

Infosafe No™ 1CHM1 Issue Date : March 2018 RE-ISSUED by ACR

Product Name : **SULFURIC ACID 5-14.9%**

Classified as hazardous

1. Identification

GHS Product Identifier SULFURIC ACID 5-14.9%

Company Name AUSTRALIAN CHEMICAL REAGENTS (ACR) (ABN 19 008 264 211)

Address 38 - 50 Bedford Street Gillman
S.A. 5013 Australia

Telephone/Fax Number Tel: (08) 8440 2000
Fax: (08) 8440 2001

Recommended use of the chemical and restrictions on use Fertilizers, chemicals, dyes and pigments, etchant, alkylation catalyst, electroplating baths, iron and steel, rayon and film, industrial explosives, non-ferrous metallurgy, analytical reagent and laboratory reagent.

Other Names	Name	Product Code
	Sulphuric Acid 10% v/v	0589
	Sulphuric Acid 10% w/v	5463
	Sulphuric Acid 10% w/v	5492
	Sulphuric Acid 10% w/w	0584
	Sulphuric Acid 1N	0083
	Sulphuric Acid 2.55	0859
	Sulphuric Acid 2N	0838
	Sulphuric Acid 5% v/v	2897

Other Information EMERGENCY CONTACT NUMBER: +61 08 8440 2000
Business hours: 8:30am to 5:00pm, Monday to Friday.

Australian Chemical Reagents (ACR) 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 Australian Chemical Reagents (ACR) 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 Australian Chemical Reagents (ACR) is limited to the replacement of supply of equivalent goods or payment of the cost of replacing the goods or acquiring equivalent goods.

2. Hazard Identification

GHS classification of the substance/mixture Corrosive to Metals: Category 1
Skin Corrosion/Irritation: Category 2
Eye Damage/Irritation: Category 2A

Signal Word (s) WARNING

Hazard Statement (s) H290 May be corrosive to metals.
H315 Causes skin irritation.
H319 Causes serious eye irritation.

Pictogram (s) Corrosion, Exclamation mark



Precautionary statement – Prevention P234 Keep only in original container.
P264 Wash thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary statement – Response P302+P352 IF ON SKIN: Wash with plenty of soap and water.
P332+P313 If skin irritation occurs: Get medical advice/attention.
P362 Take off contaminated clothing and wash before reuse.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 If eye irritation persists: Get medical advice/attention.
P390 Absorb spillage to prevent material damage.

Infosafe No™	1CHM1	Issue Date : March 2018	RE-ISSUED by ACR
--------------	-------	-------------------------	------------------

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Precautionary statement – Storage P406 Store in corrosive resistant/... container with a resistant inner liner.

Precautionary statement – Disposal P501 Dispose of contents/container to an approved waste disposal plant.

3. Composition/information on ingredients

Chemical Liquid

Characterization

Ingredients

<u>Name</u>	<u>CAS</u>	<u>Proportion</u>	<u>Hazard Symbol</u>	<u>Risk Phrase</u>
Water	7732-18-5	85-95 %		
Sulfuric acid	7664-93-9	5-15 %		

4. First-aid measures

Inhalation If inhaled, remove from contaminated area to fresh air immediately. Apply artificial respiration if not breathing. If breathing is difficult, give oxygen. Get medical aid if cough or other symptoms appear.

Ingestion Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. DO NOT INDUCE VOMITING. Seek immediate medical advice.

Skin If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Contaminated clothing must be laundered before re-use. Skin may be treated with a 2% solution of bicarbonate of soda to neutralize acid residues. If possible, because of the high heat of dilution, quickly wipe residual acid off the skin before starting water wash. In severe cases or if irritation persists, seek medical attention.

Eye contact If in eyes, hold eyelids apart and flush the eye continuously with running water. Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes. Do not use an eye ointment. Seek medical attention.

First Aid Facilities Maintain eyewash fountain and drench facilities in work area.

Advice to Doctor Treat symptomatically based on judgement of doctor and individual reactions of the patient.

Protection for First Aiders WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Protect your own hands and body.

Other Information For advice, contact a Poisons Information Centre (Phone eg Australia 13 1126; New Zealand 0800 764 766) or a doctor.

5. Fire-fighting measures

Hazards from Combustion Products Irritating and highly toxic fumes and gases, including oxides of sulfur. Reaction with water or steam may generate much heat which will increase the concentration of fumes in the air, and may produce toxic and corrosive fumes. Concentrated solutions will react with carbonates to generate carbon dioxide gas, and with cyanides and sulfides to form poisonous hydrogen cyanide and hydrogen sulfide respectively. Contact with most metals causes formation of flammable and explosive hydrogen gas.

