

1. IDENTIFICATION

Product Name	Aluminium sulphate
Other Names	Aluminium sulfate, hydrate [CAS#17927-65-0]; Aluminium sulphate, hexadecahydrate [CAS#16828-11-8]; Aluminium sulphate, octadecahydrate [CAS#7784-31-8]; Aluminium sulphate, tetradecahydrate [CAS#16828-12-9]
Uses	Water purification; Sewage treatment; Deodoriser and decolouring in petroleum refinery processes; Water proofing agent for concrete; Sizing paper and pH control; Clarifying agent for fats and oil.
Chemical Family	No Data Available
Chemical Formula	Al ₂ (SO ₄) ₃
Chemical Name	Aluminium sulfate
Product Description	Inorganic salt.

Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Pty Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox Pty Ltd	11 Mayo Road Wiri Auckland 2104 New Zealand	+64-9-2506222
Redox Inc.	3960 Paramount Boulevard Suite 107 Lakewood CA 90712 USA	+1-424-675-3200
Redox Chemicals Sdn Bhd	Level 2, No. 8, Jalan Sapir 33/7 Seksyen 33, Shah Alam Premier Industrial Park 40400 Shah Alam Sengalor, Malaysia	+60-3-5614-2111

Emergency Contact Details


For emergencies only; DO NOT contact these companies for general product advice.

Organisation	Location	Telephone
Poisons Information Centre	Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766
CHEMTREC	USA & Canada	1-800-424-9300 CN723420 +1-703-527-3887

2. HAZARD IDENTIFICATION

Poisons Schedule (Aust) Not scheduled

Globally Harmonised System

Hazard Classification	Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)		
Hazard Categories	Serious Eye Damage/Irritation - Category 2A		
Pictograms			
Signal Word	Warning		
Hazard Statements	H319	Causes serious eye irritation.	
Precautionary Statements	Prevention	P280	Wear eye protection/face protection.
	Response	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.

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

HSNO Classifications	Health Hazards	6.3A	Substances that are irritating to the skin
		6.1D	Substances that are acutely toxic - Harmful
		6.4A	Substances that are irritating to the eye
	Environmental Hazards	8.1A	Substances that are corrosive to metals
		9.1B	Substances that are ecotoxic in the aquatic environment
		9.3C	Substances that are harmful to terrestrial vertebrates

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Aluminium sulphate	Al ₂ (SO ₄) ₃	10043-01-3	<=100 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	If swallowed: Rinse mouth, then drink 200 - 300 ml of water. Do NOT induce vomiting. Call a Poison Centre or doctor/physician if you feel unwell. Never give anything by mouth to an unconscious person.
Eye	Eye contact: Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Remove contact lenses if present and easy to do. Continue rinsing for at least 15

minutes. If eye irritation persists, get medical advice/attention.

Skin	Skin contact: Remove material from skin immediately. Flush skin with running water for at least 15 minutes and/or wash with plenty of soap and water. Take off contaminated clothing and wash before reuse. If skin irritation occurs, get medical advice/attention.
Inhaled	Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Apply resuscitation if victim is not breathing. Administer oxygen if breathing is difficult. Call a Poison Centre or doctor/physician if experiencing respiratory symptoms, or if you feel unwell.
Advice to Doctor	Treat symptomatically. Ensure that attending medical personnel are aware of the identity and nature of the product(s) involved, and take precautions to protect themselves.
Medical Conditions Aggravated by Exposure	No information available.

