KYNOCH FERTILIZER

SAFETY DATA SHEET

1.0.0(42) + 3.8%S

Date Issued / Revised Date : *25 September 2022*
New version : *3.0*
Date previously revised : *1 February 2021*
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 : **1.0.0(42) + 3.8%S**

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

1.2 Other means of identification

Description : **Blend (N,P,K and S) made with > 10% Urea, between 10-20% Ammonium Sulphate**

CAS Number : **N/A**

EC Number [3] : **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 Weirda 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**
: **Kynoch – 086 092 7272**
: **Spilltech - 086 100 0366**

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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	Not Classified		
Health Hazards	Eye Irritation	Category 2A	H319
	Acute toxicity, oral	Category 5	H303
Environmental Hazards	Not Classified		

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*

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.)

2.2 GHS Label elements, including precautionary statements

Pictogram :

Pictogram Name : **Exclamation**

Signal Word : **Warning**

Hazard Statements : **H303 - Acute toxicity, oral**
H319 - Causes serious eye irritation

Precautionary Statements : **P264 - Wash hands [and …] thoroughly after handling.**
P265 - Do not touch eyes.
P280 - Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...

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

2.3 Other hazards that do not result in classification

Hazards : **Can cause serous eye irritation**

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

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substance

Substance : **N/A**

[1] *"N/A" – Not available*

Reference: (European Chemical Agency [ECHA], n.d.) & (The Australian Industrial Chemicals Introduction Scheme [AICIS], n.d.)

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3.2 Mixture

Substance A:

Common name	:	**Urea Granular**
Composition		**10% - 80%**
EC Name		**Carbamide**
Chemical Formula	:	**CH_4N_2O**
Molecular Weight	:	**60,05 g/mol**
Nutrient Content	:	**46% N**
CAS Number	:	**57-13-6**
EC Number	:	**200-315-5**

Substance B:

Common name	:	**Mono Ammonium Phosphate**
Composition	:	**0-80%**
EC Name	:	**Ammonium dihydrogen orthophosphate**
Chemical Formula	:	**$(NH_4)(H_2PO4)$**
Molecular Weight	:	**115,025 g/mol**
Nutrient Content	:	**11% N 22% P**
CAS Number	:	**7722-76-1**
EC Number	:	**231-764-5**

Substance C:

Common name	:	**Potassium Chloride Granular**
Composition	:	**0-60%**
EC Name	:	**Potassium Chloride**
Chemical Formula	:	**KCl**
Molecular Weight	:	**74.55 g/mol**
Nutrient Content	:	**50% K**
CAS Number	:	**7447-40-7**
EC Number	:	**200-315-5**

Substance D:

Common name	:	**Ammonium sulphate Granular**
Composition	:	**>10% <20%**
EC Name	:	**Ammonium sulphate**
Chemical Formula	:	**$(NH_4)_2SO_4$**
Molecular Weight	:	**132.14 g/mol**
Nutrient Content	:	**21% N, 24% S**
CAS Number	:	**7783-20-2**
EC Number	:	**231-984-1**

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SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General information	:	**No special measures required.**
After inhalation	:	**Supply fresh air. Consult doctor in case of complaints.**
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). Seek medical treatment.**
After swallowing	:	**Rinse out mouth. Make victim drink water (maximum of 2 drinking glasses). Do NOT induce vomiting. If symptoms persist consult doctor.**

4.2 Most important symptoms and effects, both acute and delayed

Effects	:	**Can cause serous eye irritation**

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, CO2, foam, powder**
Inappropriate extinguishing media	:	**No information available**
Notes	:	**Use fire extinguishing methods suitable to surrounding conditions.**

5.2 Specific hazards arise from chemical

Warning	:	**Formation of toxic gases is possible during heating or in case of fire.**
Hazardous Combustion Products	:	**Nitrogen oxides (NOx). Carbon monoxide (CO). Carbon dioxide (CO2). Ammonia.**
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	:	**Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire.**
	:	**No action shall be taken involving any personal risk or without suitable training.**
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.**

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	:	**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	:	**Move containers from spill area. Vacuum or sweep up material and place in a designated, labelled waste container. Dispose of via a licensed waste disposal contractor.**
Large Spill	:	**Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements, or confined areas. Vacuum or sweep up material and place in a designated, labelled waste container. Dispose of via a licensed waste disposal contractor.**

