





## 4.2 Most important symptoms and effects, both acute and delayed

May cause mild, transient eye irritation. Not expected to cause skin irritation. May cause mild, transient skin irritation in some individuals. Low hazard for usual industrial handling. Inhalation of mist may cause respiratory tract irritation. May cause gastrointestinal upset when ingested in large amounts. Symptoms may include headache, nausea, vomiting, abdominal pain and diarrhea.

## 4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically and supportively.

# SECTION 5: Firefighting measures

## 5.1 Extinguishing media

### Suitable (and unsuitable) extinguishing media

Use extinguishing media suitable for the surrounding fire. Water jets or direct streams may spread the fire.

## 5.2 Specific hazards arising from the substance or mixture

Closed containers may rupture due to the buildup of pressure when exposed to extreme heat. During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent or may be delayed. Obtain medical attention. **Explosion hazard** This product is not considered an explosion hazard.

## 5.3 Special protective equipment and precautions for firefighters

Use appropriate personal protective equipment (PPE) for firefighting. Avoid contact with skin and eyes. Use self-contained breathing apparatus (SCBA) and full protective gear. Avoid contact with skin and eyes. Use self-contained breathing apparatus (SCBA) and full protective gear. Avoid contact with skin and eyes. Use self-contained breathing apparatus (SCBA) and full protective gear.

## 5.4 Further information

No data available.

# SECTION 6: Accidental release measures

## 6.1 Personal precautions, protective equipment and emergency procedures

Evacuate non-essential personnel. Wear appropriate protective clothing and equipment designated in Section 8.2. Ventilate the area. Remove all sources of ignition. No smoking. Clean up spills immediately. Spill creates a slip hazard.

## 6.2 Environmental precautions

Avoid dispersal of spilled material or runoff and prevent contact with soil and entry into drains, sewers or waterways.

## 6.3 Methods and materials for containment and cleaning up

Approach spill from upwind direction. DO NOT flush large spills into the drain. Cover drains and contain spill. Cover spill with a large quantity of inert absorbent. Do not use combustible material such as sawdust. Collect material using non-sparking tools and place into an approved container for proper disposal. Observe possible material restrictions (Sections 7.2 and 10.5). Do not allow material or runoff from rinsing contaminated areas to enter floor drains or storm drains and ditches that lead to waterways. Dispose of in accordance with federal, state and local regulations.

## 6.4 Reference to other sections

For disposal see Section 13.

# SECTION 7: Handling and storage

## 7.1 Precautions for safe handling

Wear all appropriate personal protective equipment specified in Section 8.2, Do not get in eyes or on skin or clothing. Do not inhale mist or vapor. No smoking. If normal use of material presents a respiratory hazard, use only adequate ventilation or wear an appropriate respirator. Wash contaminated clothing and shoes thoroughly before reuse. Keep away from heat and sources of ignition.

### Hygiene measures

Facilities storing or using this material should be equipped with an eyewash station and safety shower. Change contaminated clothing. Preventative skin protection is recommended. Wash hands thoroughly after use, before eating, drinking, smoking or using the lavatory.

## 7.2 Conditions for safe storage, including any incompatibilities

### Storage conditions

Store in dry, cool, well-ventilated areas away from incompatible materials (see Section 10.5), food and drink. Transfer only to approved containers having correct labeling. Hygroscopic material! Keep containers tightly closed when not in use to prevent moisture absorption. Protect containers against physical damage. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Containers are hazardous when empty as they contain product residue. Use appropriate containment to avoid environmental contamination. Ventilate closed areas. Keep out of reach of children.

# SECTION 8. Exposure controls/personal protection

## 8.1 Occupational exposure limits

Chemical Name	Exposure Limits
Glycerin	10 mg/m <sup>3</sup> TWA ACGIH TLV, 5 mg/m <sup>3</sup> TWA OSHA PEL (respirable fraction).

## 8.2 Exposure controls

### Appropriate engineering controls

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment. Use adequate ventilation. Local exhaust is preferable. Refer to Section 7.1.

