KYNOCH FERTILIZER

SAFETY DATA SHEET

Date Issued / Revised Date	:	*25 August 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 : **Ammonium sulphate 21% Granular**

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

1.2 Other means of identification

Description : **Ammonium Sulphate Granular**

Chemical name : **Diammonium sulphate**

CAS Number[2] : **7783-20-2**

EC Number[3] : **231-984-1**

[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**
: **Spilltech - 086 100 0366**

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SECTION 2: HAZARD IDENTIFICATION

2.1 Classification of substance or mixture

Product Defined : **Substance**

Summarized Classification

Types of Hazards	Hazard Class	Category/subcategory	H-Statement
Physical Hazards	Not Classified [1]		
Health Hazards	Acute Toxicity, oral	Category 4	H302 [2]
Environmental Hazards	Not Classified [1]		

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

Classification by Organization

EPA-NZ	:	Acute Tox. 4
ECHA	:	Not Classified
ILO (WHO)	:	Not Classified
AICIS	:	Poses no unreasonable risk to human health

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 : **H302 - Harmful if swallowed**

Precautionary Statements : **P264 - Wash hands [and …] thoroughly after handling.**

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

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

2.3 Other hazards that do not result in classification

Skin Irrit. 2 : **Causes skin irritation**

Eye Irrit. 2 : **Causes serious eye irritation**

STOT SE 3 : **May cause respiratory irritation**

Aquatic Chronic 2 : **Toxic to aquatic life with long lasting effects**

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

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SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substance

Common name	:	**Ammonium sulphate**
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**
Impurities and stabilizers	:	**N/A**[1]

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

3.2 Mixture

N/A[1]

[1] *N/A – Not applicable*

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

Not expected to present a significant hazard under anticipated conditions of normal use

4.3 Indication of any immediate medical attention and special treatment needed

No further relevant information available

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SECTION 5: FIRE-FIGHTING MEASURES

5.1 Suitable extinguishing medium

Suitable extinguishing agents	:	**Water, CO2, foam, powder**
Inappropriate extinguishing media	:	**Do not use a heavy water stream.**
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). Sulphur oxides**
Fire hazard	:	**Not flammable**
Explosion hazard	:	**Not applicable**
Reactivity	:	**None**

5.3 Special protective action for Fire-Fighters

Special firefighting procedures	:	**Do not enter fire area without proper protective equipment, including respiratory protection.**
	:	**Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.**

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Percussions	:	**Avoid formation of dust. Do not inhale dust. Ensure adequate ventilation.**
Equipment	:	**Non-emergency personnel - Use personal protective equipment as required. See Section 8. Emergency personnel PPE [1] – No information available**
Procedure	:	**Evacuate dangerous areas.**

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

6.2 Environmental precautions

	:	**Prevent further leakage or spillage if safe to do so.**
	:	**Do not let product enter drains.**
	:	**Discharge into the environment must be avoided.**

6.3 Methods and material for containment and cleaning up

Solid	:	**Cover drains. Vacuum, sweep or shovel the material into container and cover. Avoid generation of dusts. If appropriate, slightly moisten first to prevent dusting. Wash away remainder with plenty of water.**
Solution	:	**Cover drains. Construct barriers to contain solutions or divert to impermeable holding area. Collect, bind, and pump off spills. Remove material by manual or mechanical means.**

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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.**
	:	**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	:	**Segregate from alkalies and alkalizing substances. Segregate from nitrites and alkaline substances.**
	:	**Incompatible products: Strong bases. Strong oxidizers.**
	:	**Incompatible materials : Sources of ignition. Direct sunlight.**
Handling of product	:	**Keep container tightly closed.**
Room conditions	:	**Keep in a dry, well-ventilated place. Recommended storage temperature at +5°C to +30°C. (Room temperature)**
	:	**Protect against moisture. The substance/product may cake under the influence of moisture.**
Storage Class	:	**(TRGS 510): 10 - 13 Other liquids and solids: Non-Combustible Solids**

7.3 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	Ammonium Sulphate	7783-20-2	Not Listed	Not Listed
American Industrial Hygiene Association (ACGIH)	Ammonium Sulphate	7783-20-2	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) & (Pubchem, search, n.d. / Referencing AIHA)

Routes of exposure	:	**The substance can be absorbed through the generation and inhalation of airborne dust.**
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	:	**The substance is irritating to the eyes, skin and respiratory tract.**
Effects of long-term or repeated exposure	:	**Repeated or prolonged contact with skin may cause dermatitis.**

Reference: (ILO, n.d.)

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	:	**Respiratory protection is not required.** 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**

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SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Properties

Physical state	:	**Solid** [1]
Composition	:	**Substance** [2]
Colour	:	**Colorless, White, Brownish gray**
Odour	:	**Odorless**
Melting point/freezing point	:	**235 °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 oxidising**
Decomposition temperature	:	**≥280 °C**
pH	:	**5 – 6 @ 20 °C**
Kinematic viscosity	:	**Not applicable**
Solubility	:	**764 g/l water @ 25°C**
Partition coefficient: n-octanol/water (log value)	:	**-5.1 @ 20°C**
Vapour pressure	:	**1.871 kPa at 20 °C**
Density and/or relative density	:	**1.77 g/cm³ @ 25°C**
Relative vapour density	:	**Not determined**
Bulk Density (Volumetric)	:	**768-845 kg/m³**
Particle characteristics	:	**0% < 100 micron**
Molecular Formula	:	**H8 N2 O4 S**
Molecular Weight	:	**132.14 g/mol**

[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.)

