



# SAFETY DATA SHEET

## ALUMINIUM CHLOROHYDRATE

SDS 002/R5  
2017-01-01

Reg. No.2003/017152/07

**Safety Data Sheet (SDS)** According to ISO/SANS 11014:2009/2010, UN Transport of Dangerous Goods, UN Globally Harmonised System of Classification & Labelling and EC Directive 1272/2008

**Aluminium Chlorohydrate Solution has been approved by NSF/ ANSI Standard 60 for treatment of potable water up to the maximum rates specified by the NSF.**

### SECTION 1. Identification – Chemical Product and Company

Trade Name	:	U3000, ACH
Chemical Name/ Proper Shipping Name	:	Corrosive liquid, acidic, inorganic, N.O.S.
UN Number	:	3264
CAS Number	:	12042-91-0
GHS product identifier	:	Dialuminium chloride pentahydroxide
Chemical Name	:	Polynuclear inorganic salt, Cationic flocculants
Chemical Formula	:	Mixture $Al_2(OH)_xCl_{6-x}$ with $0 < x < 6$
Other means of identification	:	Clear to slightly hazy colourless liquid.
Recommended use of the chemical	:	Water treatment flocculant for various formulations, paper chemicals, coatings, dyes and textile treatment and cleaning products
Restrictions on use	:	Use only as directed & recommended dosage, not for use by untrained persons
Supplier's details	:	NCP Chlorchem (Pty) Ltd
Address	:	Cnr. Allandale Road and Chloor Road Chloorkop, Gauteng South Africa:
Telephone Number	:	+27 (0) 11 921 3111
24hour Emergency Phone Number	:	+27 (0) 11 976 2115

### SECTION 2. Hazards Identification

**GHS classification of the substance:** corrosive liquid, irritating to skin and eyes, and harmful to aquatic life

Transport – Class 8 Corrosive GHS C & L Notified Hazard Classes and Categories	GHS Hazard Statement
Skin Corrosion/Irritation Category 2	H315 Causes skin irritation
Eye Damage Category 1	H 318 Causes serious eye damage
Eye Irritation Category 2	H319 Causes serious eye irritation
STOT SE Respiratory Tract Category 3	H335 May cause respiratory irritation

**The most important adverse effects to know in emergency are –**  
**Corrosive is a severe aquatic pollutant.**

**GHS label elements, including precautionary Statements:**



GHS 05 Corrosive – metals & serious eye damage

GHS 07 exclamation mark - skin irritant & respiratory irritation

**Signal word:** Danger

**Hazard Statements** - Skin and eye irritation health hazard - causes skin and serious eye damage or irritation; May cause respiratory irritation

**Precautionary statements:**

P280 Wear protective gloves

P264 Wash hands thoroughly after handling

P270 do not eat, drink or smoke when using /handling this product

P302 + P352 if on skin wash off with plenty of water

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P332 + P313 if skin irritation continues, get medical attention  
P280 wear eye / face protection  
P305 + P351 + P338 if in eyes rinse cautiously with water for several minutes, remove contact lenses if safe and easy to do, continue rinsing and get medical attention  
P261 + P271 avoid breathing mist, wear eye & face protection and use in well ventilated area  
P304 & P340 if mist inhaled and breathing difficulty – remove person to fresh air and get medical attention  
P301 if swallowed and feel unwell, get medical attention

### Response:

Refer Sections 5, 6 and 8

### Storage:

Refer Section 7

**Special Labelling requirements** – refer Section 14 for transport labels

## SECTION 3. Composition/information on ingredients

Chemical identity	:	Mixture
Other means of identity	:	Clear to slightly hazy colourless liquid
Common name, synonyms, etc	:	Aluminium hydroxychloride, Poly Aluminium chloride
Hazardous components	:	Aluminium chlorohydrate
IUPAC Name	:	Aluminium chloride hydroxide
CAS number	:	12042-91-0
EC number	:	234-933-1
Impurities and stabilizing additives	:	none

