SAFETY DATA SHEET

ALUMINIUM CHLOROHYDRATE

SDS 002 /R6
2021-06-20

Reg. No. 2003/017152/07

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

Aluminium Chlorohydrate Solution has been approved by NSF/ AINSI 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 penta-hydroxide
Chemical Group	:	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, viscous 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 at recommended dosage, not for use by untrained persons.
Supplier's details	:	NCP Chlorchem (Pty) Ltd, a Bud Group company
Address	:	Cnr. Allandale Road and Chloor Road Chloorkop, Gauteng South Africa
Telephone Number	:	+27 (0) 11 976 2115
24hour Emergency Phone Number	:	+27 (0) 11 921 3333

SECTION 2. Hazards Identification

GHS classification of the substance: corrosive liquid, irritating to skin and eyes

Transport – Class 8 Corrosive GHS C & L Notified Hazard Classes and Categories	**GHS Hazard Statement**
Corrosive to Metals Category 1	H290 May be corrosive to metals
Skin Corrosion/Irritation Category 2	H315 Causes skin irritation
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: causes eye and skin irritation, may cause respiratory irritation and harmful to aquatic life.

GHS label elements, including Precautionary Statements:

Signal word: Danger

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Hazard Statements - Skin and eye irritation hazard - causes skin and serious eye 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,
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	:	Inorganic substance
Other means of identity	:	Clear to slightly hazy colourless viscous 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	%	EC List no. 1272/2008
Dialuminium chloride pentahydroxide	3264	12042-91-0 (ACH)	40% Solution	234-933-1

This substance is registered with the ECHA for REACH and approved as a biocide under CLP.

Section 4. First Aid Measures

Product in eye
Immediately flush the contaminated eye(s) with gently flowing water for 20-30 minutes, while holding the eyelid(s) open. Neutral saline solution may be used as soon as it is available. If irritation persists get medical help

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, get a doctor / medical advice. If persists transport victim to an emergency care facility.

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

Fire hazard summary - Aluminium chlorohyrate solutions do 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.
Keep containers cool with water while extinguishing surrounding fire.
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 to 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.

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

SECTION 7. Handling and Storage

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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 to:

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 – South Africa HCA Regulations 2021
Dialuminium chloride pentahydroxide	100	Not listed

ACGIH - TLV is 2 mg/m^3 for soluble salts of aluminium.
Aluminium chloride hydrolyses to corrosive hydrogen chloride.
ACGIH TLV and OSHA PEL are 5 ppm ceiling for 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 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 located near to work area, ready for use in emergency.

SECTION 9. Physical and Chemical Properties

Appearance	Clear to slightly hazy colourless liquid
Odour	Slightly acidic
pH	3.5 - 4.5
Boiling point/range	> 110°C
Melting point	No information available
Flash point	Not flammable
Flammability	Not flammable
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	Not volatile
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

Main hazards Corrosive to the eyes and skin.

GHS – HCA Regulations, EU REACH and C & L Inventory

Acute toxicity	Result	Species		Caution – low hazard
Oral	LD_{50} 9 187mg/kg	Rat		Cat 5 – not adopted in SA
Dermal	2 000 mg/ kg	Rat		Cat 5 – not adopted in SA
Inhalation	No available data & not volatile			Mist may cause irritation

Skin Corrosion/Irritation: Category 5, H313 May cause skin irritation, prolonged contact may cause dermatitis.

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

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

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Respiratory or Skin Sensitization: Not Classified

Germ Cell Mutagenicity: No data available.

Carcinogenicity: Insufficient information available Not Classified

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

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

STOT – Specific Target Organ Toxicity SE & RE: Category 3, H335 May cause respiratory irritation over prolonged exposure.
Aspiration Hazard: Not Classified

SECTION 12. Ecological GHS

GHS - HCA EU REACH 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.

Biodegradability	No data available
Bio-accumulation	Low potential for bioaccumulation.
Mobility	No data available
Hazardous to the Ozone layer:	No evidence - not Classified.

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
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

	UN TDG / SANS	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.

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Transport Class 8 and hazard - Corrosive			
Packing group	III	III	III
Environmental hazards	No	No	N/A
Additional information	Use UN Certified packaging	Use UN certified Packaging	Use UN Certified packaging
Emergency Response Guide - ERG 2020	Refer Guide 154 for Corrosive liquid info - Emergency Response	Refer IMDG 40-20 2020 and Supplement	Refer ICAO & IATA 62nd edition January 2021

SECTION 15. Regulatory information

NSF/ AINSI 60 Standard for Drinking Water Treatment Chemicals
OHS Act - Occupational Health and Safety Act 85 of 1993:
HCA Regulations – R14 requires: GHS Classification, GHS compliant SDS & Labels + site Risk Assessment and monitoring to inform personnel Health / Biological Monitoring,
GHS Compliant SDS to be made available to all who handle, store, use and transport this product.

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 2020 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 2020 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 – adopted as SANS 11014:2010.
UN Recommendations for Transport of Dangerous Goods Model Regulations commonly known as the **TDG "Orange Books"** 21st revision 2019 published June 2019.
UN Globally Harmonized System of Classification and Labelling of Chemicals – GHS commonly known as **the GHS "Purple Book" 8th** revision 2019.
IMDG – International Maritime Dangerous Goods Code, 2020 edition, amendment 40 - 20
IATA Technical Regulations 62nd edition, January 2021

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Training - Persons handling and working with this product should be Trained in the hazards and safe handling as required in the Chapter 1.3 of the UN Model Regulations for Transport of Dangerous Goods.

Date of original MSDS	**: 2003-08-14**	**Compiled by DD Liebenberg**
Date of issue previous SDS	**: 2016-08-12**	**Compiled by E Anderson**
Date of Revision	**: 2021-06-20**	**Compiled by E Anderson**

Approved as per Management of Change No. 18-8-2021-226

EXCLUSION OF LIABILITY

All information and instructions provided in this Safety Data Sheet in respect of the substance is given in terms of the provisions of the South African Occupational Health and Safety Act No 85 of 1993 and the Hazardous Chemical Agents Regulations of 2021.
Information is based on best available scientific and technical knowledge as at the date of revision 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 mixtures. The product 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 into 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, and/or to comply with any other applicable legislation.