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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	:	**Avoid moisture**
Incompatible Materials	:	**Strong oxidizing agents, Strong bases**
Hazardous Decomposition Products	:	**Hazardous decomposition products formed under fire conditions - Nitrogen Oxides, Sulphur Oxides.**

Reference: Minema Chemicals (2022)

SECTION 11: TOXICOLOGY

11.1 Acute Toxicity

Classification	:	**Acute Tox. 4**
Description	:	**Ammonium sulfate is of relatively low acute toxicity**

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
Inhalation	Ammonium Sulphate	7783-20-2	LC0[3]	3.5 mg/m³ air	Rat
Subcutaneous				Not listed	
Intravenous				Not listed	

[1] *"LD50" – Lethal Doses. The dosage at which 50% mortality was observed.*
[2] *"LDLo" - The 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.*
[3] *"LC0" – The lethal consentration 0 represents the consentration at which no individuals are expected to die.*
[4] *"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	:	**Barely visible skin erythema (equivalent to a Draize score of 0) was noted at 24 hours after exposure when test substance was applied for 5 minutes, 15 minutes or 20 hours. No effects were noted at 8 days after the end of the exposure or after exposure to the test substance for only 1 minute. Neither scaling nor edema were noted at any observation time.**
Subjects	:	**Rabbits**

Reference: (ECHA, n.d.)

11.3 Serious eye damage/irritation

Classification	:	**No classification**
Description	:	**Slight edema and conjunctival redness was noted at 1 hour after instillation**

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of the test substance; no edema, but still slight redness was present at 24 hours. In the eyes treated with talcum, slight redness was also noted at 1 and 24 hours after exposure. No effects were noted at day 8.

Subjects : **Rabbits**

Reference: (ECHA, n.d.)

11.4 Respiratory or skin sensitisation

Classification : **No classification**

Description : **Very slight to slight edema were observed in the treatment group.**

Subjects : **Guinea Pig**

Reference: (ECHA, n.d.)

11.5 Germ cell mutagenicity

Classification : **No classification**

Description : **In conclusion it can be stated that under the experimental conditions reported the test item did not induce gene mutations.**

Subjects : **Hamster**

Reference: (ECHA, n.d.)

11.6 Carcinogenicity

Classification : **No classification**

Description : **There was no evidence of a long-term carcinogenic activity of the test substance**

Subjects : **Rat**

Reference: (ECHA, n.d.)

11.7 Reproductive toxicity

Classification : **No classification**

Description : **Offspring was unaffected by parental exposure to diammonium phosphate**

Subjects : **Rat**

Reference: (ECHA, 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

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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.)

11.12 Long- and short-term effects

No dara available

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

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

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

Aquatic Toxicity : Acute harmful to fish and invertebrates

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
Ammonium Sulphate	7783-20-2	Fish	Barbus ambassis (barb)	24-h	LC50[1]	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 :

Compound	Cas Number	Organism	Species	Time	Measure	Value

[1]

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Ammonium Sulphate	7783-20-2	Macro-organisms	Eisenia fetida	14-d	LC50	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

[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 : **There is no evidence for photodegradation of ammonium sulfate.**

In aqueous solution, ammonium sulfate is completely dissociated into the ammonium ion ($NH4^+$) and the sulfate anion (SO_4^{2-}). Hydrolysis of ammonium sulfate does not occur.

Biodegrastion **Ammonia from ammonium sulfate decomposition can be released from soils**

Reference: (ECHA, n.d.)

12.3 Bioaccumulate potential

Description : **Based on the high water solubility and the ionic nature, ammonium sulfate is not expected to adsorb or bioaccumulate to a significant extent. In addition, due to the log Kow of –5.1 bioaccumulation is not expected**

Reference: (ECHA, n.d.)

12.4 Mobility in soil

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 : **Because of the chemical structure of ammonium sulfate, the Henrys Law Constant is not assignable. Ammonium sulfate will not volatilise from soil.**

Reference: (ECHA, n.d.)

12.5 Other adverse effects

Classification : **No data available**

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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

UN Number	:	**Not listed**
UN proper shipping name	:	**Not listed**
Transport hazard class(es)	:	**No classification**
Packing group	:	**No classification**
Environmentally hazardous	:	**No classification**
Special precautions:	:	**ADR/RID**[1] **- Not specified**
		IMDG[2] **- Not specified**
		IATA[3] **- Not Specified**
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

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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**

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 consentration 0, represents the consentration 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. https://www.dgg.bam.de/quickinfo/en/show/kcvi54ygzfpw4ctfc3j6wyeowe/

(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)

Environmental protection agency [EPA]. New Zealand Government. (n.d.) Database search. *Chemical Classification and Information Database (CCID).* Retrieved from *https://www.epa.govt.nz/database-search/chemical-classification-and-information-database-ccid/view/2B0386E5-33B9-40C3-B9F9-39B3352FB4C0*

(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. *https://echa.europa.eu/registration-dossier/-/registered-dossier/15571/2/1*

(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). https://www.hazmattool.com/info.php?language=en/

(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/showcard.display?p_lang=en&p_card_id=0595&p_version=2/

(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.)

Minema Chemicals (2022) Search for MSDS or Specification Documents. Retrieved from http://www.minema.co.za/msds/A7000

(MINEMA Chemicals provide MSDS information and documentation on a veriety of chemicals)

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/6097028

(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=7783-20-2

(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.

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