



Product Safety Summary

Sulfuric Acid

CAS No. 7664-93-9

This Product Safety Summary is intended to provide a general overview of the chemical substance. The information in the summary is basic information and is not intended to provide emergency response information, medical information or treatment information. The summary should not be used to provide in-depth safety and health information. In-depth safety and health information can be found in the Safety Data Sheet (SDS) for the chemical substance.

Names

- Sulfuric acid
- Oil of vitriol
- Sulphuric acid
- H₂SO₄

Product Overview

Solvay Eco Services does not sell sulfuric acid directly to consumers and will not directly sell to persons that formulate consumer products containing sulfuric acid. Sulfuric acid is a widely-used industrial chemical utilized as an intermediate to produce many different organic and inorganic chemicals. These include fertilizers, additives for gasoline, water treatment, pulp and paper processing, mineral extraction from ores, metal processing and pH control. Sulfuric acid is also used in lead-cell batteries of the type used in automobiles and other motorized vehicles.

Sulfuric acid is used in industrial applications and other processes where workplace exposures can occur. Consumers might come in contact with sulfuric acid contained in lead-cell batteries and should avoid exposure as sulfuric acid can cause severe health effects. **H₂SO₄ is dangerous to human health. Sulfuric acid solutions, particularly the more concentrated ones, are rapidly destructive to all body tissues, causing severe burns which may result in scarring.**

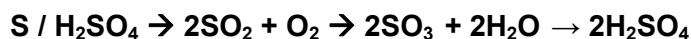
Most sulfuric acid is consumed in manufacturing processes or recovered and re-used. H₂SO₄ can make its way into the environment through unintentional releases (spills) and industrial or consumer discharges. H₂SO₄ will not bioaccumulate and is not biodegradable. Based on ecotoxicological testing performed on fish and fresh-water invertebrates, H₂SO₄ in higher concentrations can be harmful to aquatic life.



When released into the upper atmosphere, sulfuric acid exists as particles or droplets. The acid particles dissolve in clouds, fog, rain, or snow, resulting in very dilute acid solutions. This may impact the environment as wet acid deposition ('acid rain').

Manufacture of Product

Sulfuric acid is produced by thermally decomposing sulfur and/or spent sulfuric acid to produce sulfur dioxide gas. The sulfur dioxide (SO₂) is then converted to sulfur trioxide (SO₃) by reaction with oxygen (O₂) in the presence of a catalyst. Finally, the sulfur trioxide (SO₃) is reacted with water (H₂O) to produce sulfuric acid.



Sulfuric acid is a liquid which is transferred to specially designed storage tanks.

Product Description

Sulfuric acid is a clear to slightly cloudy, oily liquid. Typical physical properties for sulfuric acid are provided in Table 1.

Table 1: Typical physical properties of common grades of sulfuric acid

	93% H ₂ SO ₄	98% H ₂ SO ₄
Strength	93.2% min	98.0% min
Specific gravity	1.8354	1.8437
Boiling point	549°F (287°C)	621°F (327°C)
Freezing point	-20°F (-29°C)	-30°F (-1°C)
Weight/US gallon	6.94 kg (15.30 lbs)	6.97 kg (15.37 lbs)
Flammability	Not flammable	Not flammable
Flash Point	Not applicable	Not applicable

Product Uses

Solvay Eco Services does not sell sulfuric acid directly to consumers and will not directly sell to persons that formulate consumer products containing sulfuric acid. Sulfuric acid is known to the general public as battery acid of the type used in lead-cell automobile and other vehicles' batteries. However, sulfuric is more commonly used as a basic chemical for chemical synthesis, municipal and industrial water treatment, oil industries, phosphoric acid and fertilizers production, metal extraction for mining, refining and processing of metals, and for other industrial uses such as pulp and paper processing.



Exposure Potential

- **Workplace Exposure** - H_2SO_4 is toxic by ingestion, inhalation or contact with skin and eyes. Exposures can occur at a H_2SO_4 manufacturing facility or at a manufacturing facility that handles H_2SO_4 . Exposure may also occur in the event of a transportation incident. Persons involved in maintenance, sampling and testing activities, or in the loading and unloading of H_2SO_4 containers are at greater risk of exposure. Following good safe handling practices will minimize the likelihood of H_2SO_4 exposure. Persons involved in higher risk activities should always wear proper personal protective equipment such as rubber gloves and boots, a chemical resistant full acid suit, goggles, face shield and a hard hat.

Please consult the appropriate Safety Data Sheet for more information on H_2SO_4 exposures and for information concerning exposure limits.

