

## Safety Data Sheet **ALUMINIUM CHLORIDE Anhydrous**

SDS no. HLVNSS0Y • Version 1.0 • Date of issue: 2024-07-30

### SECTION 1: Identification

#### GHS Product identifier

Product name ALUMINIUM CHLORIDE Anhydrous

#### Other means of identification

Product Product Number

ALUMINIUM CHLORIDE Anhydrous LR AL058  
Aluminum trichloride

#### Recommended use of the chemical and restrictions on use

Acid catalyst for the production of a wide range of organic compounds including hydrocarbon resins, ethylbenzene, titanium dioxide, pharmaceuticals, alkylate detergents, dyes, ethyl chloride, agricultural chemicals, butyl rubber, polybutenes, plastics, lubricants, fragrances and cosmetics; catalyst in the petroleum industry; electrolytic production of aluminium; chemical intermediate for aluminium compounds; production of aluminium borohydride and lithium aluminium hydride; and laboratory 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.au](http://www.chemsupply.com.au)

#### Emergency phone number

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

### SECTION 2: Hazard identification

#### Classification of the substance or mixture

#### GHS classification in accordance with: UN GHS revision 7

- Serious eye damage/eye irritation, Cat. 1
- Skin corrosion/irritation, Cat. 1B

#### GHS label elements, including precautionary statements

**Pictograms**



**Signal word**

**Danger**

**Hazard statement(s)**

H314

Causes severe skin burns and eye damage

**Precautionary statement(s)**

P260

Do not breathe dust/fume/gas/mist/vapors/spray.

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 an approved waste disposal facility

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**SECTION 3: Composition/information on ingredients**

**Mixtures**

Molecular weight: 266.6813334

**Components**

Component	CAS no.	Concentration
Aluminum chloride (EC no.: 231-208-1; Index no.: 013-003-00-7)	7446-70-0	100 - 100 % (weight)
CLASSIFICATIONS: Skin corrosion/irritation, Cat. 1B. HAZARDS: H314 - Causes severe skin burns and eye damage.		

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**SECTION 4: First-aid measures**

**Description of necessary first-aid measures**

General advice

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

If inhaled

If inhaled, remove from contaminated area to fresh air immediately. Apply artificial respiration if not breathing. If breathing is difficult, give oxygen. Immediately medical attention is required.

In case of skin contact

Immediately remove contaminated clothing and wash affected area with water for at least 15 minutes. Ensure contaminated clothing is washed before re-use. Seek medical advice /attention depending on the severity.

In case of eye contact

Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open.  
Seek immediate medical assistance.

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

**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, contact the National Poisons Information Centre (Phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor.

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**SECTION 5: Fire-fighting measures**

**Suitable extinguishing media**

Small fire: Use CO2, dry chemical or dry sand.

Unsuitable Extinguishing Media: Water and foam.

When material is not involved in fire: Do not use water on material itself.

**Specific hazards arising from the chemical**

Hazards from Combustion Products: Irritating and toxic fumes and gases, aluminium oxide and hydrogen chloride.

Does not burn but may produce poisonous and/or corrosive fumes upon heating. Heat of reaction may be enough to ignite combustible materials. Will react with water (violently) releasing flammable, corrosive gases and runoff. Contact with metals may evolve flammable hydrogen gas. Fire may produce irritating, poisonous and/or corrosive gases. Runoff may pollute waterways.

**Special protective actions for fire-fighters**

Wear SCBA and acid-resistant chemical splash suit. Structural firefighter's uniform is NOT effective for these materials.

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**SECTION 6: Accidental release measures**

**Personal precautions, protective equipment and emergency procedures**

Evacuate the area of all non-essential personnel. Avoid inhalation, contact with skin, eyes and clothing.

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

**Methods and materials for containment and cleaning up**

Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Stop leak if safe to do so - Prevent entry into waterways, drains or confined areas. DO NOT GET WATER INSIDE CONTAINERS.

Cover with DRY earth, sand or other non-combustible material followed by a plastic sheet to minimize spreading or contact with rain. Use clean non-sparking tools to collect material and place it into loosely-covered plastic containers for later disposal.

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**SECTION 7: Handling and storage**

**Precautions for safe handling**

Avoid ingestion and generation and inhalation of dusts, vapours, mists, or gases. Avoid contact with eyes, skin, or clothing. Avoid prolonged or repeated exposure. Minimize dust generation and accumulation. Keep locked up. Keep container tightly closed. Work under hood. Use only in a well-ventilated area. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Immediately change contaminated clothing. Discard contaminated shoes. Never add water to this product. Keep container dry. Do not allow water to get into the container, or allow contact with water, because of violent reaction. Prolonged storage may lead to pressure build-up - vent container periodically. Open carefully. Keep away from incompatibles such as metals. Separate from food and feedstuffs.