## Personal protective equipment

### Eye/face 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.

### Skin and body protection

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

### 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.

### Control of environmental exposure

No data available.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

<b>Physical State</b>	Liquid.
<b>Appearance</b>	Clear oily liquid.
<b>Odor</b>	Odorless
<b>Odor Thresh</b>	Not determined.
<b>pH</b>	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
<b>Melting Point/Range</b>	3°C (100%), -32°C (93%), -38°C (78%), -64°C (65%)
<b>Boiling Point/Range</b>	ca. 290°C (ca. 554°F) (decomposes at 340°C)
<b>Flash Point</b>	Not applicable.
<b>Evaporation Rate</b>	Not determined.
<b>Flammability (solid, gas)</b>	Not applicable
<b>Flammability or explosive limit</b>	
	<b>Upper</b> : NA
	<b>Lower</b> : NA
<b>Vapor Pressure</b>	1 @ 145.8°C (295°F)
<b>Vapor Density</b>	3.4
<b>Density</b>	1.84 g/cm <sup>3</sup> at 25 °C (77 °F)
<b>Solubility</b>	100 g/100 ml water @ 100°C (212°F). 1g/13mL cold water
<b>Partition coefficient; n-octanol/water</b>	1 @ 145.8°C (295°F)
<b>Autoignition Temp</b>	3.4
<b>Decomposition Temp</b>	1.84 g/cm <sup>3</sup> at 25 °C (77 °F)
<b>Viscosity</b>	100 g/100 ml water @ 100°C (212°F). 1g/13mL cold water
<b>Molecular Formula</b>	H <sub>2</sub> SO <sub>4</sub>
<b>Molecular Weight</b>	98.08
<b>VOC Content(%)</b>	No data available.
<b>Oxidizing properties</b>	None.

## 9.2 Other safety information

None.

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

No data available.

### 10.2 Chemical stability

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

### 10.3 Possibility of hazardous reactions

Hazardous polymerization does not occur. Vigorous reactions occur when in contact with incompatible materials.

### 10.4 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.

### 10.5 Incompatible materials

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

### 10.6 Hazardous decomposition products

Thermal decomposition may release oxides of sulfur.

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

#### Acute toxicity

Sulfuric Acid: Oral rat LD50-2140 mg/kg, Inhalation rat LC50-375 mg/m<sup>3</sup>/4hr .

#### Skin corrosion/irritation

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.

#### Serious eye damage/eye irritation

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

#### Respiratory or skin sensitization

No data available.

#### Germ cell mutagenicity

Not expected to cause mutagenic activity.

#### 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 toxicity**

Reproductive harm is not expected from this product.

**Specific target organ toxicity - single exposure**

No data available.

**Specific target organ toxicity - repeated exposure**

No data available.

**Aspiration hazard**

Toxic if inhaled. Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness. May be fatal if swallowed and enters airways.

**Chronic effects**

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

**11.2 Additional information**

None.

**SECTION 12. Ecological information****12.1 Toxicity****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.

**12.2 Persistence and Degradability**

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

**12.3 Bioaccumulative Potential**

No further relevant information available.

**12.4 Mobility in Soil**

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

**12.5 Results of PBT and vPvB assessment**

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

**12.6 Endocrine disrupting properties**

No data available.

## 12.7 Other adverse effects

None known.

## SECTION 13. Disposal considerations

### 13.1 Waste Disposal Methods

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. Waste Corrosive material [pH  $\leq$ 2 or  $\geq$ 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 neutralization. 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.

## SECTION 14: Transport information

### DOT

<b>UN-No</b>	UN1830
<b>Proper Shipping Name</b>	Sulfuric Acid
<b>Hazard Class</b>	8
<b>Packing Group</b>	II

### TDG

<b>UN-No</b>	UN1830
<b>Proper Shipping Name</b>	Sulfuric Acid
<b>Hazard Class</b>	8
<b>Packing Group</b>	II

### IATA

<b>UN-No</b>	UN1830
<b>Proper Shipping Name</b>	Sulfuric Acid
<b>Hazard Class</b>	8
<b>Packing Group</b>	II

### IMDG/IMO

<b>UN-No</b>	UN1830
<b>Proper Shipping Name</b>	Sulfuric Acid
<b>Hazard Class</b>	8
<b>Packing Group</b>	II



## SECTION 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](http://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

## SECTION 16: Other information

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**Disclaimer:**

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