



**SAFETY DATA SHEET**  
**ALUMINIUM CHLOROHYDRATE SOLUTION**  
**REVISION 2, DATE 28 FEB 20**

## 1. IDENTIFICATION

<b>Product Name</b>	<b>Aluminium Chlorohydrate Solution</b>
<b>Other Names</b>	No Data Available
<b>Uses</b>	Specialist coagulant in the treatment of water and wastewater; other miscellaneous applications.
<b>Chemical Family</b>	No Data Available
<b>Chemical Formula</b>	$\text{Al}_2(\text{OH})_5\text{Cl} \cdot 2.3\text{H}_2\text{O}$
<b>Chemical Name</b>	Aluminium chloride, basic, aqueous solution
<b>Product Description</b>	Water solution of polymeric aluminium compounds. This is a commercial product whose exact ratio of components may vary slightly. Minor quantities of other non-hazardous ingredients are also possible.

### Contact Details of the Supplier of this Safety Data Sheet

<b>Organisation</b>	<b>Location</b>	<b>Telephone</b>
Redox Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox 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.*

<b>Organisation</b>	<b>Location</b>	<b>Telephone</b>
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

<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>	Skin Corrosion/Irritation - Category 2 Serious Eye Damage/Irritation - Category 2A		
<b>Pictograms</b>			
<b>Signal Word</b>	Warning		
<b>Hazard Statements</b>	<b>H315</b>	Causes skin irritation.	
	<b>H319</b>	Causes serious eye irritation.	
<b>Precautionary Statements</b>	Prevention	<b>P280</b>	Wear protective gloves/eye protection/face protection.
	Response	<b>P302 + P352</b>	IF ON SKIN: Wash with plenty of water/...
		<b>P337 + P313</b>	If eye irritation persists: Get medical advice/attention.
		<b>P332 + P313</b>	If skin irritation occurs: Get medical advice/attention.
		<b>P362</b>	Take off contaminated clothing.
		<b>P305 + P351 + P338</b>	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

## National Transport Commission (Australia)

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

<b>Dangerous Goods Classification</b>	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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## 3. COMPOSITION/INFORMATION ON INGREDIENTS

## Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Aluminium chlorohydrate (as Al <sub>2</sub> O <sub>3</sub> )	Unspecified	1327-41-9	20 - 60 %
Water	H <sub>2</sub> O	7732-18-5	Balance %

## 4. FIRST AID MEASURES

## Description of necessary measures according to routes of exposure

<b>Swallowed</b>	IF SWALLOWED: Rinse mouth with water. Do not induce vomiting. Get immediate medical advice/attention.
<b>Eye</b>	IF IN EYES: Immediately flush eyes with lukewarm running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Take care not to rinse contaminated water into the unaffected eye or onto the face. Remove contact lenses if present and easy to do. Continue rinsing for at least 15 minutes. Get immediate medical advice/attention.

<b>Skin</b>	If ON SKIN: Remove contaminated clothing and shoes immediately. Wash skin gently with warm running water (and non-abrasive soap, if necessary) for at least 15 minutes. In case of gross contamination, drench contaminated clothing and skin with plenty of water before removing clothes. If skin irritation occurs, get medical advice/attention. Wash contaminated clothing and shoes before reuse or discard.
<b>Inhaled</b>	If INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If respiratory symptoms persist, get medical advice/attention.
<b>Advice to Doctor</b>	Treat symptomatically.
<b>Medical Conditions Aggravated by Exposure</b>	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 water spray until well after fire is out. If a significant quantity of this product is involved in a fire, call the fire brigade.
<b>Flammability Conditions</b>	Not combustible; Does not burn.
<b>Extinguishing Media</b>	If material is involved in a fire, use extinguishing media suited to burning materials.
<b>Fire and Explosion Hazard</b>	The major hazard in fires is usually inhalation of heated and toxic or oxygen deficient (or both) fire gases. There is no risk of an explosion from this product under normal circumstances if it is involved in a fire.
<b>Hazardous Products of Combustion</b>	Only small quantities of decomposition products are expected from this product at temperatures normally achieved in a fire. This will only occur after heating to dryness. Fire decomposition products from this product are likely to be irritating if inhaled. May form Hydrogen chloride gas, other compounds of Chlorine and Aluminium compounds.
<b>Special Fire Fighting Instructions</b>	Contain runoff from fire control or dilution water - Runoff may pollute waterways.
<b>Personal Protective Equipment</b>	Wear positive pressure self-contained breathing apparatus (SCBA) and chemical splash suit. SCBA and structural firefighter's uniform may provide limited protection.
<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. Do not touch or walk through spilled material. Avoid breathing vapours and contact with eyes, skin and clothing.
<b>Clean Up Procedures</b>	Absorb with earth, sand or other non-combustible material and transfer to a suitable container for disposal (see SECTION 13). Hose final trace residues to drain.
<b>Containment</b>	Stop leak if safe to do so – Prevent entry into waterways, drains or confined areas.
<b>Decontamination</b>	This product can be neutralised with alkali to form a mixture of aluminium hydroxide and the chloride salt of the alkali. The resulting mixture is non-hazardous providing the resulting pH is between roughly 5 and 10.
<b>Environmental Precautionary Measures</b>	Prevent spillage from entering drains or water courses. *Spillage into waterways will result in some lowering of the pH and the formation of aluminium hydroxide, which has a very low toxicity.
<b>Evacuation Criteria</b>	Spill or leak area should be isolated immediately. Keep unauthorised personnel away.
<b>Personal Precautionary Measures</b>	Wear full protective clothing, including eye/face protection (see SECTION 8). If there is a significant chance that vapours or mists are likely to build up in the cleanup area, we recommend that you use a respirator.

