



MATERIAL SAFETY DATA SHEET
MSDS

Sulfuric acid 98%

REVISION DATE: 05/17/2018

1. - IDENTIFICATION OF PRODUCT AND COMPANY

Product name: Sulfuric acid 98%.

Internal identification code of the product: 109.01.9.

Company name: USIQUÍMICA DO BRASIL LTDA.

Address: Rua da Lagoa, 431 – Cumbica – Guarulhos – SP.

Business Phone: (11) 3821-7000 (Trunk Key) – (11) 2481-3355.

Telephones for emergencies: SUATRANS - COTEC - Environmental Emergency.
DDG (0800) 0111-767 - (0800) 7071-767 - 24 HOURS.
193 – Fireman.

Recommended main uses for the substance: Textile industry, metallurgy, rubber, industrial gases, soap and detergents, sugar and alcohol, electroplating, fertilizers, ore treatment, sulfate manufacturing and chemical industries in general.

2. - HAZARD IDENTIFICATION

Classification of the substances

Acute toxicity - Oral, Category 5,

Acute toxicity - Inhalation, Category 2,

Corrosion / irritation to skin, Category 1A,

Serious eye damage / eye irritation, Category 1

Specific target organ toxicity - single exposure, Category 1,

Specific target organ toxicity - repeated exposure, Category 1,

Hazardous to the aquatic environment - Acute, Category 3.

Most important hazards:

Sulfuric acid is a potent irritant to the respiratory tract, skin and eyes. On the skin produces severe burns with intense scarring fibrosis and functional limitations. In accidents with the eyes can cause serious ulcerative lesions, cataract and glaucoma. Although ingestion is unlikely, it can cause severe damage to the digestive tract. Handle the product safely.

Product effects:

Inhalation of vapor or mist may cause coughing, sneezing, nasal bleeding, bronchospasm, respiratory distress, and pulmonary edema. Ingestion causes corrosion of the mucous membranes of the mouth, throat and esophagus, severe epigastric pain with nausea and vomiting similar to coffee grounds, glottis edema and asphyxia.

Adverse effects on human health:

The severe burns produced by the contact of sulfuric acid with the skin evolve with ulcerated lesions of slow healing, cicatricial fibrosis and functional limitations. Extensive burns can lead to death. Signs of shock such as cold and sticky sweat, rapid pulse, shallow breathing and restlessness may appear after ingestion or extensive contact with the skin. Shock is the most frequent cause of death in major accidents. Eye contact produces deep corneal ulceration, keratoconjunctivitis and eyelid lesions with severe sequelae, including blindness.

Environmental effects:

It may contaminate waterways, making them unfit for use for any purpose. High concentrations in the air endanger human and animal life.

Physical and chemical hazards:

Sulfuric acid can react violently with acetic acid, acetones, acrylonitrile, aniline, ethylene glycol, iron, perchloric acid, isocyanides, sodium, sodium carbonate, among others.

Specific hazards:

Avoid exposure of the product to incompatible materials and heat.


Main symptoms:

Inhalation of vapor or mist may cause coughing, sneezing, nasal bleeding, bronchospasm, respiratory distress, and pulmonary edema.

Emergency overview:

Depending on the proportions, isolate and evacuate the area. In case of leakage and / or spillage, seek to block leak, contain spilled liquid or transfer product. During the emergency service, keep the wind blowing on your back. Access of persons to contaminated areas should only be allowed if they are wearing specific clothing and adequate respiratory protection.

GHS labeling elements, including phrases of concern.