5. FIRE FIGHTING MEASURES

General Measures	If safe to do so, move undamaged containers from fire area. Cool containers with flooding quantities of water until well after fire is out. Avoid getting water inside containers.
Flammability Conditions	Non-combustible. Material does not burn.
Extinguishing Media	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use dry chemical, Carbon dioxide, foam or water spray - Do NOT use water jets.
Fire and Explosion Hazard	No information available.
Hazardous Products of Combustion	Decomposes on heating, emitting toxic fumes including: Sulphur oxides and oxides of Aluminium.
Special Fire Fighting Instructions	Prevent fire extinguishing water from contaminating surface water or the ground water system.
Personal Protective Equipment	Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure to products of decomposition.
Flash Point	No Data Available
Lower Explosion Limit	No Data Available
Upper Explosion Limit	No Data Available
Auto Ignition Temperature	No Data Available
Hazchem Code	No Data Available

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation - Ventilate enclosed spaces before entering. Do not touch or walk through spilled material. Wear protective equipment to avoid eye and skin contact. Avoid breathing dust.
Clean Up Procedures	Sweep up, but avoid generating dust and airborne material. Collect and seal in properly labelled containers or drums for disposal. Take up dry - Avoid getting water inside containers.
Containment	Stop leak if safe to do so. Contain - Prevent entry into waterways, drains or confined areas.
Decontamination	Cleaned up material may be hazardous waste. Do NOT flush to surface water or sanitary sewer system.
Environmental Precautionary Measures	Prevent entry into waterways and drains.
Evacuation Criteria	Spill or leak area should be isolated immediately. Clear area of all unprotected personnel. Keep unauthorised personnel away.
Personal Precautionary Measures	Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

7. HANDLING AND STORAGE

Handling	Eyewash fountains and safety showers should be provided within the immediate work area for emergency use. Handle in accordance with good industrial hygiene and safety practice. Ensure adequate ventilation. Avoid breathing dust. Avoid contact with eyes and skin. Wear eye protection/face protection. Avoid handling which leads to dust
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formation.

Storage

Store under cover in a cool, dry and well-ventilated place. Keep containers tightly closed when not in use - Check regularly for spills. Avoid exposure to air/moisture. Store away from incompatible materials (water, strong bases).

Container

Keep in the original container.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General

There is no exposure standard assigned for this specific material.
 COMPONENT: Aluminium, soluble salts (CAS No. 7429-90-5):
 - Safe Work Australia Exposure Standard: TWA = 2 mg/m3 (as Al).
 - New Zealand WES: TWA = 5 mg/m3 (as Al).

Exposure Limits

No Data Available

Biological Limits

No information available.

Engineering Measures

Ensure ventilation is adequate and that air concentrations are controlled below quoted Workplace Exposure Standards. If in the handling and application of this material, safe exposure levels could be exceeded, the use of engineering controls such as local exhaust ventilation must be considered and the results documented. Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

Personal Protection Equipment

Respiratory protection: If determined by a risk assessment an inhalation risk exists, wear a dust mask/respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716. Recommended filter type: P1 filter for solid particles.
 Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Chemical goggles.
 Hand protection: Wear impervious gloves. Recommended (Full/splash contact): Nitrile rubber (Glove thickness: 0.11 mm; Break through time: >480 min).
 Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substance handled. Recommended: Overalls; Safety shoes.

Special Hazards Precautions

No information available.

Work Hygienic Practices

Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State

Solid

Appearance

Powder or granules, flake

Odour

Odourless

Colour

White to brownish

pH

>3 (1% sol. @27°C)

Vapour Pressure

No Data Available

Relative Vapour Density

No Data Available

Boiling Point

No Data Available

Melting Point

770 °C (decomposes)

Freezing Point

No Data Available

Solubility

Soluble in water - 87 g/100 ml water 27°C

Specific Gravity

No Data Available

Flash Point

No Data Available

Auto Ignition Temp

No Data Available

Evaporation Rate

No Data Available

Bulk Density

920 kg/m3 (Powder)