Ingredient name	UN Number	CAS number	%	Classification EC1272/2008
Dialuminium chloride pentahydroxide	3264	12042-91-0 (ACH)		234-933-1
Aluminum Ingots			13	
Hydrochloric Acid			26	

**Main hazards** Corrosive to the eyes and skin.

**Health effects – inhalation** Not expected - mist may irritate respiratory tract.

**Health effects – eyes** Irritating, may cause burns, inflammation of conjunctiva.

**Health effects – skin** Prolonged exposure may cause skin irritation, swelling, dermatitis

### Health effects – ingestion

May cause nausea and vomiting.

Small quantities - nausea, vomiting and diarrhea.

Large quantities - ulceration and necrosis of the mucous membranes in the mouth and throat.

Possible liver and kidney damage.

**Carcinogenicity** No information available.

### Teratogenicity

"very toxic"; fetotoxic and embryotoxic effects were observed in animals, in the absence of maternal toxicity.

**Mutagenicity** Does not meet criteria; negative results obtained in animals following oral exposure.

## Section 4. First Aid Measures

### Product in eye



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Immediately flush the contaminated eye(s) with gently flowing water for 20-30 minutes, by the clock, while holding the eyelid(s) open. Neutral saline solution may be used as soon as it is available. If irritation persists transport victim to an emergency care facility.

### Product on skin

Remove contaminated clothing and wash skin with plenty of running water for at least 20-30 minutes. If irritation persists transport victim to an emergency care facility. Wash contaminated clothing before re-use. Discard shoes and leather goods if these cannot be decontaminated by washing with water.

### Product ingested

Never give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Have victim rinse mouth thoroughly with water. Do not induce vomiting. Have victim drink 240 to 300 ml of water. If milk is available, it may be administered after the water has been given. If vomiting occurs naturally, rinse mouth and repeat administration of water. Quickly transport victim to an emergency care facility

### Product inhaled

Remove victim to fresh air. If breathing is difficult, oxygen may be beneficial if administered by trained personnel, preferably on a doctor's advice. Immediately transport victim to an emergency care facility

## Section 5. Fire Fighting Measures – product is not flammable

### NFPA (704) hazard rating

**Fire 0** material that will not burn

**Health 2** material which on exposure would cause irritation, discomfort, rash, skin burns or ulceration.

**Reactivity 0** material which in themselves are normally stable even under fire exposure conditions  
and not reactive with water

**Fire hazard summary** - Aluminium chlorohydrate solutions will not burn or support combustion.

Heating concentrated solutions may produce corrosive hydrogen chloride gas and hydrochloric acid, requiring responders to wear appropriate protective equipment.

Well-sealed containers may rupture violently when exposed to fire or excessive heat for sufficient time.

**Extinguishing media** - Aluminium chlorohydrate solutions will not burn or support combustion.

Use extinguishing media appropriate for the surrounding fire.

**Fire fighting instructions** - If involved in a fire - evacuate the area and fight fire from a safe distance.

Approach the fire from upwind to avoid hazardous vapours and toxic decomposition products.

If possible, isolate materials not yet involved in the fire, and move containers from the fire area if this can be done without risk, and protect personnel.

**Special precautions** - Fire-exposed containers or tanks should be cooled by application of water spray NB closed containers may rupture violently when exposed to the heat of the fire, so apply water from the side and from a safe distance to keep containers cool until well after the fire is out. Take care not to get water inside container.

**Protective clothing** - The decomposition products of aluminium chlorohydrate can be highly acidic and corrosive. Chemical resistant clothing (e.g. Chemical splash suit) and positive pressure self-contained breathing apparatus (MSA/NIOSH approved) must be used.

**NB: Prompt actions can disperse small fires but *Large fires involving chemicals* require professional Emergency Response teams.**

## Section 6. Accidental Release Measures

**Personal precautions** - Spills of this product can be very slippery. Wear personal protection.

**Environmental precautions** - Do not dispose large volumes of any chemical into watercourses or sewers.



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### Clean-up methods

**Small spills:** wear protective clothing, neutralize with soda ash to pH between 6 and 9, then scoop up as much as possible. Wash and scrub area with plenty of water to remove any residue.

