



Chemifloc Ltd.

SAFETY DATA SHEET Sulfuric Acid 25 - 50%

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II

1: Identification of the substance/preparation and of the company/undertaking

Identification of the substance or preparation

Product Name: Sulfuric Acid

Chemical Name: Sulfuric Acid

Use of the preparation:

Used as a chemical for the treatment of drinking water, has received appropriate approval by the European Committee for Standardisation.

Company/Undertaking identification

Supplier: Chemifloc Ltd
Smithstown, Shannon,
Co. Clare,
Rep. of Ireland.
Tel: 00353 61 708699
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Emergency Telephone Number: 00353 61 708699

2: Hazards Identification

Main Hazard Corrosive.

Causes severe burns and damage to eyes. Harmful if inhaled, causes respiratory irritation. Harmful or fatal if swallowed. Sulphuric Acid will react with many organic materials and may cause fire due to the heat of the reaction. Sulphuric Acid is not flammable but reacts with most metals to form explosive/flammable hydrogen gas.

3: Composition/Information on Ingredients

Ingredient Name	CAS Number	%	EC Number	Classification	Risk Phrases
Sulfuric Acid	7664-93-9	25 - 50	231-639-5	C	R35
Water		75 - 50		Not classified	

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in section 8.

4: First Aid Measures

- Inhalation:** Remove from exposure. Keep warm and at rest. If there is respiratory distress, give oxygen. If respiration stops or shows signs of failing, apply artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other suitable respiratory medical device.
Obtain medical attention immediately.
- Eyes:** Immediately flush eyes with running water holding the eye open if necessary. Continue for a minimum of 20 minutes. If irritation persists, repeat flushing. Obtain medical attention immediately.
- Skin:** Immediately flush skin with running water, preferably under a shower, removing contaminated clothing while flushing proceeds. Continue for a minimum of 20 minutes. If irritation persists, repeat flushing.
Obtain medical attention if blistering occurs or if irritation persists. Contaminated clothing should be washed before re-use or disposal.
- Ingestion:** Do not induce vomiting. Wash out mouth with water, give plenty of water. Obtain medical attention immediately.
Treatment may be needed for pain and shock.

Note for Doctors

Harmful by ingestion, inhalation, skin and eye contact.
Corrosive effects on the skin and eyes may be delayed, and damage may occur without the sensation or onset of pain.
Speed is essential.
Do not attempt to neutralise the acid with weak bases since the reaction will produce heat that may extend the corrosive injury.

5: Fire-Fighting Measures

Fire & Explosion Hazards Sulfuric acid is not flammable but is highly reactive. It is a strong dehydrating agent, which may cause ignition of finely divided combustible materials on contact. Reacts violently with water with the evolution of heat, can react with organic materials explosively. Reacts with most metals to form explosive/flammable hydrogen gas. Oxides of sulfur may be produced in fire.

Fire Fighting Instructions Wear an approved self-contained breathing apparatus if vapors or mists are present and full protective clothing. For fighting fires in close proximity to spill or vapors, use acid-resistant personal protective equipment. Evacuate personnel to safe area. Prevent unauthorised entry to fire area. Dike area to contain runoff and prevent contamination of water sources. Neutralise runoff with lime, soda ash or other suitable neutralising agents. Cool containers that are exposed to flame with streams of water until fire is out.

6: Accidental, Release Measures

- In the event of a spill or leak:** Use appropriate Personal Protective Equipment. Remove all ignition sources. All equipment should be grounded. Ventilate area. Prevent liquid from entering sewers or waterways. Stop or reduce leak if safe to do so.
- Small spills:** Cover with dry earth, sand or other non-combustible material. Use clean non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.

- Large spills:** Prevent liquids from entering sewers or waterways. Dike with inert material (sand, earth, etc.). Collect into plastic containers for disposal. Consider in situ neutralisation and disposal. Ensure adequate decontamination of tools and equipment following clean up.
Comply with local regulations on reporting releases.
- Waste Disposal:** Dispose of waste material at an approved waste treatment/disposal facility, in accordance with applicable regulations. Do not dispose of waste with normal refuse or to sewer systems.