Corrosion Rate

No Data Available

Decomposition Temperature

770 °C

Density

No Data Available

Specific Heat

No Data Available

Molecular Weight

No Data Available

Net Propellant Weight	No Data Available
Octanol Water Coefficient	No Data Available
Particle Size	No Data Available
Partition Coefficient	No Data Available
Saturated Vapour Concentration	No Data Available
Vapour Temperature	No Data Available
Viscosity	No Data Available
Volatile Percent	No Data Available
VOC Volume	No Data Available
Additional Characteristics	HYGROSCOPIC - Absorbs moisture/water from surrounding air.
Potential for Dust Explosion	No information available.
Fast or Intensely Burning Characteristics	No information available.
Flame Propagation or Burning Rate of Solid Materials	No information available.
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No information available.
Properties That May Initiate or Contribute to Fire Intensity	Non-combustible. Material does not burn.
Reactions That Release Gases or Vapours	Decomposes on heating, emitting toxic fumes including: Sulphur oxides and oxides of Aluminium.
Release of Invisible Flammable Vapours and Gases	No information available.

10. STABILITY AND REACTIVITY

Chemical Stability	Stable under normal ambient and anticipated storage and handling conditions.
Conditions to Avoid	Avoid dust generation. Avoid exposure to water/moisture/air.
Materials to Avoid	Incompatible with water and strong bases. May react with some metals in the presence of moisture.
Hazardous Decomposition Products	Decomposes on heating, emitting toxic fumes including: Sulphur oxides and oxides of Aluminium. Reacts with moisture forming Sulphuric acid.
Hazardous Polymerisation	Will not occur.

11. TOXICOLOGICAL INFORMATION

General Information	<p>Information on possible routes of exposure:</p> <ul style="list-style-type: none"> - Ingestion: Swallowing may result in nausea, vomiting, diarrhoea, and gastrointestinal irritation. - Eye contact: Causes serious eye irritation. - Skin contact: May cause skin irritation. - Inhalation: Breathing in dust may result in coughing, respiratory irritation. <p>Acute toxicity: Low toxicity (LD50: >2,000 mg/kg bw), based on rat and mouse studies [OECD Test Guideline 401]. No mortalities were found in studies involving dermal or inhalation exposure (of humans or animals) to various forms of aluminium.</p> <p>Skin corrosion/irritation: May cause skin irritation. Although sulphuric acid, aluminium salt (3:2) produced some skin irritation in most of the studies performed in accordance with OECD TG 404, the effects were not sufficient to warrant a hazard classification.</p> <p>Eye damage/irritation: Causes serious eye irritation - Lack of evidence of irreversible effects. Sulphuric acid, aluminium salt (3:2) and its hexa-, hepta- and octahydrates are classified as eye irritants based on available data and read-across. Three studies conducted in accordance with OECD TG 405 reported eye irritation. Two of the studies found conjunctival redness and swelling which was not reversible during the test periods (three and seven days). The third test reported conjunctivitis and purulent ophthalmitis which were reversible during the 21-day study.</p> <p>Respiratory/skin sensitisation: The available data do not provide any evidence of skin sensitisation.</p> <p>Germ cell mutagenicity: The weight of evidence does not support classification for genotoxicity.</p> <p>Carcinogenicity: The available data do not support classification as a carcinogen.</p>
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Reproductive toxicity: No information available on the product itself. However, neurodevelopmental effects have been observed in rats and mice at doses of 103 – 330 mg Al/kg bw/day - This is equivalent to 652 - 2,090 mg sulphuric acid, aluminium salt (3:2).

STOT - single exposure: No information available.

STOT - repeated exposure: No information available on the product itself. However, results from human and animal studies investigating the toxicity of soluble and insoluble forms of aluminium suggest that the respiratory tract, particularly the lung, is a sensitive target of airborne aluminium toxicity. The lung effects observed in humans and animals are suggestive of dust overload. In addition, neurotoxicity is a well-documented effect of aluminium in orally-exposed mice and rats. Although the neurotoxicity of aluminium has not been established in humans with normal renal function, the available data establish that the human nervous system is susceptible to aluminium toxicity.

Aspiration toxicity: No information available.