**Conditions for safe storage, including any incompatibilities**

## Safety Data Sheet

### ALUMINIUM CHLORIDE Anhydrous

SDS no. HLVNSS0Y • Version 1.0 • Date of issue: 2024-07-30

Store in tightly closed, labelled, corrosion-resistant, containers, in a cool, dry, well-ventilated area, away from incompatible substances. Store away from bases, organic materials, food and feedstuffs, strong acids, water, all combustible material and other incompatible materials. Protect from humidity, moisture, water and sunlight. Store away from fire hazard. Do not store in area equipped with emergency water sprinklers. Store in a noncombustible, non-sprinklered building, in an area without drain or sewer access. Structural materials including lighting and ventilation systems in the storage area, should be corrosion resistant. Do not store material for prolonged periods. Reaction with moisture in air may cause build-up of pressure in containers. Containers should be carefully vented before being opened. Inspect and monitor periodically. Vent periodically.

Corrosiveness: Dry (anhydrous) aluminium chloride is not corrosive to metals. Anhydrous aluminium chloride absorbs moisture from the air forming a <math>wet</math> paste or solutions and corrosive hydrochloric acid. Therefore, in the presence of moisture, aluminium chloride is corrosive to steel, stainless steel, cast iron, copper, brass and bronze, aluminium and lead.

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## SECTION 8: Exposure controls/personal protection

### 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.

Hand Protection: Ensure hand protection complies with AS 2161, Occupational protective gloves - Selection, use and maintenance.

#### Body protection

Footwear: 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, preferably with an apron. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.

#### 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.

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## SECTION 9: Physical and chemical properties

### Basic physical and chemical properties

Physical state  
Appearance  
Color  
Odor  
Odor threshold

Solid  
White or yellowish crystals or powder.  
No data available.  
Strong, pungent odour of hydrogen chloride.  
No data available.

## Safety Data Sheet

### ALUMINIUM CHLORIDE Anhydrous

SDS no. HLVNSS0Y • Version 1.0 • Date of issue: 2024-07-30

Melting point/freezing point

192.5 °C at 233 kPa (2.3 atm) (Triple point).

Boiling point or initial boiling point and boiling range

180.2 °C at 101.33 kPa (760 mm Hg) (sublimes as the dimer, Al<sub>2</sub>Cl<sub>6</sub>).

Flammability

Non combustible material - Water reactive.

Lower and upper explosion limit/flammability limit

No data available.

Flash point

No data available.

Explosive properties

Well-sealed containers may rupture violently when exposed to fire or excessive heat for sufficient time. Combines with water with explosive violence and liberation of much heat. Produces strong explosion on impact with alkali metals (e.g. potassium or sodium). Mixtures with nitrobenzene or nitromethane are thermally unstable and may lead to explosive decomposition. Can react explosively with oxygen difluoride, phenyl azide, perchloryl benzene, perchloryl fluoride and benzene, sodium tetrahydroborate or strong bases. Violent exothermic reactions can occur upon contact with mixtures of benzoyl chloride and naphthalene, mixtures of aniline and ethyleneimine or mixtures of sodium peroxide and aluminium.

No data available.

Auto-ignition temperature

No data available.

Decomposition temperature

No data available.

Oxidizing properties

No data available.

pH

Reacts violently with water. Resulting solutions are acidic.

Kinematic viscosity

No data available.

Solubility

Solubility in Water: Very soluble (70 g/100 mL at 15 °C); reacts violently with water. Solubility in Organic Solvents: Very soluble in absolute alcohol; soluble in chlorinated solvents (carbon tetrachloride and chloroform), and forms a complex with the solvent in polar, aprotic solvents (acetonitrile, diethyl ether, nitrobenzene and nitromethane); slightly soluble in benzene.

Not applicable. Reacts violently with water.

Partition coefficient n-octanol/water (log value)

Extremely low at room temperature; 0.133 kPa (1 mm Hg) at 100.0 °C.

Vapor pressure

No data available.

Evaporation rate

Specific Gravity: 2.44 at 25 ° (fused solid).

Density and/or relative density

4.5 (air = 1).

Relative vapor density

No data available.

Particle characteristics

#### Supplemental information regarding physical hazard classes

No data available.

#### Further safety characteristics (supplemental)

Saturated Vapour Concentration: Very low at normal temperatures.

