Safety Data Sheet Sulphuric Acid (5 to 51% w/w)

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SECTION 1: Identification

GHS Product identifier

Product name	Sulphuric Acid (5 to 51% w/w)
Brand	ChemSupply

Other means of identification

Name	Product Code
Sulphuric Acid 10% v/v	0589/2.5L
Sulphuric Acid 10% w/v	5492/2.5L
Sulphuric Acid 10% w/v AR	5463/1L
Sulphuric Acid 10% w/w	0584/2.5L
Sulphuric Acid 10N	0583/1L
Sulphuric Acid 12N	6194/2.5L
Sulphuric Acid 15% w/w	0585/1L
Sulphuric Acid 15% w/w	0585/2.5L
Sulphuric Acid 16% v/v	6263/2.5L
Sulphuric Acid 2.55N	0859/2.5L
Sulphuric Acid 20% w/v	1001/1L
Sulphuric Acid 20% w/v (200g/L)	5117/20L
Sulphuric Acid 25% v/v	0591/1L
Sulphuric Acid 25% v/v	0591/2.5L
Sulphuric Acid 25% w/v	1016/1L
Sulphuric Acid 25% w/w	4252/5L
Sulphuric Acid 27% w/w	2906/2.5L
Sulphuric Acid 2N (1M)	0838/10L
Sulphuric Acid 2N (1M)	0838/1L
Sulphuric Acid 2N (1M)	0838/2.5L
Sulphuric Acid 2N (1M)	0838/20L
Sulphuric Acid 2N (1M)	0838/500ML
Sulphuric Acid 3.6N	6213/1L
Sulphuric Acid 30% w/v	5493/2.5L
Sulphuric Acid 30% w/w	0586/1L
Sulphuric Acid 34% w/v	3401/10L
Sulphuric Acid 3N	3746/1L
Sulphuric Acid 41.2% (412g/L)	4081/20L
Sulphuric Acid 4N	0085/1L
Sulphuric Acid 5.25N	3515/1L
Sulphuric Acid 5% v/v	2897/1L
Sulphuric Acid 5N	0086/1L
Sulphuric Acid 6N	4186/1L
Sulphuric Acid 8N	2838/2.5L
Sulphuric Acid 9N	2741/2.5L

Recommended use of the chemical and restrictions on use

Laboratory and Analytical Reagent

Supplier's details

Name	ChemSupply Australia Pty Ltd
Address	38-50 Bedford Street 5013 Gillman South Australia Australia
Telephone	08 8440 2000
email	www.chemsupply.com

Emergency phone number

CHEMCALL 1800 127 406 (Australia) / +64-4-917-9888 (International)

SECTION 2: Hazard identification

General hazard statement
Classified as dangerous goods according to the Australian Dangerous Goods Code (ADG).

Classified as Hazardous according to the Globally Harmonised System of classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia.

Classification of the substance or mixture

GHS classification in accordance with: UN GHS revision 7

- Corrosive to metals, Cat. 1
- Serious eye damage/eye irritation, Cat. 1
- Skin corrosion/irritation, Cat. 1A

GHS label elements, including precautionary statements

Pictograms



Signal word **Danger**

Hazard statement(s)

H314	Causes severe skin burns and eye damage
H290	May be corrosive to metals

Precautionary statement(s)

P260	Do not breathe dust/fume/gas/mist/vapors/spray.
P264	Wash hands thoroughly after handling.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P330+P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER/doctor/physician
P363	Wash contaminated clothing before reuse.
P405	Store locked up.

P501	Dispose of contents/container to approved waste disposal facility
P234	Keep only in original packaging.
P390	Absorb spillage to prevent material-damage.
P406	Store in a corrosive resistant/… container with a resistant inner liner.

SECTION 3: Composition/information on ingredients

Substances

Formula: H2SO4; Molecular weight: 98.08

Hazardous components

Component	Concentration
Sulfuric acid (CAS no.: 7664-93-9; EC no.: 231-639-5; Index no.: 016-020-00-8)	**>= 5 - 51 % (weight)**
Water (CAS no.: 7732-18-5; EC no.: 231-791-2)	**>= 49 - 95 % (weight)**

SECTION 4: First-aid measures

Description of necessary first-aid measures

General advice	For advice, contact a Poisons Information Centre (e.g. phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor (at once).
If inhaled	If breathed in, move person into fresh air. If not breathing, give artificial respiration.
In case of skin contact	If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water.
In case of eye contact	If in eyes, hold eyelids apart and flush eye continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre (e.g. phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor, or for at least 15 minutes.
If swallowed	If swallowed, do NOT induce vomiting. Seek immediate medical assistance.

Most important symptoms/effects, acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

Indication of immediate medical attention and special treatment needed, if necessary

For advice in an emergency, contact a Poisons Information Centre (Phone Australia 131 126) or a doctor at once.