Carcinogen Category None

12. ECOLOGICAL INFORMATION

Ecotoxicity Toxicity to fish:
- LC50, Pimephales promelas (fathead minnow): 36.1 mg/l (96 h).

Persistence/Degradability No information available.

Mobility The product will likely be mobile in the environment due to its water solubility. Highly mobile in soils.

Environmental Fate Prevent entry into waterways and drains.

Bioaccumulation Potential No information available.

Environmental Impact No Data Available

13. DISPOSAL CONSIDERATIONS

General Information Dispose of contents/container in accordance with local/regional/national regulations. Do NOT flush to surface water or sanitary sewer system.

Special Precautions for Land Fill No information available.

14. TRANSPORT INFORMATION

Land Transport (Australia)

ADG Code

Proper Shipping Name ALUMINIUM SULPHATE

Class No Data Available

Subsidiary Risk(s) No Data Available

No Data Available

UN Number No Data Available

Hazchem No Data Available

Pack Group No Data Available

Special Provision No Data Available

Land Transport (Fiji)

Proper Shipping Name ALUMINIUM SULPHATE

Class No Data Available

Subsidiary Risk(s) No Data Available

No Data Available
UN Number No Data Available
Hazchem No Data Available
Pack Group No Data Available
Special Provision No Data Available

Land Transport (Indonesia)

Proper Shipping Name ALUMINIUM SULPHATE
Class No Data Available
Subsidiary Risk(s) No Data Available
 No Data Available
UN Number No Data Available
Hazchem No Data Available
Pack Group No Data Available
Special Provision No Data Available

Land Transport (Malaysia)

ADR

Proper Shipping Name ALUMINIUM SULPHATE
Class No Data Available
Subsidiary Risk(s) No Data Available
 No Data Available
UN Number No Data Available
Hazchem No Data Available
Pack Group No Data Available
Special Provision No Data Available

Land Transport (New Zealand)

NZS5433

Proper Shipping Name ALUMINIUM SULPHATE
Class No Data Available
Subsidiary Risk(s) No Data Available
 No Data Available
UN Number No Data Available
Hazchem No Data Available
Pack Group No Data Available
Special Provision No Data Available

Land Transport (Papua New Guinea)

Proper Shipping Name ALUMINIUM SULPHATE
Class No Data Available
Subsidiary Risk(s) No Data Available
 No Data Available
UN Number No Data Available
Hazchem No Data Available
Pack Group No Data Available
Special Provision No Data Available

Land Transport (United States of America)

US DOT

Proper Shipping Name	ALUMINIUM SULPHATE
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available

Sea Transport

IMDG Code

Proper Shipping Name	ALUMINIUM SULPHATE
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
EMS	No Data Available
Marine Pollutant	No
Comments	NON-DANGEROUS GOODS: Not regulated for SEA transport.

Air Transport

IATA DGR

Proper Shipping Name	ALUMINIUM SULPHATE
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for AIR transport.

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification	NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)
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15. REGULATORY INFORMATION

General Information	No Data Available
Poisons Schedule (Aust)	Not scheduled

Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

Approval Code HSR004337

National/Regional Inventories

Australia (AICS)	Listed
Canada (DSL)	Not Determined
Canada (NDSL)	Not Determined
China (IECSC)	Not Determined
Europe (EINECS)	Not Determined
Europe (REACH)	Not Determined
Japan (ENCS/METI)	Not Determined
Korea (KECI)	Not Determined
Malaysia (EHS Register)	Not Determined
New Zealand (NZIoC)	Listed
Philippines (PICCS)	Not Determined
Switzerland (Giftliste 1)	Not Determined
Switzerland (Inventory of Notified Substances)	Not Determined
Taiwan (NCSR)	Not Determined
USA (TSCA)	Not Determined