ELEMENTS OF THE LABEL	DATA
Identification of the supplier's product and emergency telephone number.	<p>Trade name: SULFURIC ACID 98%.</p> <p>Synonym: HYDROGEN SULFATE, VITROL OIL, BATTERY ACID.</p> <p>Emergency telephone number: SUATRANS - COTEC - Environmental Emergency. DDG (0800) 0111-767 - (0800) 7071-767 - 24 HOURS.</p>
Chemical composition	H ₂ SO ₄ , minimum 98%.
Hazard pictograms	
Word of warning	DANGER
Hazard statements	<p>H303 - May be harmful if swallowed</p> <p>H330 - Fatal if inhaled</p> <p>H314 Causes severe skin burns and eye damage.</p> <p>H318 - Causes serious eye damage.</p> <p>H370 - Causes damage to organs of the respiratory system</p> <p>H372 - Causes damage to organs of the respiratory system by repeated or prolonged exposure</p> <p>H402 - Harmful to aquatic organisms</p>
Worry phrases	<p>P301 + P330 + P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.</p> <p>P303 + P361 + P353 - IF ON SKIN (or with hair): Take off all contaminated clothing immediately. Rinse skin with water / shower.</p> <p>P304 + P340 - IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.</p> <p>P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. In case of contact lenses, remove them if it is easy. Continue rinsing.</p> <p>P308 + P311 - IF exposed or suspected of exposure: Contact a TOXICOLOGICAL / PHARMACEUTICAL CENTER.</p> <p>P361 + P364 - Immediately remove all contaminated clothing and wash before reuse.</p>

Other hazards which do not result in classification: Not available.

3. - COMPOSITION AND INFORMATION ABOUT INGREDIENTS

Substance: SULFURIC ACID 98%.

Common chemical name or generic name: SULFURIC ACID.

Synonym: Hydrogen sulfate, vitriol oil, battery acid.

Chemical Abstract Service (CAS): 7664-93-9.

Chemical composition of the substance:

Minimum, 98.0% sulfuric acid.

There are no impurities that contribute to the danger.

4. - FIRST AID MEASURES

First aid actions:

Inhalation: Remove injured person to uncontaminated and aerated area and administer oxygen if available. Apply resuscitation maneuvers in case of cardiorespiratory arrest. Immediately call the nearest hospital.

Skin Contact: Remove contaminated clothing and shoes thoroughly and wash affected parts with plenty of running water for 15 minutes.

Eye Contact: Immediately flush eyes with running water for 15 minutes, lifting the eyelids to allow for maximum removal of the product. After this care, immediately refer to the ophthalmologist.



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Ingestion: Never give anything by mouth to an unconscious or convulsive person. The conscious and alert casualty may ingest water or milk. Do not induce vomiting. If vomiting occurs spontaneously, the victim should lie on his or her side to prevent pulmonary aspiration. Obtain medical attention if symptoms occur.

Most important symptoms and effects, both acute and delayed.

Actions to avoid: Do not induce vomiting.

Brief description of the main symptoms and effects: Inhalation of vapor or mist may cause coughing, sneezing, nasal bleeding, bronchospasm, respiratory distress and pulmonary edema. Ingestion causes corrosion of the mucous membranes of the mouth, throat and esophagus, severe epigastric pain with nausea and vomiting similar to coffee grounds, glottis edema and asphyxia.

Protection of the aid provider: Use the individual protective equipment indicated.

Notes to Physician: The systemic toxic action of sulfuric acid causes alkaline depletion, with acidosis that affects the nervous system producing agitation, faltering gait and weakness. Obvious signs of respiratory tract irritation or respiratory depression require monitoring with arterial gasometry and chest X-rays. Gastric lavage should be performed by experienced personnel, considering the risk of perforation and induction of vomiting by nasogastric tube passage and introduction of liquids for its performance. Aspiration, which may occur during ingestion and / or vomiting, poses a significant risk to life. Consider the risk of acute gastrointestinal perforation and late pyloric obstruction. Contact with the eye can produce deep corneal ulceration. Treat skin irritation or burns with conventional features.

5. - FIRE FIGHTING MEASURES

Suitable Extinguishing Media: Product is not combustible. When involved in fire, use appropriate extinguishing media to combat it. Only use water, with great caution and in cases of absolute necessity. Use water in the form of mist only to keep the containers exposed to fire cool.

Unsuitable Extinguishing Media: Product is not combustible. The application of water directly to sulfuric acid results in a violent release of heat, and can throw the material at a distance.

Specific Hazards of Substance: Sulfuric acid is a strong dehydrating agent. Reacting with organic material produces sufficient heat for ignition and may also cause combustion when in contact with finely divided materials. Contact with some metals may release hydrogen.

