

### 1. IDENTIFICATION

<b>Product Name</b>	<b>Aluminium sulphate</b>
<b>Other Names</b>	Aluminium sulphate, hexadecahydrate (CAS#16828-11-8); Aluminium sulphate, octadecahydrate (CAS#7784-31-8); Aluminium sulphate, tetradecahydrate (CAS#16828-12-9)
<b>Uses</b>	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.
<b>Chemical Family</b>	No Data Available
<b>Chemical Formula</b>	Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> .xH <sub>2</sub> O
<b>Chemical Name</b>	Aluminium sulfate, hydrate
<b>Product Description</b>	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
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766

### 2. HAZARD IDENTIFICATION

**Poisons Schedule (Aust)** Not scheduled

### Globally Harmonised System

<b>Hazard Classification</b>	Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)
<b>Hazard Categories</b>	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.

## 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

**8.1A**

Substances that are corrosive to metals

Environmental Hazards

**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, hydrate	Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> .xH <sub>2</sub> O	17927-65-0	<=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**

<b>General Measures</b>	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.
<b>Flammability Conditions</b>	Non-combustible. Material does not burn.
<b>Extinguishing Media</b>	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.
<b>Fire and Explosion Hazard</b>	No information available.
<b>Hazardous Products of Combustion</b>	Decomposes on heating, emitting toxic fumes including: Sulphur oxides and oxides of Aluminium.
<b>Special Fire Fighting Instructions</b>	Prevent fire extinguishing water from contaminating surface water or the ground water system.
<b>Personal Protective Equipment</b>	Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure to products of decomposition.
<b>Flash Point</b>	No Data Available
<b>Lower Explosion Limit</b>	No Data Available
<b>Upper Explosion Limit</b>	No Data Available
<b>Auto Ignition Temperature</b>	No Data Available
<b>Hazchem Code</b>	No Data Available

**6. ACCIDENTAL RELEASE MEASURES**

<b>General Response Procedure</b>	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.
<b>Clean Up Procedures</b>	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.
<b>Containment</b>	Stop leak if safe to do so. Contain - Prevent entry into waterways, drains or confined areas.
<b>Decontamination</b>	Cleaned up material may be hazardous waste. Do NOT flush to surface water or sanitary sewer system.
<b>Environmental Precautionary Measures</b>	Prevent entry into waterways and drains.
<b>Evacuation Criteria</b>	Spill or leak area should be isolated immediately. Clear area of all unprotected personnel. Keep unauthorised personnel away.
<b>Personal Precautionary Measures</b>	Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

**7. HANDLING AND STORAGE**

<b>Handling</b>	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 formation.
<b>Storage</b>	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).
<b>Container</b>	Keep in the original container.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

<b>General</b>	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).
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- New Zealand WES: TWA = 5 mg/m3 (as Al).

<b>Exposure Limits</b>	No Data Available
<b>Biological Limits</b>	No information available.
<b>Engineering Measures</b>	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.
<b>Personal Protection Equipment</b>	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.
<b>Special Hazards Precautions</b>	No information available.
<b>Work Hygienic Practices</b>	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

<b>Physical State</b>	Solid
<b>Appearance</b>	Powder or granules
<b>Odour</b>	Odourless
<b>Colour</b>	White to brownish
<b>pH</b>	>3 (1% sol. @27°C)
<b>Vapour Pressure</b>	No Data Available
<b>Relative Vapour Density</b>	No Data Available
<b>Boiling Point</b>	No Data Available
<b>Melting Point</b>	770 °C (decomposes)
<b>Freezing Point</b>	No Data Available
<b>Solubility</b>	Soluble in water - 87 g/100 ml water 27°C
<b>Specific Gravity</b>	No Data Available
<b>Flash Point</b>	No Data Available
<b>Auto Ignition Temp</b>	No Data Available
<b>Evaporation Rate</b>	No Data Available
<b>Bulk Density</b>	920 kg/m3 (Powder)
<b>Corrosion Rate</b>	No Data Available
<b>Decomposition Temperature</b>	770 °C
<b>Density</b>	No Data Available
<b>Specific Heat</b>	No Data Available
<b>Molecular Weight</b>	No Data Available
<b>Net Propellant Weight</b>	No Data Available
<b>Octanol Water Coefficient</b>	No Data Available
<b>Particle Size</b>	No Data Available
<b>Partition Coefficient</b>	No Data Available
<b>Saturated Vapour Concentration</b>	No Data Available
<b>Vapour Temperature</b>	No Data Available
<b>Viscosity</b>	No Data Available
<b>Volatile Percent</b>	No Data Available
<b>VOC Volume</b>	No Data Available
<b>Additional Characteristics</b>	HYGROSCOPIC - Absorbs moisture/water from surrounding air.



<b>Potential for Dust Explosion</b>	No information available.
<b>Fast or Intensely Burning Characteristics</b>	No information available.
<b>Flame Propagation or Burning Rate of Solid Materials</b>	No information available.
<b>Non-Flammables That Could Contribute Unusual Hazards to a Fire</b>	No information available.
<b>Properties That May Initiate or Contribute to Fire Intensity</b>	Non-combustible. Material does not burn.
<b>Reactions That Release Gases or Vapours</b>	Decomposes on heating, emitting toxic fumes including: Sulphur oxides and oxides of Aluminium.
<b>Release of Invisible Flammable Vapours and Gases</b>	No information available.