**Large spills:** stop / isolate source of leaks and prevent entry to waterways, sewers and buildings where possible. Seal off area and contain material by diking with soil or other inert material. Recover as much as possible and then apply an inert material such as sawdust to absorb the remainder. Collect in suitable containers and then wash and scrub away the residue.

**GHS Disposal Precautionary Statement - P501** dispose of product and containers in accordance with SA National and / or regional Regulations refer National Environmental Management Waste Act - NEM: WA, it's Regulations and local by-laws. This informs permitted Waste Facilities and Service providers see the South African Waste Information Centre [sawic.environment.gov.za](http://sawic.environment.gov.za)

## SECTION 7. Handling and Storage

**Precautions for safe handling – wear appropriate personal protective equipment – see Section 8.**

Eating, drinking and smoking shall be prohibited in areas where chemicals are handled, stored or processed. Workers must wash hands before eating, drinking or smoking to remove any chemicals that could be ingested or inhaled.

Remove contaminated clothing and protective equipment before entering eating areas

### Storage requirements

Store in cool place out of direct sun in rubber lined, plastic or FRP Containers and avoid sources of potential contamination. Avoid temperature extremes - above 40 °C and do not allow product to freeze.

**Handling precautions:** Keep drums tightly closed when not in use. Avoid contact with skin, eyes or clothing, and metals as corrosion may occur. Avoid breathing mist. Handle as a corrosive liquid, wear rubber gloves if likely to come into skin contact.

### Conditions for Safe Storage - refer

**SANS 10263:** The Warehousing of dangerous goods, and

**10263 - Part 8** The storage and handling of corrosive substances, for more specific information and relevant regulations and recognised practices for storage, warehousing and handling.

**GHS Precautionary Statement P 406** store in corrosion resistant containers

### Suitable materials

PVC – Poly Vinyl Chloride, HDPE – High Density Polyethylene, PP – Polypropylene, SS – Stainless Steel, PTFE - Polytetrafluoroethylene, and most rubbers.

### Unsuitable materials

Mild steel, iron, copper, aluminium and alloys.

## SECTION 8. Exposure Controls/Personal Protection

**Control parameters e.g. occupational exposure limit values or biological limit values**

Ingredient name	%	Exposure limits – OHS Act South Africa 1993
Dialuminium chloride pentahydroxide	100	No data available

### ACGIH

TLV is 2 mg/m<sup>3</sup> for soluble salts of aluminium.

ACGIH TLV and OSHA PEL are 5 ppm ceiling for hydrogen chloride.

Aluminium chloride hydrolyses to hydrogen chloride

**Engineering Control Measures:** Local ventilation should be used if mists are produced.

**Personal protection – respiratory:** Atmospheric levels should be maintained below the exposure guideline. If respiratory protection is required for certain operations, use a NIOSH/MSHA approved air-purifying



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respirator with an acid gas/mist cartridge, and if exposure to vapour or mist is likely to cause eye discomfort, use a full-face respirator.

**Personal protection – ingestion:** Restrict access to unauthorized persons.  
Do not eat, drink or smoke in work areas and wash hands after contact.

**Personal protection – hand:** Avoid contact with this chemical. Wear neoprene or rubber protective gloves.

**Personal protection – eye:** Wear Safety glasses with side shields or face shield.

**Personal protection – skin:** Rubber gloves, boots, apron and acid resistant trousers and jacket. Remove contaminated clothing promptly. Discard or launder before re-use.