Special methods: Avoid application of excess water as contamination of water courses may occur.

Protective measures for fire-fighters: Use personal protective equipment, especially respiratory protection. In case of fire there is a possibility of decomposition with release of irritating toxic gases (SO_x). Wear self-contained mask or air-filled mask and acid-resistant PVC clothing.

6. - CONTROL MEASURES FOR SPILLAGE OR LEAKAGE

Personal precautions, protective equipment and emergency procedures.

For non-emergency personnel:

Removal of ignition sources: Sulfuric acid is not combustible. As it is an oxidizer, avoid contact with other fuels or organic materials.

Prevention of inhalation and contact with skin, mucous membranes and eyes: Wear appropriate personal protective equipment.

For staff in emergency services:

Use personal protective equipment, insulate the area, remove any organic product or fuel, and provide adequate ventilation to disperse the gas.

Environmental precautions: May contaminate waterways, making them unsuitable for any purpose. High concentrations in the air endanger human and animal life. Storage locations must have containment dikes.

Methods and materials for containment and cleaning

Recovery: Try to contain spilled liquid with sand or earth dam. If possible, carry out the transfer of the product. Never use organic material to absorb spill.

Neutralization: Neutralization of the acid with addition of basic, alkaline or caustic substance can be achieved. Neutralize slowly and carefully with lime, if possible. The neutralization reaction releases heat. For small amounts, cautiously add excess water with great shaking. Adjust pH to neutral, separate solids or insoluble liquids and pack them with suitable disposal as residue. The reaction can generate heat and fumes, which can be controlled by the rate of addition. Follow-up by an environmental agency specialist is recommended.

Disposal: Slowly and carefully neutralize residue before disposal.



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7. - HANDLING AND STORAGE

Handling:

Technical measures: Use only in areas provided with adequate exhaust ventilation. Provide local product handling with emergency shower set and eye wash. Handling should only be done with the indicated PPE and under safe conditions.

Prevention of worker exposure: Avoid formation of vapors / aerosols. Work with exhaust fan / chimney. Do not inhale substance / mixture. Use specific PPE - splash goggles, face shield, PVC gloves and protective clothing. Avoid inhalation of alkaline vapors.

Wash after handling and decontaminate PPE after use. The PPE must be approved for use only with the respective CAs - Certificates of Approval.

Precautions and guidelines for safe handling: Use personal protective equipment (PPE) to avoid direct contact with the product. Handle in a well-ventilated place. Do not mix or store product in contact with incompatible materials.

Storage:

Suitable: Keep container tightly closed, in a dry, cool and well-ventilated area. Never expose the container containing the product directly to the sun's rays.

To avoid: Contact with incompatible materials.

Hygiene measures:

Appropriate: Always clean the hands before handling any food, as there is a risk of food contamination. Contaminated clothing should be washed and sanitized before use. Always keep gloves dry and decontaminated.

Inappropriate: Direct contact with the product and / or its residues.

Technical measures:

Safe packaging materials:

Recommended: Always use specified material compatible with sulfuric acid. (Pipe: cast iron / Tank: Carbon steel - ASTM - A - 283 + rubber coating + antacid brick).

To avoid: See previous information.

8. - EXPOSURE CONTROL AND PERSONAL PROTECTION

Specific control parameters:

Occupational exposure limits: ACGIH: 1 mg / m³.

Biological indicators: See Table I of NR 7.

Other limits and values: Not considered.

Engineering control measures: To reduce the possibility of a health hazard, ensure adequate ventilation or exhaust in the vicinity to control the ambient concentration at low levels.

Recommended monitoring procedures: Submit exposed subjects to periodic respiratory function tests; the periodic medical examination should emphasize the possibility of occurrence of bronchial hyperreactivity in long-term exposures.

Suitable personal protective equipment:

Respiratory protection: Use respiratory protection if necessary. Panorama mask with acid or multipurpose filter. In large concentrations use an autonomous mask. **Attention:** masks with mechanical filters do not protect workers exposed to the oxygen deficient atmosphere.

