC ACID ACS REAGENT
Product Number S1526

Company Sigma-Aldrich Pte Ltd
 #08-01 Citilink Warehouse
 Singapore 118529
 Singapore

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2 - Composition/Information on Ingredients

Product Name	CAS #	EC no	Annex I Index Number
SULFURIC ACID	7664-93-9	231-639-5	016-020-00-8

Formula H2SO4
Molecular Weight 98.08 AMU
Synonyms Acide sulfurique (French) * Acido solforico
 (Italian) * Battery acid * BOV * Dihydrogen
 sulfate * Dipping acid * Electrolyte acid *
 Mattling acid * Oil of vitriol *
 Schwefelsaeureloesungen (German) * Strong
 inorganic acid mists containing sulfuric acid *
 Sulfuric acid (ACGIH:OSHA) * Sulphuric acid *
 Vitriol Brown Oil * Zwavelzuuroplossingen (Dutch)

3 - Hazards Identification

SPECIAL INDICATION OF HAZARDS TO HUMANS AND THE ENVIRONMENT
Causes severe burns.

4 - First Aid Measures

AFTER INHALATION

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

AFTER SKIN CONTACT

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

AFTER EYE CONTACT

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

AFTER INGESTION

If swallowed, wash out mouth with water provided person is

conscious. Call a physician. Do not induce vomiting.

5 - Fire Fighting Measures

CONDITIONS OF FLAMMABILITY

Strong dehydrating agent which may cause ignition of finely divided materials on contact.

EXTINGUISHING MEDIA

Suitable: Noncombustible. Use extinguishing media appropriate to surrounding fire conditions.

Unsuitable: Do not use water.

SPECIAL RISKS

Specific Hazard(s): Emits toxic fumes under fire conditions. Contact with other material may cause fire.

SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

6 - Accidental Release Measures

PERSONAL PRECAUTION PROCEDURES TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area.

PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP

Cover with dry lime or soda ash, pick up, keep in a closed container, and hold for waste disposal. Ventilate area and wash spill site after material pickup is complete.

7 - Handling and Storage

HANDLING

Directions for Safe Handling: Do not breathe vapor. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

STORAGE

Conditions of Storage: Keep tightly closed.

Incompatible Materials: Do not allow contact with water

8 - Exposure Controls / Personal Protection

ENGINEERING CONTROLS

Safety shower and eye bath. Use only in a chemical fume hood.

GENERAL HYGIENE MEASURES

Wash contaminated clothing before reuse. Discard contaminated shoes. Wash thoroughly after handling.

EXPOSURE LIMITS

Country	Source	Type	Value
Poland		NDS	1 MG/M3
Poland		NDSch	3 MG/M3
Poland		NDSP	-

EXPOSURE LIMITS - DENMARK

	Source	Type	Value
	OEL	TWA	1 mg/m3
EXPOSURE LIMITS - GERMANY			
	Source	Type	Value
	TRGS 900	OEL	1 mg/m3, E
Remarks: =1=			
EXPOSURE LIMITS - NORWAY			
	Source	Type	Value
		OEL	0.2 mg/m3
Remarks: K			
EXPOSURE LIMITS - SWEDEN			
	Source	Type	Value
		LLV (Level)	1 mg/m3
EXPOSURE LIMITS - SWITZERLAND			
	Source	Type	Value
	OEL	OEL	1 mg/m3
Remarks: E			
EXPOSURE LIMITS - UNITED KINGDOM			
	Source	Type	Value
	OEL	OEL	1 mg/m3

PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: Government approved respirator.
 Hand Protection: Compatible chemical-resistant gloves.
 Eye Protection: Chemical safety goggles.
 Special Protective Measures: Faceshield (8-inch minimum).

9 - Physical and Chemical Properties

Appearance	Physical State: Liquid	
Property	Value	At Temperature or Pressure
pH	1.2	Concentration: 5 g/l
BP/BP Range	100 °C	760 mmHg
MP/MP Range	10 °C	
Flash Point	N/A	
Flammability	N/A	
Autoignition Temp	N/A	
Oxidizing Properties	N/A	
Explosive Properties	N/A	
Explosion Limits	N/A	
Vapor Pressure	1 mmHg	145.8 °C
SG/Density	1.84 g/cm3	
Partition Coefficient	N/A	
Viscosity	21 Pas	25 °C
Vapor Density	< 0.3 g/l	25 °C
Saturated Vapor Conc.	N/A	
Evaporation Rate	N/A	
Bulk Density	N/A	
Decomposition Temp.	N/A	
Solvent Content	N/A	
Water Content	N/A	
Surface Tension	55.1 mN/m	20 °C
Conductivity	N/A	
Miscellaneous Data	N/A	
Solubility	Solubility in Water: Soluble.	

