KYNOCH FERTILIZER

SAFETY DATA SHEET

Unika Calcium

Date Issued / Revised Date	:	*25 September 2022*
New version	:	*3.0*
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Replaced version	:	*2.0*

Prepared according to: United Nations GHS (Rev 9E) (2021) and SANS 10234:2019
(This Safety Data Sheet conforms to the requirements set by the Department of Agriculture, Land reform and Rural development of the Republic of South Africa on the 29 March 2022)

SECTION 1: IDENTIFICATION

1.1 GHS[1] product identification

Product Name : **Unika Calcium**

[1] GHS - Globally Harmonized System of Classification and Labelling of Chemicals

1.2 Other means of identification

Description	:	**NPK Blend: with Calcium nitrate, Potassium nitrate and Boron.**
Chemical name	:	**Mixture – N/A**
CAS Number [2]	:	**Mixture – N/A**
EC Number [3]	:	**Mixture – N/A**

[2] "CAS Number" - CAS Number is a numerical designation for chemicals that is maintained by the Chemical Abstracts Service (CAS) of the American Chemical Society.
[3] "EC Number" - The European Community number (EC number) is a unique identifier that was assigned to substances for regulatory purposes within the European Union by the European Commission.

1.3 Recommended use of materials and restrictions on use

Recommended use of material	:	**Intended to be used as a fertilizer and in fertilizer blends**
Description	:	**Source of plant nutrients**
Restrictions on use	:	**None Identified**

1.4 Supplier's details

Supplier's details : **1st Floor, ETG House**
62 Wierda Road East
Sandton
2196
Tel no: (011) 317-2000

1.5 Emergency phone number

Emergency phone number : **Dial Triple Zero (000) and ask for fire**
: **Ambulance or the Fire department – 10177**
: **Spilltech - 086 100 0366**

SECTION 2: HAZARD IDENTIFICATION

2.1 Classification of substance or mixture

Product Defined : **Mixture**

Summarized Classification

Types of Hazards		Hazard Class	Category/subcategory	H-Statement
Physical Hazards	:	No Classification		
Health Hazards	:	Acute Toxicity, oral	Category 4	H302
		Serious eye damage/eye irritation	Category 1	H318
		Reproductive toxicity	Category 1	H360
Environmental Hazards	:	No Classification		

Classification according to the United Nations GHS (Rev 9E) (2021) and SANS 10234:2019

[1] *"Not Classified" – Data conclusive but not at sufficient levels for classification.*
[2] *"H-Statement" – Hazard Statement. Full decryption in Section16*

Substance	CAS Number	Classification
Calcium Nitrate Decahydrate	15245-12-2	Acute Tox. 4, Eye Damage 1
Potassium Nitrate	7757-79-1	Ox. Sol. 3
Boronate (represented by Boric Acid)	10043-35-3	Rep. Tox 1

Reference: (European Chemical Agency [ECHA], n.d.) & (Environmental protection agency [EPA]. New Zealand Government, n.d.) & (The Australian Industrial Chemicals Introduction Scheme [AICIS], n.d.) & (International Labour organization [ILO], n.d.) & (ChemSafetypPro, n.d.)

2.2 GHS Label elements, including precautionary statements

Pictogram :

Pictogram Name : **Corrosion, Exclamation, Health hazard**

Signal Word : **Danger**

Hazard Statements : **H302 - Harmful if swallowed**

Precautionary Statements : **H318 - Causes serious eye damage**

H360FD - May damage fertility; May damage the unborn child

P203 - Obtain, read and follow all safety instructions before use.

P264 - Wash hands [and …] thoroughly after handling.

P265 - Do not touch eyes.

P270 - Do not eat, drink or smoke when using this product.

P280 - Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...

Reference: (ECHA, n.d.) & (Pubchem, GHS, n.d.)

2.3 Other hazards that do not result in classification

Composition	:	**N/A**
Hazards	:	**N/A**

Reference: (European Chemical Agency [ECHA], n.d.) & (Pubchem, search, n.d.)