Hand protection: Wear acid-resistant gloves.

Eye Protection: Use chemical safety goggles or face shield.

Skin and body protection: Wear acid resistant PVC clothing.

Special Precautions: Provide the area for emergency showers and eyewash. Never eat, drink or smoke in the work area. Practice good personal hygiene especially before eating, drinking and smoking. Separate contaminated tools and clothing, ensuring that they are effectively washed before reuse.

Hygiene measures: Keep workplaces in good working order. Periodically educate employees about the safe handling and risks of sulfuric acid.

9. - PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Liquid.

Form: Viscous liquid (may solidify below 11 ° C).

Color: Colorless.

Odor: Characteristic odor.



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pH: Acid.

Specific temperatures:

Boiling point: 290 ° C (literature data).

Melting point: 10 ° C (literature data).

Decomposition temperature: Not determined.

Density: 1.832 g / cm³ (20 ° C).

Solubility: Soluble in water (release of heat).

Other information: Reacts violently with water, releasing heat. Always add the acid to the water or other diluent. Never add water to the acid.

10. - STABILITY AND REACTIVITY

Specific conditions:

Instability: Sulfuric acid is stable when stored at room temperature in closed equipment under normal storage and handling conditions. No polymerization occurs.

Dangerous reactions: Reacts with the products listed below.

Conditions to avoid: Avoid contact with combustible and organic materials as it may cause fire. Contact with some metals may release hydrogen.

Incompatible materials or substances: Sulfuric acid may react violently with acetic acid, ketones, acrylonitrile, aniline, ethylene glycol, iron, perchloric acid, isocyanides, sodium, sodium carbonate, among others.

Hazardous Decomposition Products: Under fire action it may decompose by releasing toxic gases (SOx).

11. - TOXICOLOGICAL INFORMATION

Information according to the different routes of exposure:

Acute toxicity:

LD₅₀ (oral in rats): 2.140 mg/kg

LC₅₀ (inhalation in rats): 510 mg/m³/2h

Skin corrosion / irritation: Severe burns from acid contact with skin develop with ulcerated lesions of slow healing, scarring and functional limitations.

Ingestion: Severe burns in the mouth and throat, as well as perforation of the esophagus and stomach. Vomiting with blood.

Inhalation: Inhalation of vapor or mist may cause coughing, sneezing, nasal bleeding, bronchospasm, respiratory distress, and pulmonary edema. Ingestion causes corrosion of the mucous membranes of the mouth, throat and esophagus, severe epigastric pain with nausea and vomiting similar to coffee grounds, glottis edema and asphyxia.

Serious eye damage / eye irritation: Causes severe eye damage. Danger of blindness!

Respiratory or skin sensitization: No such effect is expected.

Germ cell mutagenicity: No such effect is expected.

Carcinogenicity: Sulfuric acid is not considered carcinogenic, but the International Agency for Research on Cancer (IARC) relates it to Group I (carcinogenic to man) when mixed with strong inorganic acids in the form of mists in chronic exposures. Although epidemiological studies cited in the literature establish this relationship, sulfuric acid has not been confirmed as a carcinogen for man to date. The American Conference of Governmental Industrial Hygienists - ACGIH considers it a suspected carcinogen for man.

Reproductive toxicity: No such effect is expected.

Specific target organ toxicity - single exposure: The substance or mixture is not classified as a specific target organ toxicant, unique exposure.

Specific target organ toxicity - repeated exposure: The substance or mixture is not classified as a specific target organ toxicant, repeated exposure.

Aspiration hazard: The classification criteria have not been met with respect to the available data.

12. - ECOLOGICAL INFORMATION

Environmental effects, behaviors and impacts of the product:

Mobility: The product is a strong oxidizer.

Persistence / degradability: The released product tends to form SOx.

Bioaccumulation: Contaminates the soil, requiring a work of neutralization and recomposition

Expected behavior: Rapid dissipation of gaseous cloud.



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Environmental impact: Due to the corrosive nature of sulfuric acid, animals exposed to this product may suffer tissue damage and be killed depending on environmental concentration. Plants contaminated with the product may be adversely affected or destroyed.