10 - Stability and Reactivity

STABILITY

Stable: Stable.

Conditions to Avoid: Moisture. Do not allow water to enter container.

Materials to Avoid: Bases, Halides, Organic materials Incompatible with carbides, chlorates, fulminates, nitrates, picrates, cyanides, alkali halides, zinc iodide, permanganates, hydrogen peroxide, azides, perchlorates, nitromethane, phosphorous, and nitrites. Violent reaction with: cyclopentadiene, cyclopentanone oxime, nitroaryl amines, hexalithium disilicide, and phosphorous(III) oxide, Finely powdered metals

HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Sulfur oxides, Hydrogen sulfide gas.

HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

11 - Toxicological Information

RTECS NUMBER: WS5600000

ACUTE TOXICITY

LD50
Oral
Rat
2140 mg/kg

LC50
Inhalation
Rat
510 mg/m3
2H

LC50
Inhalation
Mouse
320 mg/m3
2H

LC50
Inhalation
Guinea pig
18 mg/m3

Remarks: Lungs, Thorax, or Respiration:Other changes.

IRRITATION DATA

Eyes
Rabbit
0.25 mg
Remarks: Severe irritation effect

Eyes
Rabbit
5 mg
30S

Remarks: Rinsed

SIGNS AND SYMPTOMS OF EXPOSURE

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. Inhalation may result in spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

ROUTE OF EXPOSURE

Skin Contact: Causes burns.
Skin Absorption: May be harmful if absorbed through the skin.
Eye Contact: Causes burns.
Inhalation: Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract. May be toxic by inhalation.
Ingestion: May be harmful if swallowed. Ingestion of small quantities is usually nonfatal unless aspiration occurs.
Aspiration may lead to chemical pneumonitis which is characterized by pulmonary edema and hemorrhage and may be fatal.

CHRONIC EXPOSURE - CARCINOGEN

Result: The International Agency for Research on Cancer (IARC) has determined that occupational exposure to strong-inorganic-acid mists containing sulfuric acid is carcinogenic to humans (group 1).

IARC CARCINOGEN LIST

Rating: Group 1

CHRONIC EXPOSURE - MUTAGEN

Hamster
4 MMOL/L
Cell Type: ovary
Cytogenetic analysis

CHRONIC EXPOSURE - TERATOGEN

Species: Rabbit
Dose: 20 MG/M3/7H
Route of Application: Inhalation
Exposure Time: (6-18D PREG)
Result: Specific Developmental Abnormalities: Musculoskeletal system.

12 - Ecological Information

No data available.

13 - Disposal Considerations

SUBSTANCE DISPOSAL

Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Contact a licensed professional waste disposal service to dispose of this material. Observe all federal, state, and local

environmental regulations.

14 - Transport Information

RID/ADR

UN#: 1830
Class: 8
PG: II
Proper Shipping Name: Sulphuric acid

IMDG

UN#: 1830
Class: 8
PG: II
Proper Shipping Name: Sulphuric acid
Marine Pollutant: No
Severe Marine Pollutant: No

IATA

UN#: 1830
Class: 8
PG: II
Proper Shipping Name: Sulphuric acid
Inhalation Packing Group I: No

15 - Regulatory Information

CLASSIFICATION AND LABELING ACCORDING TO EU DIRECTIVES

ANNEX I INDEX NUMBER: 016-020-00-8

NOTA: B

INDICATION OF DANGER: C

Corrosive.

R-PHRASES: 35

Causes severe burns.

S-PHRASES: 26 30 45

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Never add water to this product. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

COUNTRY SPECIFIC INFORMATION

Germany

WGK: 1

SWITZERLAND

SWISS POISON CLASS: 2

NORWAY

Declaration Number: 67082

16 - Other Information

WARRANTY

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or

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