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substance

Substance	:	**Not Applicable**

3.2 Mixture

Components	:	**KNO3, CaNO3 , Boron**

Substance 1

Common name	:	**Potassium Nitrate**
EC Name	:	**Potassium Nitrate**
Chemical Formula	:	**KNO_3 , HNO3.K**
Molecular Weight	:	**101.103 g/mol**
Nutrient Content	:	**13% Total Nitrogen (N), 13% Nitric Nitrogen (NO_3), 38% Potassium (K)**
CAS Number	:	**7757-79-1**
EC Number	:	**231-818-8**
Common name	:	**Potassium Nitrate**

Substance 2

Common name	:	**Calcium Nitrate**
EC Name	:	**Nitric acid, ammonium calcium salt**
Chemical Formula	:	**$5Ca(NO_3)2NH_4NO_3.10H_2O$**
Molecular Weight	:	**1080.71 g/mol**
Nutrient Content	:	**15.5% Total Nitrogen (N), 14,4% Nitric Nitrogen (NO_3), 1,1% Ammoniacal Nitrogen (NH_4), 18.5-19% Calcium (Ca)**
CAS Number	:	**15245-12-2**
EC Number	:	**239-289-5**
Impurities and stabilizers	:	**Not Available**[1]

Substance 3

Common name	:	**Boronate (Represented by Boric Acid)**
EC Name	:	**Boric Acid**
Chemical Formula	:	**H_3BO_3**
Molecular Weight	:	**61,83 g/mol**
Nutrient Content	:	**17%B**

CAS Number	:	**10043-35-3**
EC Number	:	**233-139-2**

Reference: (European Chemical Agency [ECHA], n.d.) & (Pubcem, Search, n.d.)

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General information	:	**Prevent dispersion of dust.**
After inhalation	:	**If inhaled, remove to fresh air. Obtain medical attention if symptoms occur.**
After skin contact	:	**Remove affected clothing. Immediately rinse with water (can use mild soap). If skin irritation continues, consult a doctor.**
After eye contact	:	**Rinse opened eye for several minutes under running water (remove contact lenses if easily possible). Obtain medical attention if symptoms occur.**
After swallowing	:	**Rinse out mouth. Make victim drink water (maximum of 2 drinking glasses). Do NOT induce vomiting. If symptoms persist consult doctor.**

Reference: (European Chemical Agency [ECHA], n.d.)

4.2 Most important symptoms and effects, both acute and delayed

Effects	:	**The substance is irritating to the eyes, skin and respiratory tract. The substance may cause effects on the blood. This may result in the formation of methaemoglobin. The effects may be delayed.**		
Symptoms	:	**Inhalation**	-	**Adverse symptoms may include the following: coughing wheezing and breathing difficulties.**
	:	**Ingestion**	-	**Adverse symptoms may include the following: stomach pains, nausea or vomiting, diarrhoea**
	:	**Skin contact**	-	**Adverse symptoms may include the following: redness, dryness.**
	:	**Eye contact**	-	**Adverse symptoms may include the following: pain, watering, redness**

Reference: (International Labour organization [ILO]. (n.d.)

4.3 Indication of any immediate medical attention and special treatment needed

No further relevant information available

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Suitable extinguishing medium

Suitable extinguishing agents	:	**Water - Use flooding quantities of water for extinction.**

Inappropriate extinguishing media	:	**Do NOT use chemical extinguisher or foam or attempt to smother the fire with steam or sand.** • **Sand** • **Foam** • **Carbon dioxide (CO2)** • **Dry chemical** **Do not use a heavy water stream.**
Notes	:	**Use fire extinguishing methods suitable to surrounding conditions.**