Specific Methods Small fire: Use dry chemical, CO₂ or water spray. If safe to do so, move undamaged containers from fire area.

Large fire: Use dry chemical, CO₂, foam or water spray - Do not use water jets.

Cool containers with flooding quantities of water until well after fire is out. Avoid getting water inside containers.

Specific hazards arising from the chemical Material does not burn. Fire or heat will produce irritating, poisonous and/or corrosive gases. Containers may explode when heated. Some may ignite combustibles (wood, paper, clothing, etc.) Contact with metals may evolve flammable hydrogen gas.

Hazchem Code 2R

Decomposition Temp. 340 °C (sulfuric acid).

Precautions in connection with Fire Wear SCBA and chemical splash suit. Fully-encapsulating, gas-tight suits should be worn for maximum protection. Structural firefighter's uniform is NOT effective for these materials.

6. Accidental release measures

Personal Protection Wear protective clothing specified for normal operations (see Section 8)

Clean-up Methods - Small Spillages Dilute with water and mop up, or absorb with an inert dry material or neutralize with sodium carbonate and then place in an appropriate waste disposal container.

Environmental Precautions Prevent from entering into drains, ditches, rivers or the sea.

Infosafe No™	1CHM1	Issue Date : March 2018	RE-ISSUED by ACR
--------------	-------	-------------------------	------------------

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7. Handling and storage

Precautions for Safe Handling	Avoid ingestion and inhalation of gas/fumes/vapour/spray mists. Avoid contact with skin, eyes, or clothing. Avoid prolonged or repeated exposure. Use with adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Keep container dry. When diluting, always add the acid to water; never add water to the acid. May corrode metallic surfaces. Keep away from incompatibles such as metals, alkalis, moisture. Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. It is essential that all who come into contact with this material maintain high standards of personal hygiene ie. washing hands prior to eating, drinking, smoking or using toilet facilities.
Conditions for safe storage, including any incompatibilities	Corrosive materials should be stored in a separate safety storage cabinet or room. Store in tightly closed containers, in a cool, dry, well-ventilated area, with acid resistant floors and good drainage, away from incompatible substances. Protect from physical damage, freezing, heat, direct sunlight and moisture. May corrode metallic surfaces. Do not store together with alkalis (caustic solutions). Store away from oxidizing agents. Store away from reducing agents. Do not store near combustible materials. Do not wash out container and use it for other purposes. Inspect regularly for deficiencies such as damage or leaks. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.
Corrosiveness	Extremely corrosive in presence of aluminium, of zinc. Highly corrosive in presence of steel, of copper. Slightly corrosive to corrosive in presence of stainless steel(304), of stainless steel(316).
Storage Regulations	Refer Australian Standard AS 3780-1994 'The storage and handling of corrosive substances'.
Storage Temperatures	Store at room temperature (15 to 25 °C recommended). Protect from freezing.
Unsuitable Materials	Metal containers.

8. Exposure controls/personal protection

Occupational exposure limit values	<u>Name</u>	STEL		TWA		<u>Footnote</u>
		<u>mg/m3</u>	<u>ppm</u>	<u>mg/m3</u>	<u>ppm</u>	
Other Exposure Information	Sulfuric acid	3		1		A time weighted average (TWA) has been established for Sulphuric acid (Worksafe Aust) of 1 mg/m ³ . The corresponding STEL level is 3 mg/m ³ . The STEL (Short Term Exposure Limit) is an exposure value that should not be exceeded for more than 15 minutes and should not be repeated for more than 4 times per day. There should be at least 60 minutes between successive exposures at the STEL. The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week.
Appropriate engineering controls						Provide sufficient ventilation to ensure that the working environment is below the TWA (time weighted average). Where vapours or mists are generated, particularly in enclosed areas, and natural ventilation is inadequate, a flame proof exhaust ventilation system is required. Refer to AS 1940-The storage and handling of flammable and combustible liquids and AS 2430-Explosive gas atmospheres for further information concerning ventilation requirements.
Respiratory Protection						Where ventilation is not adequate, respiratory protection may be required. Avoid breathing vapours or mists. Select and use respirators in accordance with AS 1716 - Respiratory Protective Devices and be selected in accordance with AS 1715 - Selection, Use and Maintenance of Respiratory Protective Devices. When mists or vapours exceed the exposure standards then the use of the following is recommended: Approved respirator with organic vapour and dust/mist filters. Filter capacity and respirator type depends on exposure levels.
Eye 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.
Hand Protection						Hand protection should comply with AS 2161, Occupational protective gloves - Selection, use and maintenance. Recommendation: Excellent: NR latex, vinyl and nitrile. Good: Neoprene gloves
Personal Protective Equipment Footwear						Final choice of personal protective equipment will depend on individual circumstances and/or according to risk assessments undertaken. Safety boots in industrial situations is advisory, foot protection should comply with AS 2210, Occupational protective footwear - Guide to selection, care and use.
Body Protection						Clean clothing or protective clothing should be worn. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.
Hygiene Measures						Always wash hands before smoking, eating or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