6.4 Reference to other sections

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

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.**

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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	:	**No special requirements.**
One common storage facility	:	**Store away from oxidising agents.**
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**
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]
OCHA	Urea	57-13-6		10mg/l	Not Listed
OCHA	MAP	7722-76-1		Not Listed	Not Listed
OCHA	Potassium Chloride	7447-40-7		Not 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 of its aerosol and by ingestion.**
Inhalation risk	:	**Evaporation at 20°C is negligible; a nuisance-causing concentration of airborne particles can, however, be reached quickly, especially if powdered.**
Effects of short-term exposure	:	**Contact can irritate the skin and eyes**
Effects of long-term or repeated exposure	:	**Repeated exposure to ammonia may cause chronic irritation of the respiratory tract.**

Reference: (ILO, n.d.)

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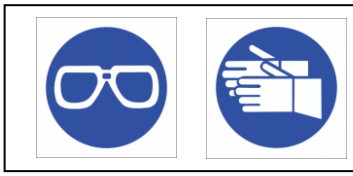
8.2 Appropriate engineering controls

: **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	:	**Not required under normal conditions of use.** 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	:	**Colourless / White to brown, red and black**
Odour	:	**Odourless**
Melting point/freezing point	:	**133-134 °C**
Boiling point or initial boiling point and boiling range	:	**Decomposes**
Flammability	:	**Product is not flammable**
Lower and upper explosion limit/flammability limit	:	**Not determined**
Flash point	:	**Not applicable**

Auto-ignition temperature	:	**Not determined**
Oxidizing Properties	:	**Non oxidizer**
Decomposition temperature	:	**≥150 °C**
pH	:	**Not Available**
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	:	**between 0.1 - 5mm**
Molecular Formula	:	**N/A**
Molecular Weight	:	**N/A**

[1] *"Solid" – Is a substance that cannot be classified as a liquid or Gas.*
[2] *"Substance" – Is chemical elements and their compounds in their natural state or obtained by production process)*

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

SECTION 10: STABILITY AND REACTIVITY

Reactivity	:	**None known, based on information available**
Chemical stability	:	**Stable under normal conditions**
Hazardous Reactions	:	**None under normal processing**
Conditions to Avoid	:	**Incompatible products**
Incompatible Materials	:	**Urea: strong oxidizing agents, Chlorine, sodium hypochlorite** **MAP: Magnesium, Strong acids, bases.** **KCl: Strong acids and strong oxidizing agents** **AmSO4: Strong oxidizing agents, Strong bases**
Hazardous Decomposition Products	:	**Urea: Products Nitrogen oxides (NOx), Carbon monoxide (CO), Carbon dioxide (CO2), Ammonia** **MAP: Toxic fumes: Ammonia** **KCl: Potassium oxides and chlorine gas** **AmSO4: Hazardous decomposition products formed under fire conditions - Nitrogen Oxides, Sulphur Oxides.**

SECTION 11: TOXICOLOGY

11.1 Acute Toxicity

Classification	:	**No Classification**
Description	:	**Although Ammonium Sulphate is classified as Acute Tox. 4, the rest of the components are not classified. The amount in the final mixture too little to warrant a classification according to the GHS guidelines.**

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Substance A:

Method	Compound	Cas Number	LD50	Subject
Oral	Urea	57-13-6	14.3-15 g/kg	Rat
			11.5-13 g/kg	Mouse
Dermal	No data are available. Urea is demonstrated to be of very low acute toxicity by the oral, subcutaneous and intravenous routes in the rat and mouse. Testing for acute dermal toxicity is not justified.			
Inhalation	No data are available. The substance is a non-volatile solid and is produced as crystals with a particle size of >100 µm. There is therefore no potential for inhalation exposure.			
Subcutaneous	Urea	57-13-6	8.2-9.4 g/kg	Rat
			9.2-10.7 g/kg	Mouse
Intravenous	Urea	57-13-6	5.3-5.4 g/kg	Rat
			4.6-5.2 g/kg	Mouse

Substance B:

Method	Compound	Cas Number	Measure	Value	Subject
Oral	MAP	7722-76-1	LD50[1]	>2000 mg/kg bw[2]	Rat
Inhalation	MAP	7722-76-1	LC50	>5 mg/L	Rat
Dermal	MAP	7722-76-1	LD50	>5000 mg/kg bw	Rat

Substance C:

Method	Compound	Cas Number	LD50	Subject
Oral	Potassium chloride	7447-40-7	2600 mg/kg	Rat
			1500 mg/kg	Mouse
Dermal	No data are available. Potassium chloride is demonstrated to be of very low acute toxicity by the oral, subcutaneous and intravenous routes in the rat and mouse. Testing for acute dermal toxicity is not justified.			
Inhalation	No data are available. The substance is a non-volatile solid and is produced as crystals with a particle size of >100 µm. There is therefore no potential for inhalation exposure.			
Subcutaneous	Potassium chloride	7447-40-7	2550 mg/kg	Guinea pig
			9.2-10.7 g/kg	Mouse
Intravenous	Potassium chloride	7447-40-7	142 mg/kg	Rat
			117 mg/kg	Mouse

Substance D:

Method	Compound	Cas Number	Measure	Value	Subject
Oral	Ammonium Sulphate	7783-20-2	LD50[1]	4 250 mg/kg bw[4]	Rat
Oral	Ammonium Sulphate	7783-20-2	LD50[1]	640 mg/kg	Mouse
Oral	Ammonium Sulphate	7783-20-2	LDLo[2]	1500 mg/kg	Man
Dermal	Ammonium Sulphate	7783-20-2	LD50[1]	>2000 mg/kg bw	Rat

Method	Compound	Cas Number	Measure	Value	Subject
Subcutaneous			[1]	Not listed [4]	
Intravenous				Not listed	

[1] *"LD50" – Lethal Doses. The dosage at which 50% mortality was observed.*
[2] *"bw" - body-weight/day*

Reference: (ECHA, n.d.) & (Pubchem, search, n.d.) & (EPA. New Zealand Government, n.d.)

11.2 Skin corrosion/irritation

Classification : **No classification**

Description : **None of the component was classified as skin corrosive/irritant.**

Subjects : **Humans, Rabbits**

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

11.3 Serious eye damage/irritation

Classification : **Eye Irritation, Cat 2A**

Description : **Urea Classified as an Eye Irritation, Category 2A. More than 10% is used therefore it triggers classification.**

Potassium Chloride is irritating to the eyes but does not cause a classification. MAP and Ammonium Sulphate is not irritating. The amount in the final mixture too little to warrant a classification according to the GHS guidelines.

Subjects : **Humans, Rabbits**

Reference: (ECHA, n.d.) & (EPA. New Zealand Government, n.d.) & (Pubchem, search, n.d.)

11.4 Respiratory or skin sensitisation

Classification : **No classification**

Description : **None of the component was classified as skin corrosive/irritant.**

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

11.5 Germ cell mutagenicity

: **No classification**

: **None of the component was classified as skin corrosive/irritant.**

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

11.6 Carcinogenicity

: **No classification**

: **None of the component was classified as skin corrosive/irritant.**

: **Rat and Mouse**

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

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11.7 Reproductive toxicity

No Classification

: **Only data on Ammonium Sulphate and MAP is available, but both are not classified.**

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

11.8 STOT [2] - single exposure

No data available

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

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

11.9 STOT [2] - repeated exposure

No data available

[2] "STOT" - Specific target organ toxicity.
Reference: (ECHA, n.d.) & (Pubchem, search, n.d.)

11.10 Aspiration hazard

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	:	**Redness**

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

11.12 Long- and short-term effects

No data available

Reference: (ECHA, n.d.)

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Classification : **No Classification**

None of the components is classified

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Aquatic Toxicity :

Substance A:

Compound	Cas Number	Organism	Species	Time	Measure	Value
Urea	57-13-6	Fish	Danio	96-h	LC50[1]	21 060 mg/L
Urea	57-13-6	Fish	Mozambique Tilapia	28-d	EC10[3]	7 250 mg/L
Urea	57-13-6	Aquatic invertebrates	Daphnia	24-h	EC50[1]	>10 000 mg/L
Urea	57-13-6	Aquatic invertebrates	Daphnia	21-d	EC10[3]	141 mg/L
Urea	57-13-6	Aquatic Algae and Cyanobacteria	Green alga	92-h	EC50[1]	24 542 mg/L
				72-h	EC10[3]	6 896 mg/L
Urea	57-13-6	microorganisms	Pseudomonas putida	72-h	EC50[1]	>10 000 mg/L

Substance B:

Compound	Cas Number	Organism	Species	Time	Measure	Value
MAP	7722-76-1	Fish	Rainbow trout	96-h	LC50[1]	>100 mg/L
MAP	7722-76-1	Aquatic invertebrates	Daphnia Carinata	48-h	EC50[1]	>100 mg/L
MAP	7722-76-1	Aquatic Algae and Cyanobacteria	Desmodesmus Subscpicatus	72-h	EC50[1]	>100 mg/L
MAP	7722-76-1	Micro-organisms	Activated sludge of a predominantly domestic sewage	3-h	EC50	>100 mg/L

Substance C:

Compound	Cas Number	Organism	Species	Time	Measure	Value
KCl	7447-40-7	Fish	Pimephales promelas	96-h	LC50[1]	880 mg/L
KCl	7447-40-7	Fish	Pimephales promelas	28-d	EC10[3]	N/A
KCl	7447-40-7	Aquatic invertebrates	Daphnia magna	24-h	EC50[1]	660 mg/L
KCl	7447-40-7	Aquatic invertebrates	Daphnia magna	21-d	EC10[3]	N/A
KCl	7447-40-7	Aquatic Algae and Cyanobacteria	Scenedesmus subspicatus	72-h	EC10[3]	100 mg/L
KCl	7447-40-7	Microorganisms	-	3-h	EC50[1]	1000 mg/L

Substance D:

Compound	Cas Number	Organism	Species	Time	Measure	Value
Ammonium Sulphate	7783-20-2	Fish	29 freshwater species	96-h	LC50[1]	53 mg/L
Ammonium Sulphate	7783-20-2	Fish	Lepomis Macrochirus	-	EC10[3]	5.29 mg/L
Ammonium Sulphate	7783-20-2	Fish	Alburnus alburnus (common bleak)	96-h	LC50[1]	310 mg/L
Ammonium Sulphate	7783-20-2	Fish	Agonus cataphractus (hooknose)	96-h	LC50[1]	210 mg/L

[1]

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Ammonium Sulphate	7783-20-2	Fish	Barbus ambassis (barb)	24-h	LC50	566 mg/L
Ammonium Sulphate	7783-20-2	Fish	Barbus ambassis (barb)	48k	LC50[1]	546 mg/L
Ammonium Sulphate	7783-20-2	Aquatic invertebrates	Daphnia magna	-	-	169 mg/L
Ammonium Sulphate	7783-20-2	Aquatic invertebrates	Hyalella azteca	-	EC10[3]	3.12 mg/L
Ammonium Sulphate	7783-20-2	Aquatic Algae and Cyanobacteria	Chlorella vulgaris	92-h	EC50[1]	1600 mg/L

Terrestrial Toxicity :

Substance A:

Compound	Cas Number	Organism	Species	Time	Measure	Value
Urea	57-13-6	Micro-organisms	-	24-d	NOEC[2]	> 2358 mg urea/kg dw
Urea	57-13-6	Macro-organisms	Earthworms	14-d	LC50[1]	2 000 mg/kg soil dw
Urea	57-13-6	Macro-organisms	Earthworms	60-d	EC10[3]	160 mg/kg soil dw
Urea	57-13-6	Anthropoids	Collembola, Mites, bees	36-w	NOED[2]	640 mg/kg soil dw
Urea	57-13-6	Terrestrial plants	Mono and Dicots	7-d	EC10[3]	1 000 mg/kg soil dw
Urea	57-13-6	Birds	Chickens	21-d	LC50[1]	> 150 g/kg feed
Urea	57-13-6	Above-ground organisms	amphibians	96-h	LC50[1]	> 482 kg/ha
Urea	57-13-6	Above-ground organisms	Various mammals (39 different groups/species)	-	NOEC[2]	> 1 600 kg/ha
Urea	57-13-6	Above-ground organisms	Ruminants, Cattle, Sheep	24-h	LD0[4]	1 000 mg/kg bw
Urea	57-13-6	Above-ground organisms	Cattle	56-d	LD0[4]	600 mg/kg bw
Urea	57-13-6	Above-ground organisms	Ruminants, Deer, Moose	-	LD0[4]	500 mg/kg bw

Substance D:

Compound	Cas Number	Organism	Species	Time	Measure	Value
Ammonium Sulphate	7783-20-2	Macro-organisms	Eisenia fetida	14-d	LC50[1]	201 mg/kg soil dw
Ammonium Sulphate	7783-20-2	Above ground organisms	Tadpoles – 6w old	10-d	NOED[2]	82 mg/L
Ammonium Sulphate	7783-20-2	Above ground organisms	Ambystoma gracile – 5w old	10-d	NOED[2]	384 mg/L
Ammonium Sulphate	7783-20-2	Above ground organisms	Rana aurora – 4w old	10-d	NOED[2]	390 mg/L

Terrestrial toxicity was not warranted on MAP and KCl.