5.2 Specific hazards arise from chemical

Warning	:	**Not combustible but enhances combustion of other substances. Gives off irritating or toxic fumes (or gases) in a fire. Risk of fire and explosion on confinement and exposure to high temperatures or when contaminated with other materials.** **Toxic fumes may be formed in fire.**
Hazardous Combustion Products	:	**Nitrous gases (NOx) oxides of nitrogen, ammonia, Sulphur oxides**
Fire hazard	:	**Non-flammable substance**
Explosion hazard	:	**Not applicable**
Reactivity	:	**None**

5.3 Special protective action for Fire-Fighters

Special protective actions for fire-fighters	:	**Fire fighters should use water to keep fire exposed containers cool and disperse vapour.**
	:	**Move container from fire area if it can be done without risk.**
	:	**Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire.**
Special protective equipment for fire-fighters	:	**Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.**
	:	**Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.**

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Percussions	:	**No action shall be taken involving any personal risk or without suitable training.**
Equipment	:	**Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.**
Procedure	:	**Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Provide adequate ventilation.**

[1] *PPE – Personal precautions, protective equipment.*

6.2 Environmental precautions

Environmental	:	**Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.**
	:	**Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).**
	:	**Discharge into the environment must be avoided.**

6.3 Methods and material for containment and cleaning up

Small Spill	:	**Vacuum or sweep up material and place in a designated, labelled waste container. Clean up affected area with a large amount of water. Do not collect spilled material in sawdust or other combustible material.**
Large Spill	:	**Move containers from spill area. Vacuum or sweep up material and place in a designated, labelled waste container. Recycle, if possible. Clean up affected area with a large amount of water. If spilled substance enters a watercourse, inform the local authority. Do not collect spilled material in sawdust or other combustible material.**

6.4 Reference to other sections

Section 7	:	**Information on safe handling.**
Section 8	:	**Information on personal protection equipment.**
Section 13	:	**For disposal information.**

Reference: (ECHA, n.d.)

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Handling	:	**Ensure adequate ventilation. Avoid ingestion and inhalation. Avoid dust formation. Wear protective gloves/eye protection/face protection/. Do not get in eyes, on skin, or on clothing. Wash hands thoroughly after handling.**
	:	**Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs. Provide appropriate exhaust ventilation at places where dust is formed.**
	:	**For precautions see section 2.2.**

7.2 Conditions for safe storage, including any incompatibilities

Storerooms and receptacles	:	**Store in a dry place. Hygroscopic solid.**
One common storage facility	:	**Keep away from heat and precaution to avoid mixing with combustible materials, reducing agents and metals.** **Segregate from alkalies and alkalizing substances. Segregate from nitrites and alkaline substances.**
	:	**Incompatible products:** **Separate from reducing agents and combustible materials. Keep away from acids or bases.** **Strong bases. Strong oxidizers.**

	:	**Incompatible materials:** **Sources of ignition. Direct sunlight.** **On farm keep away from hay, grain, diesel, etc.**
Handling of product	:	**Keep container tightly closed.**
Room conditions	:	**Keep in a dry, well-ventilated place. Recommended storage temperature at < 30°C. (Room temperature). DO NOT expose the substance to temperatures above 50 ˚C.**
	:	**Protect against humidity (product is hygroscopic and tends to cake or disintegrate).**
Storage Class	:	**(TRGS 510): 10 - 13 Other liquids and solids: Non-Combustible Solids**

Reference: (BAUA, 2016)

7.3 Specific end use(s)

Specific end Use(s)	:	**Apart from the uses mentioned in section 1.3 no other specific uses are stipulated**

SECTION 8: EXPOSURE CONTROL AND PERSONNEL PROTECTION

8.1 Control Parameters

	Compound	Cas Number		TWA [1]	STEL[2]
South African Labour Department	All substances			Not Listed	Not Listed
International Labour organization (ILO)	All substances			Not Listed	Not Listed
OCHA	All substances			Lot Listed	Not Listed

[1] *TWA – Long term exposure: Time Weighted Average (8 hour period)*
[2] *STEL – Short term exposure: Short term exposure limit (15 min period)*
Reference: (South African Labour Department, 2021) & (ILO, n.d.) & (OSHA, n.d.)