7: Handling and Storage

Handling Wear appropriate Personal Protective Equipment. Do not breathe sprays or mist. Do not ingest. Do not get in eyes, on skin or on clothing. Keep ignition sources away from sulfuric acid storage, handling and transportation equipment. Provide safety shower and eyewash station close to chemical handling area. Use extreme care when diluting sulfuric acid with water. Always add acid to water, slowly and with continual stirring. Caution: Hydrogen, a highly flammable gas, can accumulate to explosive concentrations inside drums, or any type of steel containers or tanks upon storage. Carbon steel storage tanks must be vented.

Storage Store sulfuric acid away from reactive materials.
Metal, and specifically carbon steel storage tanks must be vented due to hydrogen release as noted above. If sulfuric acid is stored in non-reactive containers, keep container tightly closed. For concentrations greater than 96% some precautions against freezing may be necessary.

Unsuitable storage materials:

Most common metals will be corroded if the acid is weak (<70%).

Nylon.

Suitable storage materials:

Stainless steel (for >70%), Mild steel (for >70%), PTFE, KEL-F, Glass, Certain plastics and rubbers, PVC composites, Hypolon, ebonite etc. may be suitable-check with supplier.

8: Exposure Controls/Personal Protection

Engineering Controls Local exhaust ventilation should be applied wherever there is an incidence of point source emissions or dispersion of regulated contaminants in the work area. Ventilation control of the contaminant as close to its point of generation is both the most economical and safest method to minimise personnel exposure to airborne contaminants. The most effective measures are the total enclosure of processes and the mechanisation of handling procedures to prevent all personal contact with sulphuric acid. Electrical installations should be protected against the corrosive action of acid vapors. Smoking should be prohibited in areas in which sulphuric acid is stored or handled.

Personal Protective Equipment PVC suit, PVC gloves, acid resistant boots, acid resistant apron if necessary. Tight-fitting chemical goggles and face shield.
If there is a risk of exposure to fumes use an approved air-purifying respirator equipped with acid gas/fume, dust, mist cartridges for concentrations up to 10mg/m³. An air-supplied respirator if concentrations are higher or unknown.

Occupational Exposure Limits TWA: 1mg/m³

9: Physical and Chemical Properties

General information

Appearance	Clear Liquid
Colour	Colourless
Odour	Acrid odour or odourless
Molecular Formula	H ₂ SO ₄
Important health, safety and environmental information	
pH	0.3 (1N solution at 25 ^o C)
Boiling point	50%: 121 ^o C
Freezing point	50%: -33 ^o C
Density g/cm ³ at 20 ^o C.	1,4 g/ml for sulfuric acid concentration of mass fraction of 50 %
Solubility	Miscible in water..
Viscosity (mPa.s)	7.0 centipoise for sulfuric acid concentration of mass fraction of 50 % at 20 ^o C.

10: Stability and Reactivity

Stability	Sulfuric acid is stable under normal conditions.
Conditions to Avoid	Keep away from heat and sources of ignition. Avoid temperatures which may have a negative effect on the materials of construction used in equipment. See Handling and Storage (Section 7).
Materials to Avoid	
- Water	Heat is evolved and a reaction occurs when a small amount of water is added to a large amount of acid. <u>Do not add water to acid, always add acid to water.</u>
- Acids	Dangerous reactions with nitric acid, hydrochloric acid, formic acid and dilute acids in general with the possible evolution of toxic gas.
- Bases/Alkalis	Violent reaction.
- Oxidising Agents	Violent reaction with chlorine oxyacid salts, hydrogen peroxide and permanganates. Toxic fumes may be omitted. No dangerous reaction with halogen
- Other Chemicals	Dangerous reactions possible with aldehydes, ketones, halocarbons, nitrocompounds, cyanides, phosphorus (111) oxide. Contact with organic materials (such as alcohol, acrylonitrile, chlorates, carbides, epichlorohydrin, fulminates, isoprene, nitrates and picrates) may cause fire and explosions.
- Hazardous Decomposition or Combustion Products	Toxic gases and vapors (e.g. sulfur dioxide, sulfuric acid vapors/mists and sulphur trioxide) may be released when sulfuric acid decomposes. Contact with metals may produce flammable hydrogen gas.