## 10. STABILITY AND REACTIVITY

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

## 11. TOXICOLOGICAL INFORMATION

<b>General Information</b>	<p>Information on possible routes of exposure:</p> <ul style="list-style-type: none"> <li>- Ingestion: Swallowing may result in nausea, vomiting, diarrhoea, and gastrointestinal irritation.</li> <li>- Eye contact: Causes serious eye irritation.</li> <li>- Skin contact: May cause skin irritation.</li> <li>- Inhalation: Breathing in dust may result in coughing, respiratory irritation.</li> </ul> <p>Acute toxicity: Low toxicity (LD50: &gt;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> <p>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).</p> <p>STOT - single exposure: No information available.</p> <p>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.</p> <p>Aspiration toxicity: No information available.</p>
<b>Carcinogen Category</b>	None



**12. ECOLOGICAL INFORMATION**

<b>Ecotoxicity</b>	Toxicity to fish: - LC50, Pimephales promelas (fathead minnow): 36.1 mg/l (96 h).
<b>Persistence/Degradability</b>	No information available.
<b>Mobility</b>	The product will likely be mobile in the environment due to its water solubility. Highly mobile in soils.
<b>Environmental Fate</b>	Prevent entry into waterways and drains.
<b>Bioaccumulation Potential</b>	No information available.
<b>Environmental Impact</b>	No Data Available

**13. DISPOSAL CONSIDERATIONS**

<b>General Information</b>	Dispose of contents/container in accordance with local/regional/national regulations. Do NOT flush to surface water or sanitary sewer system.
<b>Special Precautions for Land Fill</b>	No information available.

**14. TRANSPORT INFORMATION****Land Transport (New Zealand)**

NZS5433

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

**Sea Transport**

IMDG Code

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

**Air Transport**

IATA DGR



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

**15. REGULATORY INFORMATION**

<b>General Information</b>	No Data Available
<b>Poisons Schedule (Aust)</b>	Not scheduled

**Environmental Protection Authority (New Zealand)**  
 Hazardous Substances and New Organisms Amendment Act 2015

<b>Approval Code</b>	HSR004337
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**National/Regional Inventories**

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

**16. OTHER INFORMATION**



<b>Related Product Codes</b>	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, ALSULP2300, ALSULP2400, ALSULP2500, ALSULP2501, ALSULP3000, ALSULP3100, ALSULP3200, ALSULP3500, ALSULP3550, ALSULP4000, ALSULP4900, ALSULP5000, ALSULP5100, ALSULP5101, ALSULP5200, ALSULP5201, ALSULP5205, ALSULP5300, ALSULP5400, ALSULP5500, ALSULP5600, ALSULP5700, ALSULP6000, ALSULP6500, ALSULP7000, ALSULP7100
<b>Revision</b>	3
<b>Revision Date</b>	02 Jun 2016
<b>Reason for Issue</b>	Updated SDS
<b>Key/Legend</b>	<p>&lt; Less Than                  &gt; Greater Than  <b>AICS</b> Australian Inventory of Chemical Substances  <b>atm</b> Atmosphere  <b>CAS</b> Chemical Abstracts Service (Registry Number)  <b>cm<sup>2</sup></b> Square Centimetres  <b>CO<sub>2</sub></b> Carbon Dioxide  <b>COD</b> Chemical Oxygen Demand  <b>deg C (°C)</b> Degrees Celcius  <b>EPA (New Zealand)</b> Environmental Protection Authority of New Zealand  <b>deg F (°F)</b> Degrees Fahrenheit  <b>g</b> Grams  <b>g/cm<sup>3</sup></b> Grams per Cubic Centimetre  <b>g/l</b> Grams per Litre  <b>HSNO</b> Hazardous Substance and New Organism  <b>IDLH</b> Immediately Dangerous to Life and Health  <b>immiscible</b> Liquids are insoluble in each other.  <b>inHg</b> Inch of Mercury  <b>inH<sub>2</sub>O</b> Inch of Water  <b>K</b> Kelvin  <b>kg</b> Kilogram  <b>kg/m<sup>3</sup></b> Kilograms per Cubic Metre  <b>lb</b> Pound  <b>LC50</b> 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.  <b>LD50</b> 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.  <b>ltr</b> or <b>L</b> Litre  <b>m<sup>3</sup></b> Cubic Metre  <b>mbar</b> Millibar  <b>mg</b> Milligram  <b>mg/24H</b> Milligrams per 24 Hours  <b>mg/kg</b> Milligrams per Kilogram  <b>mg/m<sup>3</sup></b> Milligrams per Cubic Metre  <b>Misc</b> or <b>Miscible</b> Liquids form one homogeneous liquid phase regardless of the amount of either component present.  <b>mm</b> Millimetre  <b>mmH<sub>2</sub>O</b> Millimetres of Water  <b>mPa.s</b> Millipascals per Second  <b>N/A</b> Not Applicable  <b>NIOSH</b> National Institute for Occupational Safety and Health  <b>NOHSC</b> National Occupational Health and Safety Commission  <b>OECD</b> Organisation for Economic Co-operation and Development  <b>Oz</b> Ounce  <b>PEL</b> Permissible Exposure Limit  <b>Pa</b> Pascal  <b>ppb</b> Parts per Billion  <b>ppm</b> Parts per Million  <b>ppm/2h</b> Parts per Million per 2 Hours  <b>ppm/6h</b> Parts per Million per 6 Hours  <b>psi</b> Pounds per Square Inch  <b>R</b> Rankine  <b>RCP</b> Reciprocal Calculation Procedure  <b>STEL</b> Short Term Exposure Limit  <b>TLV</b> Threshold Limit Value  <b>tne</b> Tonne  <b>TWA</b> Time Weighted Average  <b>ug/24H</b> Micrograms per 24 Hours  <b>UN</b> United Nations</p>





**wt** Weight