Routes of exposure	:	**The substance can be absorbed into the body by inhalation and by ingestion.**
Inhalation	:	**Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed, especially if powdered.**
Skin	:	**No effect**
Eye	:	**Redness**
Indigestion	:	**Abdominal pain. Blue lips, fingernails and skin. Confusion. Convulsions. Dizziness. Headache. Nausea. Unconsciousness.**
Effects of short-term exposure	:	**The substance is irritating to the eyes, skin and respiratory tract. The substance may cause effects on the blood. This may result in the formation of methaemoglobin. The effects may be delayed.**
Effects of long-term or repeated exposure	:	**Repeated or prolonged contact with skin may cause dermatitis.**

Reference: (European Chemical Agency [ECHA], n.d.) & (ILO, n.d.)

8.2 Appropriate engineering controls

Engineering controls	:	**Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations, and safety showers are close to the workstation location. See Section7.**

8.2 Individual protection measures

Eye/face protection	:	**Wear safety glasses.** Use equipment for eye protection tested and approved under appropriate government standards. SABS adoption: SANS 50166:2018(SA), EN 166(EU) or NIOSH (US).
Skin Protection	:	**Handle with gloves.** Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.
Body Protection	:	Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
Respiratory protection	:	**Respiratory protection is necessary.** Where protection from nuisance levels of dusts is desired, use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).
Control of environmental exposure	:	**No special environmental precautions required**

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Properties

Physical state	:	**Solid** [1]
Composition	:	**Mixture** [2]
Colour	:	**N/A**
Odour	:	**N/A**
Melting point/freezing point	:	**N/A**
Boiling point or initial boiling point and boiling range	:	**N/A**
Flammability	:	**N/A**
Lower and upper explosion limit/flammability limit	:	**N/A**
Flash point	:	**N/A**
Auto-ignition temperature	:	**N/A**

Oxidizing Properties	:	**N/A**
Explosive properties	:	**N/A**
Decomposition temperature	:	**N/A**
pH	:	**N/A**
Kinematic viscosity	:	**N/A**
Solubility	:	**N/A**
Partition coefficient: n-octanol/water (log value)	:	**N/A**
Vapour pressure	:	**N/A**
Density and/or relative density	:	**N/A**
Relative vapour density	:	**N/A**
Bulk Density (Volumetric)	:	**N/A**
Particle characteristics	:	**N/A**

[1] *"Solid" – Is a substance that cannot be classified as a liquid or Gas.*
[2] *"Mixture" – A mixture is composed of two or more substances in which they do not react.*

SECTION 10: STABILITY AND REACTIVITY

Reactivity	:	**Stable under recommended storage and handling conditions.** **An oxidizing agent. Non-combustible but accelerates the burning of combustible materials.**
Chemical stability	:	**Stable under normal conditions.**
Hazardous Reactions	:	**Hazardous reactions or instability may occur under certain conditions of storage or use. Conditions may include the following:** • **Contact with incompatible substances.** • **Contact with combustible materials.** **Reactions may include the following:** • **Risk of causing or intensifying fire** • **If mixed with chlorine or hypochlorites, it may form nitrogen trichloride which may explode spontaneously in air.** • **Under normal conditions of storage and use, hazardous reactions will not occur.**
Conditions to Avoid	:	**Decomposes on heating. Avoid confinement. Avoid Moisture.**
Incompatible Materials	:	**Moisture-sensitive material. Hygroscopic. Keep container tightly closed. Avoid contamination by any source including metals, dust and organic materials. Incompatible with copper alloys, copper, and zinc. May be incompatible with some materials of construction. Contact your sales representative or a metallurgical specialist to ensure compatibility with your equipment.** **Separate from reducing agents and combustible materials. Keep away from acids or bases.** **Alkalies, strong acids, copper, and its alloys.**
Hazardous Decomposition Products	:	**Hazardous decomposition products formed under fire conditions - Nitrogen Oxides, Sulphur Oxides.**

Reference: (Pubchem, search, n.d.)