## 7. HANDLING AND STORAGE

<b>Handling</b>	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Keep exposure to this product to a minimum, and minimise the quantities kept in work areas. Avoid breathing mist/vapours and contact with eyes, skin and clothing. Do not ingest. Use personal protective equipment as required (see SECTION 8). Avoid contact or contamination of product with incompatible materials.
<b>Storage</b>	Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed. Keep away from heat and sources of ignition - No smoking. Keep away from foodstuffs and incompatible materials (see SECTION 10). Some liquid preparations settle or separate on standing and may require stirring before use.
<b>Container</b>	Keep in the original container.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<b>General</b>	No specific exposure standards are available for this product. For Aluminium, soluble salts (as Al): - Safe Work Australia Exposure Standard: TWA = 2 mg/m <sup>3</sup> .
<b>Exposure Limits</b>	No Data Available
<b>Biological Limits</b>	No information available.
<b>Engineering Measures</b>	A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.
<b>Personal Protection Equipment</b>	- Respiratory protection: Usually, no respirator is necessary when using this product. However, for bulk handling or where regular exposure in an occupational setting occurs without proper containment systems, we recommend that you use a respirator (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Protective glasses or goggles. - Hand protection: Wear protective gloves. Recommended: Impervious gloves, e.g. rubber, PVC. - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Impervious clothes and, preferably, apron.
<b>Special Hazards Precautions</b>	No information available.
<b>Work Hygienic Practices</b>	Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Thoroughly launder protective clothing before storage or re-use. *Advise laundry of nature of contamination when sending contaminated clothing to laundry.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State</b>	Liquid
<b>Appearance</b>	Liquid
<b>Odour</b>	Faint, characteristic
<b>Colour</b>	Clear to slightly hazy
<b>pH</b>	>=2.6 (as supplied) at 25°C
<b>Vapour Pressure</b>	2.37 kPa (Water vapour pressure) (@ 20 °C)
<b>Relative Vapour Density</b>	As for water
<b>Boiling Point</b>	approx. 100 - 110 °C
<b>Melting Point</b>	No Data Available
<b>Freezing Point</b>	<0 °C
<b>Solubility</b>	Completely soluble in water
<b>Specific Gravity</b>	>=1.30
<b>Flash Point</b>	No Data Available
<b>Auto Ignition Temp</b>	No Data Available

<b>Evaporation Rate</b>	As for water
<b>Bulk Density</b>	No Data Available
<b>Corrosion Rate</b>	No Data Available
<b>Decomposition Temperature</b>	No Data Available
<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>	approx. 50% (Water component)
<b>VOC Volume</b>	No Data Available
<b>Additional Characteristics</b>	Prolonged drying leads to product change.
<b>Potential for Dust Explosion</b>	Not applicable.
<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>	Not combustible; Does not burn.
<b>Reactions That Release Gases or Vapours</b>	Only small quantities of decomposition products are expected from this product at temperatures normally achieved in a fire. This will only occur after heating to dryness. May form Hydrogen chloride gas, other compounds of Chlorine and Aluminium compounds.
<b>Release of Invisible Flammable Vapours and Gases</b>	No information available.