Other Information: Critical temperature: 620 K.

Critical pressure: 2.63 MPa.

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## SECTION 10: Stability and reactivity

### Reactivity

Stable under normal conditions of storage and handling.

### Chemical stability

## Safety Data Sheet

### ALUMINIUM CHLORIDE Anhydrous

SDS no. HLVNSS0Y • Version 1.0 • Date of issue: 2024-07-30

Stable at room temperature in closed containers under normal storage and handling conditions - may decompose upon prolonged storage. Normally stable to dry air and light; deliquescent (reacts with moisture in air producing hydrogen chloride gas); reacts violently with water producing corrosive hydrochloric acid.

#### Possibility of hazardous reactions

Reacts violently with water to produce heat and hydrochloric acid/hydrogen chloride, an irritating and corrosive gas apparent as white fumes.

May react explosively in contact with strong bases and active metals (e.g. potassium, sodium).

Can react explosively with oxygen difluoride, phenyl azide, perchloryl benzene, perchloryl fluoride and benzene, sodium tetrahydroborate.

May react violently or explosively in contact with organic nitro compounds plus organic matter.

May react vigorously in contact with strong oxidising agents.

Violent exothermic reactions can occur upon contact with mixtures of benzoyl chloride and naphthalene, mixtures of aniline and ethyleneimine or mixtures of sodium peroxide and aluminium.

#### Conditions to avoid

Moisture, water, dust generation, excess heat.

#### Incompatible materials

Water/moisture, bases, strong oxidizing agents, alkali metals (e.g. potassium or sodium), alkaline earth metals, most other metals in the presence of water, nitrobenzene or nitromethane, polymerizable materials (e.g. monomers such as ethylene, ethylene oxide, isobutene or allyl chloride), halogen oxides, oxygen difluoride, phenyl azide, perchloryl benzene, perchloryl fluoride and benzene, sodium tetrahydroborate or strong bases, mixture of benzoyl chloride and naphthalene, mixture of aniline and ethyleneimine or mixture of sodium peroxide and aluminium, alkenes, alcohols, phenols, and combustible materials. Small amounts of  $AlCl_3$  can speed up many chemical reactions and it may react violently with certain chemicals, due to its catalytic activity and reactivity. This anhydrous form (containing no water) is especially hazardous.

#### Hazardous decomposition products

Hydrogen chloride and hydrochloric acid.

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## SECTION 11: Toxicological information

#### Information on toxicological effects

##### Acute toxicity

Acute Toxicity - Oral: LD50 (rat): > 3450 mg/kg. (RTECS)

Ingestion: Corrosive - causes burns. Ingested anhydrous aluminium chloride reacts with moisture in the mouth and throat to form corrosive hydrogen chloride. Ingestion of this product may cause irritation of mucous membranes in the mouth, pharynx, oesophagus, and gastrointestinal tract, burning sensation, sore throat, nausea, vomiting, abdominal pain, diarrhoea, damage to mucous membranes, chemical burns to the mouth, throat, gastrointestinal tract and stomach, shock or collapse. Ingestion is not a typical route of occupational exposure. The following applies to aluminium compounds in general: After swallowing, only slightly absorbed via the gastrointestinal tract. Serious disorders in man (from about 400 mg up) phosphate metabolism, calcium metabolism.

Inhalation: Corrosive - causes burns. Causes damage to the lungs, and to tissue of the mucous membranes. Aluminium chloride dust reacts with moisture in the respiratory tract and in room air to form hydrogen chloride gas and acid mists, which are corrosive and irritating to the nose and throat. Inhalation of dust will produce irritation to gastro-intestinal or respiratory tract, characterized by severe nasal irritation, burning, sore throat, sneezing, coughing, wheezing, laryngitis, dyspnoea, laboured breathing, headache, nausea, and vomiting. Inhalation may result in lesions of the nasal septum, spasm, inflammation and oedema of the larynx and bronchi, chemical pneumonitis, emphysema, and pulmonary oedema. Symptoms of pulmonary oedema, such as shortness of breath, can be delayed for several hours. Severe over-exposure can produce chemical burns to the respiratory tract, lung damage, fluid accumulation in the lungs, choking, unconsciousness or death.