SECTION 11: TOXICOLOGY

11.1 Acute Toxicity

Classification : **Acute Tox. 4**

Interpretation : **Calcium Nitrate is harmful if swallowed**

Method	Compound	Cas Number	Measure	Value	Subject
Oral	Potassium Nitrate	7757-79-1	LD50[1]	>2000 mg/kg bw[2]	Rat
Inhalation	Potassium Nitrate	7757-79-1	LC50	>527 mg/L air	Rat
Dermal	Potassium Nitrate	7757-79-1	LD50	>5000 mg/kg bw	Rat

Method	Compound	Cas Number	Measure	Value	Subject
Oral	Calcium Nitrate	15245-12-2	LD50[1]	300-2000 mg/kg bw[4]	Rat
Inhalation	Calcium Nitrate	15245-12-2		Not justified	
Dermal	Calcium Nitrate	15245-12-2	LD50[1]	>2000 mg/kg bw[4]	Rat

Method	Compound	Cas Number	Measure	Value	Subject
Oral	Boric Acid	10043-35-3	LD50	3450 mg/kg	Rat
Inhalation	Boric Acid	10043-35-3	LD50	2.03 mg/m3	Rat
Dermal	Boric Acid	10043-35-3	LD50	>2000mg/kg	Rat

[1] *"LD50" – Lethal Doses. The dosage at which 50% mortality was observed.*

[2] *"LC50" – Lethal Concentration. The concentration at which 50% mortality was observed.*

[3] *"bw" - body-weight/day*

Reference: (ECHA, n.d.) & (Pubchem, search, n.d.)

11.2 Skin corrosion/irritation

Classification : **No classification**

Description : **None of the substances qualify to be classified.**

Subjects : **Rabbits**

Reference: (ECHA, n.d.)

11.3 Serious eye damage/irritation

Classification : **Eye Damage 1**

Description : **Instillation of 70.7 mg of CAN (a volume of approximately 0.1 mL) into an eye of one rabbit resulted in effects on the cornea, iris, and conjunctivae. effects persistence up to the end of the observation time of 21 days.**

Subjects : **Rabbits**

Reference: (ECHA, n.d.)

11.4 Respiratory or skin sensitisation

Classification	:	**No classification**
Description	:	**None of the substances qualify to be classified.**
Subjects	:	**Mouse**

Reference: (ECHA, n.d.)

11.5 Germ cell mutagenicity

Classification	:	**No classification**
Description	:	**None of the substances qualify to be classified.**
Subjects	:	**Salmonella typhimurium strains**

Reference: (ECHA, n.d.)

11.6 Carcinogenicity

Classification	:	**No data available**

Reference: (ECHA, n.d.)

11.7 Reproductive toxicity

Classification	:	**No classification**
Description	:	**None of the substances qualify to be classified.**
Subjects	:	**Rat**

Reference: (ECHA, n.d.)

11.8 STOT [2] - single exposure

Classification	:	**No data available**

[2] "STOT" - Specific target organ toxicity.

Reference: (ECHA, n.d.) & (Pubchem, search, n.d.)

11.9 STOT [2] - repeated exposure

Classification	:	**No classification**
Description	:	**None of the substances qualify to be classified.**
Subjects	:	**Rat**

[2] "STOT" - Specific target organ toxicity.

Reference: (ECHA, n.d.) & (Pubchem, search, n.d.)

11.10 Aspiration hazard

Classification	:	**No data available**

Reference: (ECHA, n.d.) & (Pubchem, search, n.d.)

11.11 Route of Exposure and potential effects

Swallowing	:	**Convulsions. Headache. Nausea. Vomiting.**
Inhalation	:	**Cough. Shortness of breath. Sore throat.**
Eye exposure	:	**Redness**
Skin exposure	:	**No symptoms**

Reference: (ECHA, n.d.)