**Other protection:** A safety shower and eye wash facility should be nearby and ready for use.

### SECTION 9. Physical and Chemical Properties

Appearance	Clear to slightly hazy colourless liquid.
Odour	Mild
pH	3.5 - 4.5
Boiling point/range	> 110°C
Flash point	Not flammable
Flammability	Not applicable
Explosive properties	Not applicable
Oxidising properties	None
Vapour pressure	Not volatile under STP (Standard Temperature and Pressure)
Specific gravity	1.3 - 1.4
Viscosity	40 - 100 cps
% Aluminium content	23-24% expressed in $Al_2O_3$
% Volatile by volume	~50
Solubility - water	Complete

### SECTION 10. Stability and Reactivity

**Chemical Stability:** Stable under normal conditions of storage and handling

**Reactivity:** Avoid excessive heat, alkalis, metals and oxidising agents.

**Conditions to avoid:** do not mix with chemicals other than those recommended.

**Incompatible materials:** Strong oxidizing agents and alkalis + corrosive to iron, copper and aluminium.

**Polymerization:** Hazardous polymerization does not occur

**Hazardous decomposition products:** Thermal decomposition may liberate hydrogen gas and hydrogen chloride gas.

### SECTION 11. Toxicological Information

Acute toxicity				
	Result	Species	Dose	Caution
Oral	LD50 13g/kg	Rat		
Dermal	No available data			
Inhalation	No available data			

#### GHS – EU Group Classification, and C & L Inventory

**Skin Corrosion/Irritation:** Category 2, H315 Causes skin irritation, prolonged contact may cause dermatitis.

**Eye damage:** Category 1, H 318 Causes serious eye damage

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**Eye Irritation:** Category 2A, H319 Causes serious eye irritation

**Respiratory or skin Sensitization:** Not Classified

**Germ Cell Mutagenicity:** No data available. Not Classified

**Carcinogenicity:** Insufficient information available Not Classified

**Reproductive Toxicity:** No data currently recorded on the ECHA REACH or C & L Inventory.

**STOT – Specific Target Organ Toxicity SE & RE:** Category 3, H335 May cause respiratory irritation over prolonged exposure

**Aspiration Hazard:** Not Classified but inhalation of mist may irritate the respiratory tract

## SECTION 12. Ecological Information

**GHS – EU Group Classification, and C & L Inventory:**

**Hazardous to the Aquatic Environment**

**Acute (short term) –** No Classification registered or notified on ECHA database. NB information on past tests on Rainbow Trout gave 96 Hour LC50: 405 mg/l i.e. greater than the 100mg/l cut-off for Category 3, and Daphnia magna: 48 Hour LC50: 233.2 mg/l which is also greater than the Category 3 cut-off

**Chronic (long term) –** No Classification currently registered or notified on ECHA database

**Hazardous to the Ozone layer:** No evidence - not Classified

**Biodegradability** No data available

**Bio-accumulation** No data available

**Mobility** No data available

## SECTION 13. Disposal Considerations

### Disposal methods




Disposal must be made in accordance with the applicable National and Regional Government regulations at approved and permitted chemical disposal sites – refer to the SA National Environmental Management Waste Act - NEM: WA, it's Regulations and local by-laws. This informs permitted Waste Facilities and Service providers see the South African Waste Information Centre [sawic.environment.gov.za](http://sawic.environment.gov.za)

### Disposal of packaging

Packagings and containers, even those that have been emptied, will retain product residue and vapours, handle empty containers as if they were full. Remove all possible traces of product and wash prior to disposal of packaging and containers. Dispose in compliance with Regulations – see above and Industry Best Practice

**Always** observe and comply with hazard warnings.

## SECTION 14. Transport information

	SANS 10228:2012	IMDG	IATA
UN Number	UN 3264	UN 3264	UN 3264
UN proper shipping name – PSN	Corrosive liquid, acidic, inorganic, N.O.S.	Corrosive liquid, acidic, inorganic, N.O.S.	Corrosive liquid, acidic, inorganic, N.O.S.
Transport Class 8 and hazard - Corrosive			
Packing group	III	III	III
Environmental hazards	No		N/A
Additional information			
Emergency Response Guide - ERG 2016	Refer Guide 154 for Corrosive liquid info on Emergency Response	Refer IMDG 37-14 2014 Supplement and MARPOL	Refer ICAO & IATA 2015