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[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.*
[3] *"ECx" - It is the concentrations at which x % (10% for EC10) effect was observed or derived statistically when compared to the control group.*

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

12.2 Persistence and degradability

Stability	:	**Non of the components hydrolyse nor is there evidence for photodegradation.**
Biodegradation		**Readily biodegradation study does not need to be conducted since the substance is inorganic.**

Reference: (ECHA, n.d.)

12.3 Bioaccumulate potential

Description	:	**The study does not need to be conducted as the substance as an inorganic salt has a low potential for adsorption.**

Reference: (ECHA, n.d.)

12.4 Mobility in soil

Adsorption	:	**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 adsorption.**
Volatilization	:	**No data availible**

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.

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SECTION 14: TRANSPORT INFORMATION

12.1 UN Modelled regulations

UN Number	:	**No classification**
UN proper shipping name	:	**No classification**
Transport hazard class(es)	:	**No classification**
Label	:	**No classification**
Packing group	:	**No classification**
Environmentally hazardous	:	**No classification**
Special precautions:	:	**ADR/RID**[1] **- Not classified**
		IMDG[2] **- Not classified**
		IATA[3] **- Not classified**
Transport in Bulk according to IMO instructions	:	**Not specified**

Reference: (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 August 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**

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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	:	*H319 - Causes serious eye irritation*
Precautionary Statements	:	*P264 - Wash hands [and …] thoroughly after handling.*
	:	*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

BAM. (2021) Dangerous Goods Database. Retrieved From *https://www.dgg.bam.de/quickinfo/en/show/*

(The BAM offers with the expert portal TES information and service concerning the transport and packaging of dangerous substances and goods as well as explosives act)

BAUA. (2016). Technical Rule for Hazardous Substances. TRGS 510 Storage of hazardous substances in non-stationary containers. Retrieved from *https://www.baua.de/EN/Service/Legislative-texts-and-technical-rules/Rules/TRGS/*

(The German Federal Institute for Occupational Safety and Health offers selected publications in English. Baua's research aims to ensure a safe and healthy working environment that is adapted to the needs of humans.)

Environmental protection agency [EPA]. New Zealand Government. (n.d.) Database search. *Chemical Classification and Information Database (CCID).* Retrieved from *https://www.epa.govt.nz/search/SearchForm?*

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

European Chemicals Agency [ECHA]. (n.d.) Information on Chemicals. Retrieved from *https://echa.europa.eu/registration-dossier/-/registered-dossier/*

(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.)

Hazmat Tool. (n.d.) Load, Transport and Storage of Hazardous Materials according U.S-Hazardous Materials Regulations (49 CFR). Retrieved from *https://www.hazmattool.com/*

(Hazmat Tool is a free to search database with information regarding the 49CRF classification and transport)

International Labour organization [ILO]. (n.d.) ICSC database. *International Chemical Safety Cards (ICSCs).* Retrieved from *https://www.ilo.org/dyn/icsc/*

(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.)

OECD. (n.d.) The Global Portal to Information on Chemical Substances. Classification Search. Retrieved from *https://www.echemportal.org/echemportal/ghs-search/*

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

Pubchem, search. (n.d.) Explore Chemistry. *Quickly find chemical information from authoritative sources.* Retrieved from *https://pubchem.ncbi.nlm.nih.gov/compound/*

(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)

Pubchem, GHS. (n.d.) Explore Chemistry. *GHS Classification.* Retrieved from *https://pubchem.ncbi.nlm.nih.gov/ghs/*

(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)

South African Labour Department. (2021) Regulations for Hazardous Chemical Agents. Retrieved from *https://www.gov.za/sites/default/files/gcis_document/202103/44348rg11263gon280.pdf*

(The Minister of Employment and Labour has, under section 43 of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993), after consultation with the Advisory Council for Occupational Health and Safety, made the regulations in the Schedule)

The Australian Industrial Chemicals Introduction Scheme [AICIS]. (n.d.) Chemical information. *Search assessments.* Retrieved from *https://www.industrialchemicals.gov.au/chemical-information/search-assessments?assessmentcasnumber*

(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.