- **Consumer Exposure to Products Containing Sulfuric Acid** - Solvay Eco Services does not sell H_2SO_4 directly to consumers and will not directly sell to persons that formulate consumer products containing H_2SO_4 . However, sulfuric acid is used in lead-cell batteries which are commonly used in automobiles and other vehicles. Consumers should avoid direct contact with these products and use them in strict compliance with the manufacturer's instructions. H_2SO_4 is both corrosive and toxic.
- **Environmental Releases** - Spills of H_2SO_4 should be contained and isolated from waterways, sewers and drains. Concentrated H_2SO_4 will react violently with water and a considerable amount of heat is evolved during dilution. Small spills of H_2SO_4 should be carefully diluted and then soaked up with an approved absorbent material which can be swept or shoveled up and placed in a suitable container for disposal. The contaminated area should be washed down with water. Lime or soda ash may be used to neutralize contaminated water. Larger spills of H_2SO_4 should be contained and carefully diluted with water before neutralizing with a suitable neutralizing agent. Disposal should be in accordance with applicable local, state or federal regulations. Persons attempting to clean up H_2SO_4 spills should wear proper personal protective equipment, (See guidelines in the Safety Data Sheet.) If required, report spills to the appropriate local, state and federal authorities.
- **Fires** - H_2SO_4 is not flammable. However, hydrogen gas is produced when H_2SO_4 comes in contact with certain metals. Hydrogen gas is explosive in some circumstances.

For additional information concerning H_2SO_4 emergency response procedures, please consult the Safety Data Sheet.

Health Information

H_2SO_4 is corrosive and toxic by ingestion, inhalation or contact with skin and eyes. Effects can be immediate. In the event of exposure to the skin or eyes the area should be washed with water for at least 30 minutes. Please consult the Safety Data Sheet for additional information.



Exposures to H₂SO₄ can produce the following adverse health effects:

- **Contact** - Skin exposures to sulfuric acid can cause symptoms ranging from minor skin irritation to painful redness and swelling. Severe burns can occur if treatment is delayed. Eye exposure to H₂SO₄ may result in severe eye irritation, burns or even blindness.
- **Inhalation** - Sulfuric acid is harmful if inhaled. It can cause upper respiratory tract irritation, lung irritation, chest pain, wheezing, shortness of breath, a burning sensation, tickling of the nose and throat and sneezing. Repeated exposure to high levels of sulfuric acid mist may cause etching of tooth enamel in persons who breathe through their mouths.
- **Ingestion** - Sulfuric acid is harmful if ingested. It can cause irritation, abdominal pain, corrosion, burns to mouth and esophagus and death.
- **Other Effects** - Based on available data at the time of their review, the International Agency for the Regulation of Cancer (IARC) and the US National Toxicology Program (NTP) considered strong inorganic acid mist containing sulfuric acid to be a human carcinogen. Exposure to these strong inorganic acid mists may be encountered in an industrial setting. However, some later epidemiology studies were negative for respiratory cancer. Also, animal studies not considered by NTP and IARC were negative for carcinogenicity.

For more information on health effects or for information concerning proper first aid measures, please consult the Safety Data Sheet.

Environmental Information

Sulfuric acid is readily neutralized and will therefore be degraded within the wastewater treatment process. Due to this rapid degradation, an exposure to surface waters is expected to be negligible. Since ecotoxicological effects of the substance solely result from changes in pH, H₂SO₄ is not considered to be acutely harmful to aquatic organisms. Further, sulfuric acid does not accumulate in the food chain. An exposure assessment was performed for the identified uses and resulted in releases that do not pose a risk for aquatic life. Consequently, all identified uses are considered to be safe for the environment.

For more ecological and environmental information concerning this product, please consult the Safety Data Sheet.

Physical Hazard Information

H₂SO₄ is extremely corrosive to many metals. Please consult chemical compatibility tables before selecting vessels, piping, pumps and/or valves for use in H₂SO₄ service.

Exposure of some metals to H₂SO₄ can result in the evolution of flammable hydrogen gas. If allowed to accumulate in a confined space, hydrogen gas can present a fire or explosion hazard.



For more information concerning the physical hazards of this product, please consult the Safety Data Sheet.

Regulatory Information

Regulations may exist that govern the manufacture, sale, export, import, storage, transportation, use and/or disposal of this chemical. These regulations can vary by city, state, country or geographic region. Information may be found by consulting the relevant Safety Data Sheet specific to your country or region.

Additional Information

- Solvay USA Inc. www.solvaynorthamerica.com
- Solvay - Rhodia, Eco Services www.rhodia.com/en/about_us/businesses/eco_services/index.tcm
- Solvay - Rhodia, Safety Data Sheets www.rhodia.com/our_company/businesses/documents/Sulfuric_Acid_98.pdf
- Contact Solvay - Rhodia, Eco Services www.rhodia.com/en/info/contacts.tcm
- NJ Department of Health & Senior Services Hazardous Substance Fact Sheets <http://web.doh.state.nj.us/rtkhsfs/factsheets.aspx>
- This summary was prepared in October, 2013.

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