Infosafe No™	1CHM1	Issue Date : March 2018	RE-ISSUED by ACR
--------------	-------	-------------------------	------------------

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9. Physical and chemical properties

Form	Liquid
Appearance	Clear, colourless liquid.
Odour	Odourless.
Decomposition Temperature	340 °C (sulfuric acid).
Melting Point	-2 °C (5%); -5.7 °C (10%).
Boiling Point	100.7 °C (5%); 101.6 °C (10%).
Solubility in Water	Fully miscible. Exothermic reaction with water.
Solubility in Organic Solvents	Insoluble in methanol, diethyl ether, n-octanol (10%).
Specific Gravity	1.03 (5%); 1.07 (10%).
pH	Acidic. pH of 1.0 N solution (~5.0%): 0.3; pH of 0.1 N solution (~0.5%): 1.2;
Vapour Pressure	The highest known value is 0.1 kPa (1 mmHg) (@ 20 °C) (Sulfuric Acid). The highest known value is 17.535 mm of Hg (@ 20 °C) (Water). Weighted average: 15.82 mm of Hg (@ 20 °C) (10%).
Vapour Density (Air=1)	The highest known value is 3.4 (Air = 1) (Sulfuric acid). Weighted average: 0.76 (Air = 1) (5%); 0.89 (Air = 1) (10%).
Evaporation Rate	0.36 (Water) compared to (n-Butyl Acetate=1).
Odour Threshold	The lowest known value is >1 ppm (SULFURIC ACID).
Volatile Component	> 95 %vol @ 21 °C (0.1 - 10%).
Flammability	Non combustible material. Contact with moisture or water may generate heat. Contact with strong alkalis may generate heat.
Explosion Properties	Contact with most metals causes formation of flammable and explosive hydrogen gas. Containers may explode when heated or if contaminated with water.
Molecular Weight	98.08 (Sulfuric acid)

10. Stability and reactivity

Chemical Stability	Stable under normal temperatures, pressures and conditions of use and storage. Hygroscopic. Concentrated solutions react violently with water, splattering and liberating heat.
Conditions to Avoid	Excess heat, extremes of temperature and direct sunlight, metals, combustible materials, organic materials, oxidizers, amines, bases and incompatible materials.
Incompatible Materials	Alkali metals, alkaline earth metals, alkali compounds, ammonia, alkali hydroxide solutions, metals, metal alloys, organic solvents, permanganates.
Hazardous Decomposition Products	Irritating and highly toxic fumes and gases, including oxides of sulfur. Reaction with water or steam may generate much heat which will increase the concentration of fumes in the air, and may produce toxic and corrosive fumes. Concentrated solutions will react with carbonates to generate carbon dioxide gas, and with cyanides and sulfides to form poisonous hydrogen cyanide and hydrogen sulfide respectively. Contact with most metals causes formation of flammable and explosive hydrogen gas.
Possibility of hazardous reactions	Hygroscopic. Exothermic reaction with water. Reacts violently with water and alcohol especially when water is added to the product. Highly reactive with reducing agents, combustible materials, organic materials, metals, oxidizing agents, acids, alkalis. Flammable hydrogen gas is generated by the action of the acid on most metals (i.e. lead, copper, tin, zinc, aluminium, etc.).
Hazardous Polymerization	Will not occur.