SECTION 5: Fire-fighting measures

Suitable extinguishing media

Use fire extinguishing media appropriate for surrounding environment. Use water spray, dry chemical, carbon dioxide, or appropriate foam.

Specific hazards arising from the chemical

Sulfuric acid: Sulfur oxides

Special protective actions for fire-fighters

Fire fighters should wear full protective clothing and self-contained breathing apparatus (SCBA) operated in positive pressure mode. Fight fire from safe location.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. For personal protection see section 8.

Environmental precautions
Do not let product enter drains.

Methods and materials for containment and cleaning up
Soak up with inert absorbent material and dispose of in accordance with local and national regulations. Keep in suitable, closed containers for disposal.

SECTION 7: Handling and storage

Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. For precautions see section 2.2.

Conditions for safe storage, including any incompatibilities
Store in a cool, dry, well-ventilated area, out of direct sunlight. Store in suitable, labelled containers. Keep containers tightly closed. Store away from incompatible materials. Ensure that storage conditions comply with applicable local and national regulations.

SECTION 8: Exposure controls/personal protection

Control parameters

1. Sulfuric acid (CAS: 7664-93-9)
TWA (Inhalation): 1 mg/m3; Australia (AU/SWA)

STEL (Inhalation): 3 mg/m3; Australia (AU/SWA)

REL (Inhalation): 1 mg/m3; USA (NIOSH)
OSHA Annotated Table Z-1, www.osha.gov

TLV® (Inhalation): 0.2 mg/m3, (Thor.); USA (ACGIH)
OSHA Annotated Table Z-1, www.osha.gov

TWA (Inhalation): 0.2 mg/m3; USA (ACGIH)
USA. ACGIH Threshold Limit Values (TLV)

Appropriate engineering controls
Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, gas, etc.) below recommended exposure limits.

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection
The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336.

Skin protection
Clean impervious clothing should be worn. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.

Body protection
Suitable protective workwear, e.g. cotton overalls buttoned at neck and wrist is recommended. Chemical resistant apron is recommended where large quantities are handled.

Respiratory protection
If engineering controls are not effective in controlling airborne exposure then an approved respirator with a replaceable vapor/ mist filter should be used. Refer to relevant regulations for further information concerning respiratory protective requirements. Reference should be made to Australian Standards AS/ NZS 1715, Selection, Use and Maintenance of Respiratory Protective Devices; and AS/NZS 1716, Respiratory Protective Devices, in order to make any necessary changes for individual circumstances.

Environmental exposure controls
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

SECTION 9: Physical and chemical properties

Basic physical and chemical properties

Physical state	Liquid
Appearance	No data available.
Color	Colourless to slightly yellow
Odor	Nil
Odor threshold	No data available.
Melting point/freezing point	No data available.
Boiling point or initial boiling point and boiling range	No data available.
Flammability	No data available.
Lower and upper explosion limit/flammability limit	No data available.
Flash point	No data available.
Explosive properties	No data available.
Auto-ignition temperature	No data available.
Decomposition temperature	No data available.
Oxidizing properties	No data available.
pH	Acidic
Kinematic viscosity	No data available.
Solubility	Miscible
Partition coefficient n-octanol/water (log value)	No data available.
Vapor pressure	No data available.
Evaporation rate	No data available.
Density and/or relative density	1 - 1.4 g/mL
Relative vapor density	No data available.

Particle characteristics
No data available.

Supplemental information regarding physical hazard classes
Non combustible material. This material increases the risk of fire and may aid combustion. Strong dehydrating agent which may cause ignition of combustible/organic/finely divided/other materials on contact. Contact with moisture/water, or with strong alkalies may generate heat. Flammable hydrogen gas may be produced on prolonged contact with metals such as aluminium, tin, lead and zinc.

Contact with most metals causes formation of flammable and explosive hydrogen gas. Exothermic reaction with water. Containers may explode when heated or if contaminated with water. Slightly explosive in presence of oxidizing materials. Mixtures of sulfuric acid and any of the following can explode: p-nitrotoluene, pentasilver trihydroxydiaminophosphate, perchlorates, alcohols with strong hydrogen peroxide, ammonium tetraperoxychromate, mercuric nitrite, potassium chlorate, potassium permanganate with potassium chloride, carbides, nitro compounds, nitrates, carbides, phosphorous, iodides, picrates, fulminates, dienes, alcohols (when heated). Nitramide decomposes explosively onc ontact with concentrated sulfuric acid. 1,3,5-Trinitrosohexahydro-1,3,5-triazine + sulfuric acid causes explosive decomposition.

Further safety characteristics (supplemental)
No data available.

SECTION 10: Stability and reactivity

Reactivity
Stable under normal conditions of storage and handling.