11.12 Long- and short-term effects

No data available

Reference: (ECHA, n.d.)

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Classification : **Triggers for classification are not met.**

Aquatic Toxicity :

Compound	Cas Number	Organism	Species	Time	Measure	Value
Potassium Nitrate	7757-79-1	Fish	Oncorhynchus Mykiss	96-h	LC50[1]	> 100 mg/L
Potassium Nitrate	7757-79-1	Fish	Fathead minnow	32-d	NOEC[2]	58 mg/L
Potassium Nitrate	7757-79-1	Aquatic invertebrates	Daphnia magna	96-h	EC50[1]	490 mg/L
Potassium Nitrate	7757-79-1	Aquatic invertebrates	Daphnia magna	12-d	NOEC[1]	>245 mg/L
Potassium Nitrate	7757-79-1	Aquatic Algae and Cyanobacteria	benthic diatoms	10-d	EC50	>1700 mg/L
Potassium Nitrate	7757-79-1	Micro-organisms	Activated sludge of a predominantly domestic sewage	3-h	EC50[1]	>1000 mg/L

Compound	Cas Number	Organism	Species	Time	Measure	Value
Calcium Nitrate	15245-12-2	Fish	Cyprinus Carpio (Carp)	48-h	LC50[1]	447 mg/L
Calcium Nitrate	15245-12-2	Aquatic invertebrates	Daphnia magna	48-h	EC50[3]	>100 mg/L
Calcium Nitrate	15245-12-2	Aquatic Algae and Cyanobacteria	Pseudokirchneriella subcapitata	72-h	EC50	>100 mg/L
Calcium Nitrate	15245-12-2	Micro-organisms	Activated sludge of a predominantly domestic sewage	3-h	EC50	>1000 mg/L

Compound	Cas Number	Organism	Species	Time	Measure	Value
Boric Acid	10043-35-3	Fish	Fathead minnow fish	96-h	LC50	79.7 mg/L
		Fish	Pimephales promelas	32-d	NOEC	11.2 mg/L
Boric Acid	10043-35-3	Aquatic invertebrates	marine shrimp	48-h	EC50	130 mg/L
			Americamysis bahia		NOEC	33.1 mg/L
Boric Acid	10043-35-3	Aquatic Algae and Cyanobacteria	Pseudokirchneriella subcapitata	Unknown	EC50	52.4 mg/L
Boric Acid	10043-35-3	Microorganisms	Opercularia bimarginata-	Unknown	NOEC	10 mg/L

[1] *"LC50 /EC50" - (Median Lethal Concentration/Median Effective Concentration) They are the concentrations at which 50% mortality or inhibition of a function (e.g., growth or growth rate) was observed.*

[2] *"NOEC" - No Observed Effect Concentration. NOEC is the highest tested concentration for which there are no statistically significant difference of effect when compared to the control group.*

Terrestrial Toxicity **:**

Compound	Cas Number	Organism	Species	Time	Measure	Value
Boric Acid	10043-35-3	Macro-organisms	9 Species	24-d	NOEC	5.2 – 315 mg/kg dw
Boric Acid	10043-35-3	Anthropoids	Folsomia candida	28-d	LC50	27.8 mg/kg soil dw
Boric Acid	10043-35-3	Terrestrial plants	Unknown	Unknown	NOEC	3 - 84 mg/kg soil dw
Boric Acid	10043-35-3	Above-ground organisms	Unknown	Unknown	NOEC	3 – 419mg kg/ soil dw

None of the substance justify the testing for Terrestrial Toxicity

Reference: (ECHA, n.d.) & (Pubchem, search, n.d.)

12.2 Persistence and degradability

Stability : **All substances: The substance does not hydrolyse nor is there evidence for photodegradation.**

In aqueous solution, ammonium nitrate is completely dissociated into the ammonium ion (NH4+) and the nitrate anion (NO3 -). Hydrolysis of ammonium nitrate does not occur.