11: Toxicological Information

Effects of Substance:

- **On Eyes** Liquid: severe burns and tissue destruction.
Mist or fume: irritation.
- **On Skin** Liquid: severe burns and tissue destruction.
Mist or fume: irritation, may cause burns at high concentrations.
- **By Ingestion** Severe corrosion of the mouth, throat and digestive tract.
- **When Inhaled (acute effect)** Exposure to the mist or fume at concentrations much above the OEL causes moderate to severe irritation of the nose, throat and upper respiratory tract. High concentrations may cause immediate respiratory difficulty and serious damage to lung tissue.
- **When Inhaled (chronic effect)** Prolonged or repeated exposure to mists may cause dental erosion, chronic inflammation of the upper respiratory tract, bronchitis or lung damage.

Toxicological Data LD₅₀ (oral, rat) = 2140mg/kg
LC₅₀ (inhalation, rat) = 510mg/m³ for 2hrs
Skin effects (rabbit): Severe irritation
Eye effects (rabbit): Severe irritation

Carcinogenicity Data The International Agency for Research on Cancer (IARC) has concluded that occupational exposure to strong inorganic acid mists containing sulphuric acid is carcinogenic to man, causing cancer of the larynx. Although no direct link has been established between exposure to sulphuric acid itself and cancer in man, exposure to any mist or aerosol during the use of this product should be avoided.

Reproductive Effects Slightly embryotoxic in rabbits (a minor, rare skeletal variation).

Mutagenicity Data Cytogenic analysis (hamster) ovaries 4mmol/L.

12: Ecological Information

Ecotoxic Effects Harmful to aquatic life in very low concentrations. May be dangerous if it enters water intake; Fish toxicity: 2.8µg/L 96hrs LC₅₀ Rainbow trout.

Products of Degradation These products are sulfur oxides(SO₂,SO₃)

Toxicity of the Products of Degradation The products of degradation are more toxic than the original product.

13: Disposal Considerations

Waste Disposal: See Section 6 for Accidental Release Measures.
Dispose of waste material at an approved waste treatment/disposal facility, in accordance with applicable regulations. Do not dispose of waste with normal refuse or to sewer systems.

14: Transport Information

Proper Shipping Name: SULPHURIC ACID with not more than 51% acid
UN Number: 2796
RID/ADR: Class 8
Hazard ID Number: 80
Classification Code: C1
Packing Group: PG II

15: Regulatory Information

Sodium Hydroxide Solution is classed as **Corrosive** for supply, and packaging will carry the following information:

EU Regulations:

Hazard Symbol or symbols: C : Corrosive

Risk Phrase: R 35: Causes severe burns.

Safety Phrases: S 1/2: keep locked up and out of the reach of children;
S 26: in case of contact with eyes, rinse immediately with plenty of water and seek medical advice;
S 30: never add water to this product;
S 45: in case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Contains EINECS number: 231-639-5

16: Other Information

References: Sulfuric Acid solutions are used as chemicals for the treatment of drinking water, as approved by the European Committee for Standardisation under EN 899:2009. The Transport and Regulatory Information given are in accordance with EN 899:2009.

History: This data sheet was prepared in accordance with EC Regulation No. 1907/2006 concerning REACH.
This version replaces Version 2, Jan 2009.

Date of issue: 27-10-2009

Revision: 3.

Notice to reader

To the best of our knowledge, the information provided in this Safety Data Sheet is accurate as at the date of its issue. The information it contains is being given for safety guidance purposes and relates only to the specific material and uses described in it. This information does not necessarily apply to that material when combined with other material(s) or when used otherwise than as described herein. Final determination of the suitability of any material is the sole responsibility of the user. All materials may represent unknown hazards and should be used with caution. Chemifloc Ltd disclaims any liability for loss or damage resulting from the use of any data, information or recommendations set out in this Safety Data Sheet.