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
Will corrode metals. Will produce toxic gases on contact with cyanides, sulphides etc.

Conditions to avoid
Avoid storing in direct sunlight and avoid extremes of temperature.

Incompatible materials

Sulfuric acid: Bases, Halides, Organic materials, Carbides, fulminates, Nitrates, picrates, Cyanides, Chlorates, alkali halides, Zinc salts, permanganates, e.g. potassium permanganate, Hydrogen peroxide, Azides, Perchlorates., Nitromethane, phosphorous, Reacts violently with:, cyclopentadiene, cyclopentanone oxime, nitroaryl amines, hexalithium disilicide, phosphorous(III) oxide, Powdered metals

Hazardous decomposition products

Sulfuric acid: Hazardous decomposition products formed under fire conditions. - Sulphur oxides
Other decomposition products - No data available
In the event of fire: see section 5

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity
Corrosive. Harmful if swallowed. Ingestion can cause severe burns to the mouth, throat, oesophagus and stomach and permanent damage to the digestive tract, resulting in discomfort and severe pain, extensive tissue damage, the danger of perforation of esophagus and stomach, gastrointestinal bleeding, oedema of the glottis, necrosis and scarring, and in severe cases, collapse and death. Symptoms may include sore throat, difficulty swallowing, intense thirst, general feeling of sickness, nausea, vomiting, diarrhoea, severe swelling of the larynx and skeletal paralysis affecting the ability to breathe, circulatory collapse, with clammy skin, weak and rapid pulse, shallow respiration, scanty urine, circulatory shock and convulsions and subsequent death. Circulatory shock is often the immediate cause of death. It may also cause systemic toxicity with acidosis. Small amounts of acid which may enter the lungs during ingestion or vomiting (aspiration) can cause serious lung injury and death. After a latency period of several weeks, possibly pyloric stenosis.

LD50, (rat, oral) = 2140 mg/kg

Skin corrosion/irritation
Corrosive. Causes severe skin irritation and burns, which may result in permanent scarring. Burns may be 2nd or 3rd degree. Extensive acid burns can result in death. Symptoms of redness, irritation, pain, blistering, tissue destruction, scabs, sloughs, local necrosis, and membrane ulceration can occur. Continued contact can cause tissue necrosis. High mist or aerosol concentrations may cause redness, irritation and burns to the skin if contact is prolonged. The severity of injury depends on the concentration of the solution and the duration of exposure. May be harmful if absorbed through the skin. May cause circulatory collapse with clammy skin, weak and rapid pulse, shallow respirations, and scanty urine. Circulatory shock is often the immediate cause of death.

Serious eye damage/irritation

Corrosive. Causes severe eye irritation and severe eye burns. Contact can cause blurred vision, redness, swelling, pain, corneal lesions, permanent corneal opacification and irreversible eye injury, including blindness. Risk of serious damage to eyes. The severity of injury depends on the concentration of the solution and the duration of exposure. Sulfuric acid mists and aerosols are expected to be irritating.

Respiratory or skin sensitization
Corrosive. Harmful if inhaled. Because its vapour pressure is negligible, it exists in the air only as a mist or spray. Inhalation of mists, aerosols or sprays can cause severe irritation or corrosive damage to the respiratory tract and mucous membranes with sore throat, burning pain in the nose and throat, coughing,wheezing, laryngitis, bronchitis, shortness of breath, laboured breathing, dental erosion, headache, nausea, and vomiting. Exposure may impair lung function and cause mucostasis (reduced mucous clearance). The degree and severity of respiratory effects are influenced by factors such as the physical state and particle size of the aerosol, deposition site, concentration and humidity. Long term lung damage may result from a severe short term exposure. Inhalation may be fatal as a result of spasm, inflammation, oedema of the larynx and bronchi, chemical pneumonitis, and delayed pulmonary oedema. The symptoms of pulmonary oedema, including coughing and shortness of breath, can be delayed until hours or days after the exposure and are aggravated by physical exertion. May affect cardiovascular system (hypotension, depressed cardiac output, bradycardia). Circulatory collapse with clammy skin, weak and rapid pulse, shallow respiration, and scanty urine may follow. Circulatory shock is often the immediate cause of death.

Not expected to be a respiratory or skin sensitiser.

Germ cell mutagenicity
Not considered to be a mutagenic hazard.

Carcinogenicity
Occupational exposure to strong-inorganic-acid mists containing sulphuric acid is carcinogenic to humans (Group 1) according to the IARC (International Agency
https://publications.iarc.fr/Book-And-Report-Series/Iarc-Monographs-On-The-Identification-Of-Carcinogenic-Hazards-To-Humans/Occupational-Exposures-To-Mists-And-Vapours-From-Strong-Inorganic-Acids-And-Other-Industrial-Chemicals-1992

Reproductive toxicity
Not considered to be toxic to reproduction.