Biodegradation : **Readily biodegradation study does not need to be conducted since the substances is inorganic.**

Reference: (ECHA, n.d.)

12.3 Bioaccumulate potential

Description : **Simple inorganic salts with high aqueous solubility will exist in a dissociated form in an aqueous solution. Such a substance has a low potential for bioaccumulation.**

Reference: (ECHA, n.d.)

12.4 Mobility in soil

Adsorption	:	**Nitrate is not bound to the soil and will follow water movements. Nitrate can therefore leach when the soil receives more water than it can take up. This happens (in) mainly in the late autumn, winter, and early spring. There exist a lot of studies on the environmental impact of NO3 and NH4+/NH3.**
Adsorption	:	**Ammonia is bound in soil by the attraction of the positive charge on the ammonium ion to the negatively charged soil micelles. In soil, ammonium is adsorbed primarily by four mechanisms: chemical (exchangeable), fixation (non-exchangeable), reaction with organic matter and physical attractive forces. Since ammonia is so poorly mobile in soil, it is unlikely to leach to groundwater except under unusual circumstances, such as when the cation exchange capacity of the soil is exceeded. The worst situation for ammonium leaching would probably occur when the soil is at field capacity with respect to water.**
Volatilization	:	**Volatilization is unlikely due to the properties of the substance.**

Reference: (ECHA, n.d.)

12.5 Other adverse effects

Classification	:	**No data available**

SECTION 13: DISPOSAL CONSIDERATIONS

The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: TRANSPORT INFORMATION

12.1 UN Modelled regulations

GHS Classification	:	**Not regulated**
UN Number	:	**Not Listed**
UN proper shipping name	:	**Not Listed**
Transport hazard class(es)	:	**No classification**
Label	:	**No classification**
Packing group	:	**Not regulated**
Environmentally hazardous	:	**Not regulated**
Special precautions:	:	**ADR/RID - Not specified** **IMDG**[2] **- Not specified** **IATA**[3] **- Not specified**
Transport in Bulk according to IMO instructions	:	**Not specified**

Reference: (ILO, n.d.) & (ECHA, n.d.) & (Hazmat Tool, n.d.) & (BAM, 2021)

[1] ADR/RID - International Carriage of Dangerous Goods by Rail (RID) and by Road (ADR)
[2] IMDG - The International Maritime Dangerous Goods (IMDG)
[3] IATA - International Air Transport Association (IATA)

SECTION 15: REGULATORY INFORMATION

15.1 Safety, Health and environmental regulations specific for the substance or mixture

Regulations	:	**This Safety Data Sheet conforms to the requirements set by the Department of Agriculture, Land reform and Rural development of the Republic of South Africa, United Nations GHS (Rev 9E) (2021) and SANS 10234:2019, on the 29 March 2022.**
Restrictions	:	**The substance is not subjected to any prohibitions or restriction in South Africa.**
Chemical Safety Assessment:	:	**For this product a chemical safety assessment was not carried out.**

SECTION 16: OTHER INFORMATION

16.1 Preparation and revision

Latest Version

Version Number	:	**Ver. 3**
Preparation Date	:	**25 September 2022**
Where the changes as made	:	**Complete overall of all data to comply with GHS regulations**

Previous Version

Version Number	:	**Ver. 2**
Preparation date	:	**February 2021**

16.2 Abbreviations and Acronyms

GHS	:	*Globally Harmonized System of Classification and Labelling of Chemicals*
ECHA	:	*European Chemical agency*
AICIS	:	*The Australian Industrial Chemicals Introduction Scheme*
EPA-NZ	:	*Environmental protection agency New Zealand*
ILO (WHO)	:	*International labour organization (World health organization)*
CAS Number	:	*CAS Number is a numerical designation for chemicals that is maintained by the Chemical Abstracts Service (CAS) of the American Chemical Society.*
EC Number	:	*The European Community number (EC number) is a unique identifier that was assigned to substances for regulatory purposes within the European Union by the European Commission.*
H-Statement	:	*Hazard Statement*
P-Statement	:	*Precautionary Statements*