Ecotoxicity: Sulfuric acid is soluble in water and even at low concentrations becomes harmful to aquatic life due to pH change.

13. - DISPOSAL CONSIDERATIONS

Recommended methods for final destination:

The treatment and disposal of product residues should be done in an appropriate environment by trained personnel with the use of special equipment and PPE recommended to avoid contact with the product, its vapors or mists. Leaks should be contained and collected for subsequent disposal after neutralization. Neutralize slowly and carefully with lime, if possible.

Product:

Ensure that all Federal, State and local agencies are properly notified of spills and disposal methods. CONAMA Resolution 005/1993, Law No. 12,305, of August 2, 2010 (National Policy on Solid Waste).

Product residues:

Consult regulatory environmental agencies for advice on acceptable provisions practices. Contact the relevant local authorities. Can be incinerated when in accordance with local regulations. Or dispose of in an approved chemical waste landfill.

Used packaging:

Empty containers should be drained and capped prior to handling and transportation. If the packaging is not properly washed and decontaminated, it is considered to contain product.

14. - TRANSPORT INFORMATION

Nationals and internationals

Land Regulations:

Resolution No. 5232 of 14 December 2016 of the National Land Transport Agency (ANTT), Approves the Supplementary Instructions to the Regulation of the Transport of Dangerous Goods and its modifications.

UN number: 1830.

Proper shipping name: SULFURIC ACID, with more than 51% acid.

Risk class: 8.

Number of risk: 80.

Packing Group: II

Waterway:

DPC - Direction of Ports and Coasts (Transportation in Brazilian waters) Maritime Authority Norms (NORMAM)
NORMAM 01 / DPC: Embarkation Vessels in Open Sea Navigation.

UN number: 1830.

Proper shipping name: SULFURIC ACID, with more than 51% acid.

Risk class: 8.

Number of risk: 80.

Packing Group: II

EmS: F-A, S-B

Air:

ANAC - National Civil Aviation Agency - Resolution n ° 129 of January 8, 2009

RBAC N ° 175 - (BRAZILIAN CIVIL AVIATION REGULATION) - TRANSPORT OF DANGEROUS ARTICLES IN CIVIL AIRCRAFT

IS N ° 175-001 - SUPPLEMENTARY INSTRUCTION - IS

ICAO - "International Civil Aviation Organization" - Doc 9284-NA / 905

IATA - "International Air Transport Association"



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Dangerous Goods Regulation (DGR)

UN number: 1830.

Proper shipping name: SULFURIC ACID, with more than 51% acid.

Risk class: 8.

Number of risk: 80.

Packing Group: II

15. - REGULATORY INFORMATION

Specific regulations for the chemical:

Federal Decree No. 2.657, of July 3, 1998;

Standard ABNT-NBR 14725: 2014;

Ordinance nº 229, of May 24, 2011 - Alters Regulatory Norm nº 26.

16. - OTHER INFORMATION

The information on this sheet corresponds to the current state of our knowledge and our product experience and is not exhaustive. It applies to the product under the conditions specified, unless otherwise noted. In the case of combinations or mixtures, make sure that no new hazards can occur. In no case does this information exempt the user of the product from complying with all legislative, regulatory and administrative texts related to the product, safety, hygiene and protection of human and environmental health.

References:

AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIALS HYGIENISTS. TLVs[®] and BEIs[®]: Based on the "Documentation" of Occupational Exposure Limits (TLVs[®]) for Chemicals and Physical Agents & Biological Exposure Indices (BEIs[®]).

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NIOSH – NATIONAL INSTITUTE OF OCCUPATIONAL AND SAFETY. International Chemical Safety Cards. Available in: <<http://www.cdc.gov/niosh/>>. Accessed on: January, 2018.

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U.S. ENVIRONMENTAL PROTECTION AGENCY. ECOSAR – Ecological Structure-Activity Relationships. Version 1.11. Available in: <<http://www.epa.gov/oppt/newchems/tools/21ecosar.htm>>. Accessed on: January, 2018.