Specific target organ toxicity (STOT) - single exposure
Not expected to cause toxicity to a specific target organ.

Specific target organ toxicity (STOT) - repeated exposure
Not expected to cause toxicity to a specific target organ.

Aspiration hazard
Not expected to be an aspiration hazard.

Additional information
Prolonged or repeated inhalation may affect behaviour (muscle contraction or spasticity), urinary system (kidney damage), and cardiovascular system, heart (chest pain, ischemic heart lesions), and respiratory system/lungs (nosebleeds, nasal congestion, perforation of the nasal septum, bronchial hyperreactivity, bronchitis, pulmonary oedema, lung damage), teeth (dental discoloration, erosion). Exposures to high concentrations (reportedly up to 16 mg/m3) cause dental erosion. Etching of teeth may occur after a few weeks exposure, progressing to erosion after a few months exposure. Dental etching and erosion occurred about 4 times as frequently in a high exposure group (over 0.3 mg/m3) compared to a low exposure group (below 0.07 mg/m3). Prolonged or repeated exposure to sulfuric acid mists may cause various lesions of the skin, tracheobronchitis, stomatitis, conjunctivitis, or gastritis. Prolonged or repeated skin contact may cause dermatitis (red, itchy, dry skin), an allergic skin reaction. Prolonged or repeated eye contact may cause conjunctivitis. Effects may be delayed. Occupational exposure to strong inorganic acid mists containing sulfuric acid is carcinogenic to humans.

SECTION 12: Ecological information

Toxicity
Harmful effect on aquatic organisms. Harmful effect due to pH shift. Toxic effect on fish and algae. Does not cause biological oxygen deficit. Endangers drinking-water supplies if allowed to enter soil and/or waters in large quantities. Neutralization possible in waste water treatment plants.

Acute Toxicity - Fish L. macrochirus LC50: 16-29 mg/l/ 96 h.
Acute Toxicity - Daphnia Daphnia magna EC50: 29 mg/l /24 h (calculated on the pure substance).

Persistence and degradability
Methods for the determination of biodegradability are not applicable to inorganic substances.

SECTION 13: Disposal considerations

Disposal methods

Product disposal
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers.

Other disposal recommendations
Do not discharge this material into waterways, drains and sewers.

SECTION 14: Transport information

ADG (Road and Rail)
UN Number: 2796
Class: 8
Packing Group: II
Proper Shipping Name: SULPHURIC ACID with not more than 51% acid
Marine pollutant: No
IERG No: 40

Hazchem emergency action code (EAC)
2R

IMDG
UN Number: 2796
Class: 8
Packing Group: II
EMS Number: F-A, S-B
Proper Shipping Name: SULPHURIC ACID with not more than 51% acid
Special Provisions: -
Marine Pollutant: No

IATA
UN Number: 2796
Class: 8
Packing Group: II
Proper Shipping Name: SULPHURIC ACID with not more than 51% acid
Pax/Cargo Pkg Inst: 851
Max Net Qty/Pkg: 1L
Cargo Aircraft Only Pkg Inst: 855
Max Net Qty/Pkg: 30L
Special Provisions: -

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

Australian Inventory of Industrial Chemicals
On on inconformance with the Inventory

Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP)
S6

SECTION 16: Other information

Further information/disclaimer
ChemSupply Australia Pty Ltd does not warrant that this product is suitable for any use or purpose. The user must ascertain the suitability of the product before use or application intended purpose. Preliminary testing of the product before use or application is recommended. Any reliance or purported reliance upon ChemSupply Australia Pty Ltd with respect to any skill or judgement or advice in relation to the suitability of this product of any purpose is disclaimed. Except to the extent prohibited at law, any condition implied by any statute as to the merchantable quality of this product or fitness for any purpose is hereby excluded. This product is not sold by description. Where the provisions of Part V, Division 2 of the Trade Practices Act apply, the liability of ChemSupply Australia Pty Ltd is limited to the replacement of supply of equivalent goods or payment of the cost of replacing the goods or acquiring equivalent goods.

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Standard for the Uniform Scheduling of Medicines and Poisons, Commonwealth of Australia
National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.'
Safe Work Australia, 'National Code of Practice fot the Preparation of Safety Data Sheets for Hazardous Chemicals', July 2020.
Safe Work Australia, 'National Guide for Classifying Hazardous Chemicals', July 2020.
Safe Work Australia, Workplace Exposure Standards for Airbourne Contaminants, December 2019
Safe Work Australia, Hazardous Chemical Information System (HCIS), hcis.safeworkaustralia.gov.au
IATA, Dangerous Goods Regulations (DGR)
IMO, International Maritime Dangerous Goods Code (IMDG)