##### Skin corrosion/irritation

## Safety Data Sheet

### ALUMINIUM CHLORIDE Anhydrous

SDS no. HLVNSS0Y • Version 1.0 • Date of issue: 2024-07-30

Acute Toxicity - Dermal: LD50 (rabbit): > 2000 mg/kg. (RTECS)

Corrosive - causes skin burns. The dust can probably cause moderate to severe irritation of moist skin, depending on the extent and duration of contact. Aluminium chloride reacts with the moisture in air and on the skin (eg. perspiration) releasing heat and forming corrosive hydrogen chloride. Skin contact will cause redness, itching, irritation, severe pain and chemical burns with resultant tissue destruction. Skin contact can produce inflammation and blistering. It has generally been considered that aluminium is very poorly absorbed through the skin. An animal toxicity value indicates that toxic effects would not be expected following short-term skin contact.

#### **Serious eye damage/irritation**

Corrosive - causes severe deep eye burns. Aluminium chloride reacts with moisture in the eyes, generating heat, and forming a hydrochloric acid solution which is corrosive and irritating. It may cause moderate to severe irritation or corrosive injury to the eye, depending on the extent and duration of exposure, based on limited human information. Eye contact will cause stinging, blurring, tearing, severe pain and possible permanent corneal damage, including blindness.

Serious eye damage/irritation: Eye Irritation Test, human: highly corrosive, risk of serious damage to eyes.

#### **Respiratory or skin sensitization**

Skin Sensitisation: Buehler Test, guinea pig (vehicle: water): not sensitizing;  
Guinea Pig Maximization Test, guinea pig (vehicle: petrolatum): not sensitizing;  
Guinea Pig Maximization Test, human: not sensitizing.

#### **Germ cell mutagenicity**

No data available.

#### **Carcinogenicity**

No data available.

#### **Reproductive toxicity**

No data available.

#### **Summary of evaluation of the CMR properties**

No data available.

#### **Specific target organ toxicity (STOT) - single exposure**

No data available.

#### **Specific target organ toxicity (STOT) - repeated exposure**

No data available.

#### **Aspiration hazard**

No data available.

#### **Additional information**

Chronic Effects: Effects may be delayed. Repeated or prolonged exposure may cause allergic skin reaction, conjunctivitis, dermatitis, erosion of the teeth or lung damage. May cause reproductive effects based on studies in laboratory animals. If aluminium salts are directly introduced into the blood stream for a prolonged period, neurological disorders resembling senility may develop. This has been observed in kidney dialysis patients (with dialysis fluids containing aluminium); in animals exposed to aluminium using non-occupational routes of exposure; in case reports of neurological effects in individual workers; and supported by findings of elevated aluminium levels in the brains of patients with neurological diseases. However, this type of effect is inadequately linked to occupational exposure. One reviewer has concluded that there is a likely connection between long-term occupational exposure to aluminium and a specific effect, impaired co-ordination, but not other toxic effects on the nervous system or Alzheimer's disease. Ingestion of large amounts of aluminium salts over a prolonged period may cause phosphate deficiency. There are no reports of these effects from occupational

## Safety Data Sheet

### ALUMINIUM CHLORIDE Anhydrous

SDS no. HLVNSS0Y • Version 1.0 • Date of issue: 2024-07-30

exposures to aluminium salts such as this material. Repeated or prolonged skin contact can result in irritation, corrosion and the development of dermatitis or scarring. Repeated or prolonged exposure may result in a numbing effect of the fingers.

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## SECTION 12: Ecological information

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## 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.

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## SECTION 14: Transport information

### ADG (Road and Rail)

UN Number: 1726

Class: 8

Packing Group: II

Proper Shipping Name: ALUMINIUM CHLORIDE, ANHYDROUS

Environmental Hazards: Toxic for aquatic organisms. Harmful effect due to pH shift. Forms corrosive mixtures with water even if diluted.

### Hazchem emergency action code (EAC)

4X

### IMDG

UN Number: 1726

Class: 8

Packing Group: II

EMS Number:

Proper Shipping Name: ALUMINIUM CHLORIDE, ANHYDROUS

### IATA

UN Number: 1726

Class: 8

Packing Group: II

Proper Shipping Name: ALUMINIUM CHLORIDE, ANHYDROUS

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## SECTION 15: Regulatory information

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

#### Australia SUSMP

Poison Schedule: NS

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## SECTION 16: Other information

### Further information/disclaimer



## Safety Data Sheet

### ALUMINIUM CHLORIDE Anhydrous

SDS no. HLVNSS0Y • Version 1.0 • Date of issue: 2024-07-30

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#### Preparation information

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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 for 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 Airborne Contaminants, December 2019

Safe Work Australia, Hazardous Chemical Information System (HCIS), [hcis.safeworkaustralia.gov.au](http://hcis.safeworkaustralia.gov.au)

IATA, Dangerous Goods Regulations (DGR)

IMO, International Maritime Dangerous Goods Code (IMDG)