



Infosafe No™	1CHBG	Issue Date : July 2019	RE-ISSUED by CHEMSUPP
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Product Name : **ALUMINIUM CHLORIDE Anhydrous**

Classified as hazardous

1. Identification

GHS Product Identifier ALUMINIUM CHLORIDE Anhydrous

Company Name CHEM-SUPPLY PTY LTD (ABN 19 008 264 211)

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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.

Other Names	Name	Product Code
	ALUMINIUM CHLORIDE Anhydrous LR Aluminum trichloride	AL058

Other Information

Chem-Supply Pty Ltd 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 Chem-Supply Pty Ltd 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 Chem-Supply Pty Ltd 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 Skin Corrosion/Irritation: Category 1

Signal Word (s) DANGER

Hazard Statement (s) H314 Causes severe skin burns and eye damage.

Pictogram (s) Corrosion



Precautionary statement – Prevention P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P264 Wash thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary statement – Response P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P363 Wash contaminated clothing before reuse.
P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P310 Immediately call a POISON CENTER or doctor/physician.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P405 Store locked up.

Precautionary statement – Storage



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

Other Information Potential for Accumulation: Aluminium is absorbed only to a limited degree from either the gastrointestinal tract or the lungs, and is rapidly excreted in the urine. A certain amount of tissue uptake does occur and animal experiments have shown that it can accumulate in bone. The degree of absorption of aluminium following ingestion has been shown to depend on the chemical form of the metal as well as the presence of other dietary constituents such as citrate, ascorbate and lactate. Water solubility has not been found to be a good indicator of the degree of aluminium absorption for different aluminium compounds.

3. Composition/information on ingredients

Chemical Characterization	Solid				
Ingredients	Name	CAS	Proportion	Hazard Symbol	Risk Phrase
	Aluminium chloride anhydrous	7446-70-0	100 %		

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. Immediately medical attention is required.

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 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.

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

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.

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

Unsuitable Extinguishing Media Water and foam.

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

Specific Methods When material is not involved in fire: Do not use water on material itself. Small fire: Use CO₂, dry chemical or dry sand.

Specific hazards arising from the chemical 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.

Hazchem Code 4W

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

6. Accidental release measures

Spills & Disposal 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.

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

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



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Clean-up Methods - Small Spillages - Sweep up (avoid generating dust) and remove to a suitable, clearly labelled container for disposal in accordance with local regulations.

Clean-up Methods - Large Spillages - Seek expert advice on handling and disposal.

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

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 - 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 'wet' 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.

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).

8. Exposure controls/personal protection

Other Exposure Information - These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity. A time weighted average (TWA) has been established for Aluminium, soluble salts (as Al) (Safe Work Australia) of 2 mg/m³. 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 - In industrial situations maintain the concentrations values below the TWA. This may be achieved by process modification, use of local exhaust ventilation, capturing substances at the source, or other methods. These methods should be used in preference to personal protective equipment.

Respiratory Protection - Where ventilation is not adequate, respiratory protection may be required. Avoid breathing dust, vapours or mists. Respiratory protection should comply with AS 1716 - Respiratory Protective Devices and be selected in accordance with AS 1715 - Selection, Use and Maintenance of Respiratory Protective Devices. Filter capacity and respirator type depends on exposure levels. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

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 - Wear gloves of impervious material conforming to AS/NZS 2161: Occupational protective gloves - Selection, use and maintenance. Final choice of appropriate glove type will vary according to individual circumstances. This can include methods of handling, and engineering controls as determined by appropriate risk assessments.

Personal Protective Equipment - Personal protective equipment should not solely be relied upon to control risk and should only be used when all other reasonably practicable control measures do not eliminate or sufficiently minimise risk. Guidance in selecting personal protective equipment can be obtained from Australian, Australian/New



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Footwear	Zealand or other approved standards. 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.
Hygiene Measures	Always wash hands before smoking, eating or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using. Remove metallic jewellery.

9. Physical and chemical properties

Form	Solid
Appearance	White or yellowish crystals or powder.
Odour	Strong, pungent odour of hydrogen chloride.
Melting Point	192.5 °C at 233 kPa (2.3 atm) (Triple point).
Boiling Point	180.2 °C at 101.33 kPa (760 mm Hg) (sublimes as the dimer, Al ₂ Cl ₆).
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.
Specific Gravity	2.44 at 25 ° (fused solid).
pH	Reacts violently with water. Resulting solutions are acidic.
Vapour Pressure	Extremely low at room temperature; 0.133 kPa (1 mm Hg) at 100.0 °C.
Vapour Density (Air=1)	4.5 (air = 1).
Coefficient Water/Oil Distr.	Not applicable. Reacts violently with water.
Flammability	Non combustible material - Water reactive.
Explosion 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.
Molecular Weight	266.68 (dimer); 133.34 (monomer).
Saturated Vapour Concentration	Very low at normal temperatures.
Other Information	Critical temperature: 620 K. Critical pressure: 2.63 MPa.

10. Stability and reactivity

Chemical Stability	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.
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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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.

Hazardous Polymerization Does not occur.

11. Toxicological Information**Acute Toxicity - Oral** LD50 (rat): > 3450 mg/kg. (RTECS)**Acute Toxicity - Dermal** LD50 (rabbit): > 2000 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 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.

Eye 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.

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.

Carcinogenicity Not listed in the IARC Monographs.

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



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

12. Ecological information

Ecotoxicity Harmful effect due to pH shift.

Persistence and degradability Methods for the determination of biodegradability are not applicable to inorganic substances.

Environmental Protection Do not allow to enter waters, waste water, or soil!

13. Disposal considerations

Disposal Considerations Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and disposed of according to relevant local, state and federal government regulations.

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 1726

UN proper shipping name ALUMINIUM CHLORIDE, ANHYDROUS

Transport hazard class(es) 8

Hazchem Code 4W

Packaging Method 3.8.8

Packing Group II

EPG Number 8A2

IERG Number 40

15. Regulatory information

Regulatory Information Listed in the Australian Inventory of Chemical Substances (AICS). Not listed under WHS Regulation 2011, Schedule 10 - Prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals.

Poisons Schedule Not Scheduled

16. Other Information

Literature References 'Standard for the Uniform Scheduling of Medicines and Poisons.', Commonwealth of Australia. 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 Chemical 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 Person/Point Paul McCarthy Ph. (08) 8440 2000 **DISCLAIMER STATEMENT:**
All information provided in this data sheet or by our technical representatives is compiled from the best knowledge available to us. However, since data, safety standards and government regulations are subject to change and the conditions of handling and use, or misuse, are beyond our control, we make



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Safety Data Sheet

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Empirical Formula & Structural Formula Empirical formula: Al_2Cl_6 (dimer); $AlCl_3$ (monomer).

...End Of MSDS...

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