11. Toxicological Information

Ingestion	May be harmful if swallowed. Corrosive. Ingestion of this product may cause irritations of mucous membranes in the mouth, pharynx, oesophagus, and gastrointestinal tract, possible gastrointestinal tract burns, severe and permanent corrosion and tissue damage to the mouth, throat, oesophagus, stomach and digestive tract. Swallowing may lead to the danger of perforation of the oesophagus and stomach. May cause general feeling of sickness, sore throat, nausea, vomiting and diarrhoea. Circulatory collapse with clammy skin, weak and rapid pulse, shallow respirations, and scanty urine may follow ingestion. Circulatory shock is often the immediate cause of death. Effects should be less severe than from exposure to higher concentrations of sulfuric acid.
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Inhalation	May be harmful if inhaled. Inhalation of product vapours may cause severe irritation of the nose and throat, damage to the mucous membranes and upper respiratory tract, possible burns, burning sensation, coughing, wheezing, laryngitis, shortness of breath, labored breathing, headache, nausea, and vomiting. Inhalation may result in dental erosion, spasm, inflammation and oedema of the larynx and bronchi, chemical pneumonitis, and pulmonary oedema. Effects should be less severe than from exposure to higher concentrations of sulfuric acid.
Skin	Corrosive. Causes irritation to skin and mucous membranes, and possible skin burns and strong corrosive effect on skin and mucous membranes. Symptoms may include redness, itching, and pain. May be harmful if absorbed through the skin. Circulatory collapse with clammy skin, weak and rapid pulse, shallow respirations, and scanty urine may follow skin contact. Circulatory shock is often the immediate cause of death.
Eye	Corrosive. Causes eye irritation and possible severe eye burns and strong corrosive effect. Symptoms may include tearing, blurred vision, redness, stinging, pain, and burns to eye tissue. Concentrated solutions can cause blindness. Effects should be less severe than from exposure to higher concentrations of sulfuric acid.
Carcinogenicity	Occupational exposure to strong-inorganic-acid mists containing sulfuric acid is evaluated in the IARC Monographs (Vol. 54; 1992) as Group 1: Carcinogenic to humans.
Reproductive Toxicity	May cause adverse reproductive effects based on animal data.
Chronic Effects	Chronic exposure may cause lung damage. Prolonged exposure to the skin or eyes may cause burns. Repeated or long term exposure to mist or vapours may cause erosion of teeth. Chronic exposure to mists containing sulfuric acid is a cancer hazard.

12. Ecological information

Ecotoxicity	Damage of aquatic organisms. Harmful effect due to pH shift. Toxic effect for fishes and algal. Caustic even in diluted form. 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.
Persistence and degradability	Methods for the determination of biodegradability are not applicable to inorganic substances.
Short Summary of Assessment of Environmental Impact	When released into the soil, this material may leach into groundwater. When released into the air, this material may be removed from the atmosphere to a moderate extent by wet deposition. When released into the air, this material may be removed from the atmosphere to a moderate extent by dry deposition.
Environmental Protection	Do not allow to enter waters, waste water, or soil!
Acute Toxicity - Fish	LC50 (flounder): 100 to 330 mg/l/48 hr aerated water.
Acute Toxicity - Daphnia	Daphnia toxicity: Daphnia magna EC50: 29 mg/l /24h. (pure substance)
Acute Toxicity - Other Organisms	LC50 (shrimp): 80 to 90 mg/l/48 hr aerated water; LC50 (prawn): 42.5 ppm/48 hr salt water.

13. Disposal considerations

Disposal Considerations	Dispose of according to relevant local, state and federal government regulations.
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14. Transport information

Transport Information	Dangerous goods of Class 8 (Corrosive) are incompatible in a placard load with any of the following: Class 1, Class 4.3, Class 5, Class 6, if the Class 6 dangerous goods are cyanides and the Class 8 dangerous goods are acids, Class 7; and are incompatible with food and food packaging in any quantity.
U.N. Number	2796
UN proper shipping name	SULFURIC ACID
Transport hazard class(es)	8
Hazchem Code	2R
Packaging Method	3.8.8
Packing Group	II

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EPG Number 8A1

IERG Number 37

15. Regulatory information

Poisons Schedule S6

16. Other Information

Literature 'Standard for the Uniform Scheduling of Medicines and Poisons .', Commonwealth of Australia.
References Lewis, Richard J. Sr. 'Hawley's Condensed Chemical Dictionary 13th. Ed.', Rev., John Wiley and Sons, Inc., NY, 1997.
 National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.', 2007.
 Safe Work Australia, 'National Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals', 2011.
 Standards Australia, 'SAA/SNZ HB 76:2010 Dangerous Goods - Initial Emergency Response Guide', Standards Australia/Standards New Zealand, 2010.
 Safe Work Australia, 'Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004)]'.
 Safe Work Australia, 'Hazardous Substances Information System, 2005'.
 Safe Work Australia, 'National Code of Practice for the Labelling of Safe Work Hazardous Substances (2011)'.
 Safe Work Australia, 'National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1995) 3rd Edition]'.
Contact Paul McCarthy Ph. (08) 8440 2000
Person/Point **DISCLAIMER STATEMENT:**
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Empirical Formula & Structural Formula H₂SO₄ (pure substance)
Manufacturers Advice Dilution of acid should always be carried out by slowly adding acid to water with constant stirring. Concentrated acid reacts violently with water, generating heat and causing splattering.
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