



KYNOCH FERTILIZER

SAFETY DATA SHEET

Calcium Nitrate (15.5-0-0 19)

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 GHS¹ product identification

Product Name : **Calcium Nitrate**

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

1.2 Other means of identification

Description : **Calcium Nitrate (15.5-0-0 19), Calcium Nitrate Decahydrate**
Chemical name : **Ammonium pentacalcium nitrate decahydrate**
CAS Number² : **15245-12-2**
EC Number³ : **239-289-5**

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**

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
	Serious eye damage/eye irritation	Category 1	H318 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 Section 16

Classification by Organization

Organization	Substance	CAS Number	Classification
EPA-NZ	Calcium Nitrate Decahydrate	15245-12-2	Not Listed
ECHA	Calcium Nitrate Decahydrate	15245-12-2	Acute Tox. 4, Eye Damage 1
ILO (WHO)	Calcium Nitrate Anhydrous	10124-37-5	No Classification
AICIS	Calcium Nitrate Decahydrate	15245-12-2	Acute Tox. 4, Eye Damage 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.)

2.2 GHS Label elements, including precautionary statements

Pictogram



Pictogram Name

: **Exclamation, Corrosion**

Signal Word

: **Danger**

Hazard Statements

: **H302 - Harmful if swallowed**

H318 - Causes serious eye damage

Precautionary Statements

: **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/...

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

2.3 Other hazards that do not result in classification

: **Non specified**

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

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substance

Common name	: Calcium Nitrate
EC Name	: Nitric acid, ammonium calcium salt
Chemical Formula	: 5Ca(NO₃)₂NH₄NO₃.10H₂O
Molecular Weight	: 1080.71 g/mol
Nutrient Content	: 15.5% Total Nitrogen (N), 14,4% Nitric Nitrogen (NO₃), 1,1% Ammoniacal Nitrogen (NH₄), 18.5-19% Calcium (Ca)
CAS Number	: 15245-12-2
EC Number	: 239-289-5
Impurities and stabilizers	: N/A¹

¹ "N/A" – Not available

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

3.2 Mixture

Mixture : **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

Effects	: May cause mechanical irritation to the eyes and respiratory tract. Ingestion could cause effects on the blood. This may result in the formation of methaemoglobin. The effects may be delayed. Medical observation is indicated.
Symptoms	: Inhalation - Cough. Sore throat. : Ingestion - Abdominal pain. Blue lips, fingernails, and skin. Confusion. Convulsions. Dizziness. Headache. Nausea. Unconsciousness. : Skin contact - No effect : Eye contact - Redness, pain.

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. <ul style="list-style-type: none">• Sand• Foam• Carbon dioxide (CO₂)• Dry chemical
Notes	: Use fire extinguishing methods suitable to surrounding conditions.

5.2 Specific hazards arise from chemical

Warning	: In case of fire, there is a potential option of explosion, especially if fertilizers are contaminated by inappropriate (incompatible) chemical substances (e.g., oils, see section 10). Toxic fumes may be formed in fire.
Hazardous Combustion Products	: Nitrogen oxides, metal oxide/oxides, ammonia
Fire hazard	: Non-flammable substance
Explosion hazard	: Not applicable
Reactivity	: None

5.3 Special protective action for Fire-Fighters

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| 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. |
| | : 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

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|-------------|--|
| 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

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|-------------|--|
| 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.
 - : 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
- : Avoid contamination, particularly with incompatible substances: flammable materials and lubricants, oxidising agents, acids, bases, sulphides, chlorates, chlorines, chromates, nitrates, permanganates; Metal powders, e.g., copper, nickel, cobalt, zinc, and their alloys).
 - : Incompatible products: Separate from reducing agents and combustible materials. Keep away from acids or bases. On farm keep away from hay, grain, diesel, etc.
 - : 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 < 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
Reference: (BAUA, 2016)
- : (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	Calcium Nitrate	15245-12-2		Not Listed	Not Listed
International Labour organization (ILO)	Calcium Nitrate	15245-12-2		Not Listed	Not Listed
OCHA	Calcium Nitrate	15245-12-2	Total inhalable dust	10mg/m3	-
			Respirable dust	3mg/m3	-

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 : **A nuisance-causing concentration of airborne particles can be reached quickly when dispersed. Occupational exposure limits (ACGIH 2003) : Total inhalable dust - 10 mg/m³; Respirable dust - 3 mg/m³**
- Effects of short-term exposure : **May cause mechanical irritation to the eyes and respiratory tract. Ingestion could cause effects on the blood. This may result in the formation of methaemoglobin. The effects may be delayed. Medical observation is indicated.**
- Effects of long-term or repeated exposure : **Ammonium Nitrate can cause headache, fatigue, dizziness, and a blue colour to the skin and lips.**