Hazard Statements	*H272*	-	*May intensify fire; oxidiser*
	H302	-	*Harmful if swallowed*
	H318	-	*Causes serious eye damage*
Precautionary Statements	*P210*	-	*Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.*
	P220	-	*Keep away from clothing or other combustible materials.*
	P264	-	*Wash hands [and …] thoroughly after handling.*
	P270	-	*Do not eat, drink or smoke when using this product.*
	P265		*Do not touch eyes.*
	P280	-	*Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...*
	H272	-	*May intensify fire; oxidiser*
	H302	-	*Harmful if swallowed*
	H318	-	*Causes serious eye damage*
	P210	-	*Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.*
	P220	-	*Keep away from clothing or other combustible materials.*
	P264	-	*Wash hands [and …] thoroughly after handling.*
	P270	-	*Do not eat, drink or smoke when using this product.*

		P265 Do not touch eyes.
		P280 - Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
N/A	:	*Not Applicable*
Not Classified	:	*Data conclusive but not at sufficient levels for classification*
PPE	:	*Personal precautions, protective equipment.*
TWA	:	*Time Weighted Average*
OEL	:	*Occupational Exposure Limits*
STOT	:	*Specific target organ toxicity*
LC50 / EC50	:	*(Median Lethal Concentration/Median Effective Concentration): They are the concentrations at which 50% mortality or inhibition of a function (e.g., growth or growth rate) was observed.*
NOEC	:	*(No Observed Effect Concentration) NOEC is the highest tested concentration for which there are no statistically significant difference of effect when compared to the control group*
ECx	:	*It is the concentrations at which x % (10% for EC10) effect was observed or derived statistically when compared to the control group*
LD0	:	*Lethal Dose 0, represents the dose at which no individuals are expected to die.*
LC0		*Lethal concentration 0, represents the concentration at which no individuals are expected to die.*
LDLo	:	*Lethal dose low, is the lowest dosage of a compound that is introduced to the human body or that of an animal by any means apart from inhalation that will cause the death of the individual.*

16.3 References

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(EPA-Environmental protection agency. EPA is the government agency responsible for regulating activities that affect Aotearoa New Zealand's environment.)

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(ECHA - European Chemicals Agency. The European Chemicals Agency, is an agency of the EU. They implement the EU's chemicals legislation to protect your health and the environment. There work also contributes to a well-functioning internal market, innovation and the competitiveness of Europe's chemicals industry.)

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(ILO-International Labour organization. ILO is a specialized agency of the United Nations. The database data was prepared by an international group of experts on behalf of ILO and WHO, with the financial assistance of the European Commission. © ILO and WHO 2021.)

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(OECD allow the search by chemical and provides a list and access to compiled SDS's)

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(PubChem is an open chemistry database at the National Institutes of Health (NIH). Pubchem may reference some of the same sources as listed in this document)

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(The Australian Industrial Chemicals Introduction Scheme (AICIS) helps protect Australians and the environment by assessing the risks of industrial chemicals and providing information to promote their safe use. Focus mainly on heath aspects.)

16.4 Disclaimer

The information contained in this SDS does not constitute a risk assessment, and should not replace the user's own assessment of risks as required by other health and safety legislation.

This SDS summarises at the date of issue our best knowledge of the health, safety and environmental hazard information related to the product and in particular how to safely handle, use, store and transport the product. Since Kynoch cannot anticipate or control the conditions under which the product may be handled, used, stored or transported, each user must, prior to usage, review this SDS in the context of how the user intends to handle, use, store or transport the product and beyond, and communicate such information to all relevant parties.

We shall not assume any liability for the accuracy or completeness of the information contained herein or any advice given unless there has been gross negligence on our part.