16. OTHER INFORMATION

Related Product Codes	ALSULP0500, ALSULP1000, ALSULP1001, ALSULP1002, ALSULP1003, ALSULP1004, ALSULP1005, ALSULP1006, ALSULP1007, ALSULP1008, ALSULP1009, ALSULP1010, ALSULP1011, ALSULP1012, ALSULP1013, ALSULP1014, ALSULP1015, ALSULP1016, ALSULP1100, ALSULP1200, ALSULP1250, ALSULP1251, ALSULP1300, ALSULP1400, ALSULP1500, ALSULP1600, ALSULP1800, ALSULP1801, ALSULP1802, ALSULP1803, ALSULP1804, ALSULP1805, ALSULP1806, ALSULP2000, ALSULP2040, ALSULP2100, ALSULP2200, ALSULP2201, ALSULP2202, ALSULP2203, ALSULP2205, ALSULP2210, ALSULP2211, ALSULP2212, ALSULP2213, ALSULP2300, ALSULP2310, ALSULP2400, ALSULP2410, ALSULP2411, ALSULP2500, ALSULP2501, ALSULP3000, ALSULP3100, ALSULP3200, ALSULP3500, ALSULP3550, ALSULP3700, ALSULP3701, ALSULP3702, ALSULP3710, ALSULP3711, ALSULP4000, ALSULP4900, ALSULP5000, ALSULP5100, ALSULP5101, ALSULP5105, ALSULP5200, ALSULP5201, ALSULP5205, ALSULP5300, ALSULP5400, ALSULP5500, ALSULP5600, ALSULP5700, ALSULP6000, ALSULP6500, ALSULP7000, ALSULP7100, ALSULP8001, ALSULP8002, ALSULP8005, ALSULP8020, ALSULP8030, ALSULP8031, ALSULP8040, ALSULP8881, ALSULP9001, ALSULP9010, ALSULP9011, ALSULP9200, ALSULP9310, ALSULP9311
Revision	3
Revision Date	02 Jun 2016
Reason for Issue	Updated SDS
Key/Legend	< Less Than > Greater Than AICS Australian Inventory of Chemical Substances atm Atmosphere

CAS Chemical Abstracts Service (Registry Number)
cm² Square Centimetres
CO₂ Carbon Dioxide
COD Chemical Oxygen Demand
deg C (°C) Degrees Celcius
EPA (New Zealand) Environmental Protection Authority of New Zealand
deg F (°F) Degrees Farenheit
g Grams
g/cm³ Grams per Cubic Centimetre
g/l Grams per Litre
HSNO Hazardous Substance and New Organism
IDLH Immediately Dangerous to Life and Health
immiscible Liquids are insoluable in each other.
inHg Inch of Mercury
inH₂O Inch of Water
K Kelvin
kg Kilogram
kg/m³ Kilograms per Cubic Metre
lb Pound
LC50 LC stands for lethal concentration. LC50 is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.
LD50 LD stands for Lethal Dose. LD50 is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.
ltr or **L** Litre
m³ Cubic Metre
mbar Millibar
mg Milligram
mg/24H Milligrams per 24 Hours
mg/kg Milligrams per Kilogram
mg/m³ Milligrams per Cubic Metre
Misc or **Miscible** Liquids form one homogeneous liquid phase regardless of the amount of either component present.
mm Millimetre
mmH₂O Millimetres of Water
mPa.s Millipascals per Second
N/A Not Applicable
NIOSH National Institute for Occupational Safety and Health
NOHSC National Occupational Health and Safety Commission
OECD Organisation for Economic Co-operation and Development
Oz Ounce
PEL Permissible Exposure Limit
Pa Pascal
ppb Parts per Billion
ppm Parts per Million
ppm/2h Parts per Million per 2 Hours
ppm/6h Parts per Million per 6 Hours
psi Pounds per Square Inch
R Rankine
RCP Reciprocal Calculation Procedure
STEL Short Term Exposure Limit
TLV Threshold Limit Value
tne Tonne
TWA Time Weighted Average
ug/24H Micrograms per 24 Hours
UN United Nations
wt Weight