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 only necessary if risk assessment indicates this. 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	: Solid¹
Composition	: Substance²
Colour	: White to pale-grey
Odour	: Odourless
Melting point/freezing point	: Above 400°C
Boiling point or initial boiling point and boiling range	: The study does not need to be conducted because the substance is a solid which decomposes before boiling.
Flammability	: Product is not flammable
Lower and upper explosion limit/flammability limit	: Not determined
Flash point	: The study does not need to be conducted because the substance is inorganic. The study does not need to be conducted because the flash point is only relevant to liquids and low melting point solids
Auto-ignition temperature	: No self-ignition took place up to 400°C
Oxidizing Properties	: Non oxidising
Decomposition temperature	: Above 400°C
pH	: 5 – 7 @ 20 °C
Kinematic viscosity	: Not applicable
Solubility	: 100 g/l water @ 25°C
Partition coefficient: n-octanol/water (log value)	: The study does not need to be conducted because the substance is inorganic.
Vapour pressure	: The study does not need to be conducted because the melting point is above 300°C.
Density and/or relative density	: 2.05 g/cm³ @ 20°C
Relative vapour density	: Not determined
Bulk Density (Volumetric)	: 768-845 kg/m³

Particle characteristics : <100 µm was <0.1%
 500-2000 µm was 0.7%
 >2000 µm was 99.3%
 MMAD is > 2000 µm

Molecular Formula : 5Ca(NO3)2NH4NO3.10H2O

Molecular Weight : 1080.71 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.)

SECTION 10: STABILITY AND REACTIVITY

Reactivity : **Contact with combustible materials may cause fire. Contact with base release ammonia.**

Chemical stability : **Stable under normal conditions**

Hazardous Reactions : **A dangerous reaction will not occur.**

Conditions to Avoid : **Avoid contact with incompatible materials. Avoid heat, flame, and sparks.**

Incompatible Materials : **Combustible materials, acids, and alkalis.**

Hazardous Decomposition Products : **These products are nitrogen oxides metal oxide/oxides.**

Reference: Minema Chemicals (2022)

SECTION 11: TOXICOLOGY

11.1 Acute Toxicity

Classification : **Acute Tox. 4**

Description : **Harmful if swallowed**

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

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 concentration 0 represents the concentration 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 : **No skin irritation was seen.**

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	: No adverse effect observed (not sensitising)
Subjects	: Mouse

Reference: (ECHA, n.d.)

11.5 Germ cell mutagenicity

Classification	: No classification
Description	: No adverse effect observed (negative)
Subjects	: Salmonella typhimurium strains

Reference: (ECHA, n.d.)

11.6 Carcinogenicity

Classification	: No data available
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Reference: (ECHA, n.d.)

11.7 Reproductive toxicity

Classification	: No classification
Description	: No adverse effect observed
Subjects	: Rat

Reference: (ECHA, n.d.)

11.8 STOT² - single exposure

No data available

² "STOT" - Specific target organ toxicity.

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

11.9 STOT² - 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	: 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
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

Terrestrial Toxicity

:

Compound	Cas Number	Organism	Species	Time	Measure	Value
Calcium Nitrate	15245-12-2	Macro-organisms				Not Justified
Calcium Nitrate	15245-12-2	Arthropods				Not Justified
Calcium Nitrate	15245-12-2	Plant				Not Justified
Calcium Nitrate	15245-12-2	Micro organisms				Not Justified
Calcium Nitrate	15245-12-2	Birds				Not Justified

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	: The substance does not hydrolyze nor is there evidence for photodegradation. In aqueous solution, nitric acid, ammonium calcium salt is completely dissociated into the calcium ion (Ca²⁺), the ammonium ion (NH⁴⁺) and the nitrate anion (NO₃⁻). Hydrolysis of nitric acid, ammonium calcium salt does not occur.
Biodegradation	Readily biodegradation study does not need to be conducted since the substance 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.
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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. 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.
Volatilization	: Volatilization is unlikely due to the properties of the substance.

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 regulated
UN proper shipping name	:	Not listed
Transport hazard class(es)	:	No classification
Packing group	:	No classification
Environmentally hazardous	:	No classification
Special precautions:	:	ADR/RID¹ - Not specified
		IMDG² - Not specified
		IATA³ - 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

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 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/#list/>

(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/TRGS-510.html>

(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?SiteDatabaseSearchFilters=0&Search=>

(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/15075/1/1>

(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. Their 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/info.php?language=en/>

(Hazmat Tool is a free to search database with information regarding the 49CFR 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=1037&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 variety 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/16211656>

(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=15245-12-2>

(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 health 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.