## 10. STABILITY AND REACTIVITY

<b>General Information</b>	No information available.
<b>Chemical Stability</b>	This product is unlikely to react or decompose under normal storage conditions.
<b>Conditions to Avoid</b>	This product should be kept in a cool place, preferably below 30°C.
<b>Materials to Avoid</b>	No particular incompatibilities.
<b>Hazardous Decomposition Products</b>	Only small quantities of decomposition products are expected from this product at temperatures normally achieved in a fire. This will only occur after heating to dryness. May form Hydrogen chloride gas, other compounds of Chlorine and Aluminium compounds.
<b>Hazardous Polymerisation</b>	This product will not undergo polymerisation reactions.

## 11. TOXICOLOGICAL INFORMATION

<b>General Information</b>	- Acute toxicity: No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet
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- and the product label.
- Skin corrosion/irritation: Causes skin irritation. Repeated exposure may cause skin dryness.
  - Eye damage/irritation: Causes serious eye irritation.
  - Respiratory/skin sensitisation: No information available.
  - Germ cell mutagenicity: No information available.
  - Carcinogenicity: Not listed as a carcinogen by NTP, IARC or OSHA.
  - Reproductive toxicity: No information available.
  - STOT (single exposure): Breathing in vapour, mists or aerosols may produce respiratory irritation.
  - STOT (repeated exposure): No information available.
  - Aspiration toxicity: No information available.

**Carcinogen Category** None

**12. ECOLOGICAL INFORMATION**

<b>Ecotoxicity</b>	Effect on effluent treatment: <ul style="list-style-type: none"><li>- This product is used as a coagulant in water treatment and may cause finely divided solids to settle out rapidly from aqueous streams, depending on other factors such as pH and ionic strength. It may influence pH control as this material in the raw state has a pH of roughly 4, and it may also add to solids loading in filter cakes and present as a compressible cake. In large quantity this product is likely to make filter cakes slimy and wet. This can also cause "blinding of filter cloths" but these will normally respond to hosing or rinsing off.</li></ul>
<b>Persistence/Degradability</b>	Not a persistent pollutant; can cause coagulation of solids in aqueous suspension, especially when highly diluted by the water in which the solids are suspended. When diluted by copious quantities of water, this product will hydrolyse rapidly to form aluminium hydroxide, which can be expected to become a part of the natural soil profile if not recovered. When not highly diluted with water, this product may be slow to hydrolyse and may form a mixture of partially soluble aluminium species and heavy floc of aluminium hydroxide.
<b>Mobility</b>	No information available.
<b>Environmental Fate</b>	This product is unlikely to adversely effect the environment. *Until further diluted, this mixture could affect marine life by clogging sensitive respiratory mechanisms in a similar fashion to muds and clays and possibly by toxic effects that are not yet well understood.
<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. Containers should be emptied as completely as practical before disposal. If possible, recycle product and containers; If this is not practical, send to a commercial waste disposal site.
<b>Special Precautions for Land Fill</b>	This product can be neutralised with alkali to form a mixture of aluminium hydroxide and the chloride salt of the alkali. The resulting mixture is non-hazardous providing the resulting pH is between roughly 5 and 10.

**14. TRANSPORT INFORMATION**

**Land Transport (Australia)**

<b>ADG Code</b>	
<b>Proper Shipping Name</b>	Aluminium Chlorohydrate Solution
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available

	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 LAND transport.

**Land Transport (Malaysia)**

ADR Code

<b>Proper Shipping Name</b>	Aluminium Chlorohydrate Solution
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available
	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 LAND transport.

**Land Transport (New Zealand)**

NZS5433

<b>Proper Shipping Name</b>	Aluminium Chlorohydrate Solution
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available
	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 LAND transport.

**Land Transport (United States of America)**

US DOT

<b>Proper Shipping Name</b>	Aluminium Chlorohydrate Solution
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available
	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 LAND transport.

**Sea Transport**

IMDG Code

<b>Proper Shipping Name</b>	Aluminium Chlorohydrate Solution
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	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 Chlorohydrate Solution
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 &amp; 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	Not Assessed
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**National/Regional Inventories**

Australia (AIC)	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	ALCHHY5000, ALCHHY5001, ALCHHY5100, ALCHHY5200, ALCHHY5500, ALCHHY6000, ALCHHY6200, ALCHHY8000, ALCHHY8001, ALCHHY8500, ALCHHY8502
Revision	2
Revision Date	28 Feb 2020
Key/Legend	<p>&lt; Less Than &gt; Greater Than</p> <p><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 Farenheit  <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 insoluable 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 or 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 or Miscible</b> Liquids form one homogeneous liquid phase regardless of the amount of either component present.</p>

**mm** Millimetre  
**mmH<sub>2</sub>O** 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