## SECTION 15. Regulatory information

**NSF/ AINSI 60 Standard for Drinking Water Treatment Chemicals**



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**OHS Act - Occupational Health and Safety Act 85 of 1993:** requires site Risk Assessment and monitoring to inform personnel Health / Biological Monitoring. **Section 9A** requirement to provide MSDS

**MHI – Major Hazards Installations Regulations - OHS Act:** require site Risk Assessment to ascertain potential impacts outside of the site and potential impacts on the public or neighbours. Copy to be lodged with the Dept Labour, and local Emergency Services.

**Pressure Equipment Regulations - OHS Act:** encompasses containers and service equipment

**NEMA – National Environmental Management Act 107 of 1998:** Duty of Care and Producer Responsibility for products and packaging on a Life Cycle basis. Environmental Impact Assessment Regulations for new installations or proposed increase in capacity over 25%

**NEM: WA – National Environmental Waste Act 59 of 2008:** Extended Producer Responsibility, requirements and regulations for waste management, classification and disposal

**NEM: AQA – National Environmental Air Quality Act 39 of 2004:** AQA Licenses and Emissions

**National Department of Health – Hazardous Substances Act**

**EU Directive EC 1272/2008 (EU GHS /CLP) – Safety Data Sheets and Labelling**

**ERG 2016 Transport Canada and US Dept Transportation PHMSA - Pipeline and Hazardous Materials Safety Administration**

## SECTION 16. Other information

**ECHA – European Chemical Agency Website, Chemical information, C&L Inventory, Chemicals of Very High Concern (SVHCs) and Chemicals for Community Rolling Action Plan (CoRAP)**

**ERG 2016 Transport Canada and US Dept Transportation PHMSA - Pipeline and Hazardous Materials Safety Administration**

**Other relevant information including information on preparation and revision of the SDS –**

**ISO 11014:2009 Safety Data Sheets for Chemical Products –** content and order of sections adopted as SANS 11014:2010

**UN Recommendations for Transport of Dangerous Goods Model Regulations** commonly known as the **TDG “Orange Books”** 18<sup>th</sup> revision 2013 currently in effect, 19<sup>th</sup> revision published June 2015

**UN Globally Harmonized System of Classification and Labelling of Chemicals – GHS** commonly known as the **GHS “Purple Book”** 5<sup>th</sup> revision 2013 in effect, 6<sup>th</sup> revision published July 2015

**IMDG – International Maritime Dangerous Goods Code**, 2014 edition, amendment 37-14

**IATA Technical Regulations** 56<sup>th</sup> edition, January 2015

Date of original MSDS : 2003-08-14

Compiled by DD Liebenberg

Date of issue previous MSDS : 2012-02-23

Compiled by HH Maringa

Date of Revision 5 : 2016-11-16

Compiled by EU Anderson

Approved as per Management of Change No. 7-12-2016-225

## EXCLUSION OF LIABILITY

All information and instructions provided in this Safety Data Sheet (SDS) in respect of the substance is given in terms of the provisions of the Occupational Health and Safety Act No 85 of 1993 and its



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Regulations. Information is based on best available scientific and technical knowledge as at the date indicated on this SDS, and is presented in good faith to be correct.

The information provided in this SDS apply only to the product in its present form and not to any formulation or mix. It should be used only as directed, and any formulations or other use is at the responsibility of the user of the product as formulated and/or mixed to investigate and establish any hazards or risks which may arise out of its use, wherever such user may be situated.

It is the legal responsibility of the person in receipt of this SDS, wherever such may be situated, to ensure that the information provided is communicated to, and understood by any person who may come in contact with the product in any place and in any manner whatsoever. If such recipient produces formulations or mixes using the product, then it is the recipient's sole responsibility to comply with the provisions of the Act in respect of the provision of the necessary SDS, and/or to comply with any other applicable legislation.