1. Identification

Product identifier:	V^{12} Micro®
Synonyms:	None
Company product code or Supplier code:	N/A
Fertiliser Group:	2
RSA Reg. No. (Act No. 36 of 1947):	B4514
Supplier:	Andermatt Madumbi (Pty) Ltd Suite 105, 24 Hilton Ave, Hilton KZN 3245, South Africa Telephone: +27 (0) 33 342 3984 (09:00 to 16:00) Email address (technical): support@andermatt.co.za
Recommended use:	Foliar fertiliser
Restrictions on use:	Do not use for any other purpose than described on the product label
Emergency numbers:	+27 (0) 33 342 3984 (09:00 to 16:00) +27 (0) 82 446 8946 (24 H)

2. Hazards identification

V^{12} Micro® is a liquid mixture.

Classification according to the GHS:

Skin corrosion/irritation, Category 2
Serious eye damage/eye irritation, Category 1
Reproductive toxicity, Category 1B
Specific target organ toxicity – repeated exposure, Category 2
Long-term (chronic) aquatic hazard, Category 2

Hazard statements:		
	CAUSES SKIN IRRITATION	H315
	CAUSES SERIOUS EYE DAMAGE	H318
	MAY DAMAGE FERTILITY OR THE UNBORN CHILD	H360
	MAY CAUSE DAMAGE TO ORGANS THROUGH PROLONGED/REPEATED EXPOSURE	H373
	TOXIC TO AQUATIC LIFE WITH LONG-LASTING EFFECTS	H411

Signal word: DANGER

Precautionary statements:

Obtain, read, and follow all safety instructions before use.	P203
Store locked-up	P405
Wear protective gloves/protective clothing/eye protection/face protection.	P280
Do not eat, drink, or smoke when using this product.	P270
Wash hands, exposed areas, and face thoroughly after handling. Do not touch eyes.	P264+P265
Do not breathe mist or spay.	P260
Avoid release to the environment.	P273
IF IN THE EYES: Immediately rinse with water for several minutes.	P305+P354
Remove contact lenses, if present and easy to do. Continue rinsing.	P338
Get medical help.	P317
IF ON SKIN: Wash with plenty of water and soap.	P302+P352
If skin irritation occurs: Get medical help.	P332+P317
Take off contaminated clothing and wash it before reuse.	P362+P364
If exposed or concerned, get medical advice.	P318
Get medical help if you feel unwell.	P319
Collect spillage.	P391
Dispose of contents and container in accordance with regulations.	P501

3. Composition/information on ingredients

V^{12} Micro® is a liquid blend of specific plant supportive micro-elements chelated with amino acids.

Ingredients	**CAS numbers**	**%**
Amino acid complex	None allocated	3 to 4
Ingredients containing boron, iron, magnesium, manganese and zinc	Confidential	18 to 24
Ingredients containing other nutrient elements	Confidential	< 1
Other ingredients	Confidential	5 to 7
Water	7732-18-5	65 to 70

4. First aid measures

Inhalation:

Most important acute symptoms/effects: irritation of the upper airway, a burning sensation and coughing may occur if mist or spray is inhaled.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Get medical help if the person feels unwell.

Eye contact:

Most important acute symptoms/effects: severe eye irritation and possible damage, redness and tearing will occur.
IF IN THE EYES: Immediately rinse with water for several minutes.
Remove contact lenses, if present and easy to do.
Continue rinsing. Get medical help.

Skin contact:

Most important acute symptoms/effects: skin irritation, redness will occur.
IF ON SKIN: Take off clothing if necessary and wash with plenty of water.
If skin irritation occurs, get medical help.

Ingestion:	Most important acute symptoms/effects after swallowing large amounts: nausea, vomiting, diarrhoea, drop in blood pressure, abdominal pain, dizziness and headache may occur. IF SWALLOWED: Rinse mouth cautiously with water for several minutes. Drink water and get medical help.
Most important delayed symptoms/effects after exposure:	Weakness and/or sleepiness may be experienced. Damage to fertility or to the unborn child may occur. Damage to organs, including the brain, may occur. If you were exposed and are concerned, or if you feel unwell, seek medical attention and advice. Take a copy of this SDS with you. The Supplier may be contacted if disclosure of the ingredients is required.
Indication of immediate medical attention:	If skin irritation or rash occurs, or if eye irritation persists, get medical help. Get medical help if you feel unwell. For special treatment contact the Supplier. Pre-existing conditions may be aggravated, such as respiratory disorders, eye disorders or skin disorders.
Protection of first responders:	Avoid undue contact with the mixture. Wear gloves and a mask to prevent transmission of pathogens.

5. Firefighting measures

Appropriate/suitable extinguishing media:	The product is an aqueous mixture and is not combustible. Water spray, foam, carbon dioxide (CO_2) or dry powder may be used but select extinguishing media that is appropriate for local circumstances and the surroundings.
Inappropriate extinguishing media:	None known.
Nature of hazardous combustion products:	Toxic fumes including oxides of carbon and nitrogen may be released in a fire.
Other hazards arising from the mixture:	There is no direct explosion hazard and no sensitivity to mechanical impact or to static discharge for this mixture.
Special protective equipment:	Avoid breathing dust, vapours, and combustion by-products from other chemicals in the vicinity of the fire. Use self-contained breathing apparatus and complete protective clothing. Do not attempt to act without suitable protective equipment.
Precautions and/or protective actions:	Move containers from the fire area if it can be done without risk. Water spray may be used to cool down the containers, but only after considering other material in the vicinity that may pose a hazard. Stay upwind and keep out of low areas. Take precautions to prevent extinguishing media contaminating surface water or ground water.

6. Accidental release measures

Distinguish between large or small spills, leaks, or releases.

Personal precautions:	Avoid contact with skin and eyes. Wash hands thoroughly after handling. Do not touch eyes. Do not eat, drink, or smoke during clean-up operations.
Protective equipment:	Wear protective gloves/protective clothing/appropriate face and eye protection/respiratory protection.
Emergency actions and procedures:	No special emergency actions or procedures are required.
Environmental precautions:	Avoid release to the environment. Prevent spills from entering storm sewers or drains. Report release to the appropriate authorities.
Methods and materials for containment and cleaning up:	Move intact containers from the spill area. The product is a water miscible liquid. Stop leaks if it can be done safely and prevent run-off as far as possible. Small spills: Dilute spills with water, if necessary, and mop up. Collect the spill and place in an appropriate waste disposal container. Large spills: Prevent entry into sewers, water courses, basements, or confined areas by diking if possible. Contain and collect the spillage by mopping up or absorbing with inert material such as dry sand. Transfer to appropriate containers for disposal. Flush the area afterwards with water if appropriate. Dispose of via a licensed waste disposal contractor.

7. Handling and storage

Precautions for safe handling:	Wear protective gloves/protective clothing/eye protection, such as nitrile rubber gloves, face shield/safety goggles and long-sleeved clothing. Do not eat, drink, or smoke when using this product. Do not touch eyes. Wash hands and face thoroughly after handling.
Conditions for safe storage:	Store in the original containers. Keep them closed and upright to prevent leakage. Keep out of direct sunlight. Store locked up in a facility designed to contain liquid spills. Store separately from any food, feed, or drinks. Keep out of reach of children and uninformed persons.
Any incompatibilities:	The mixture is incompatible with any strong acids and strong alkalis.

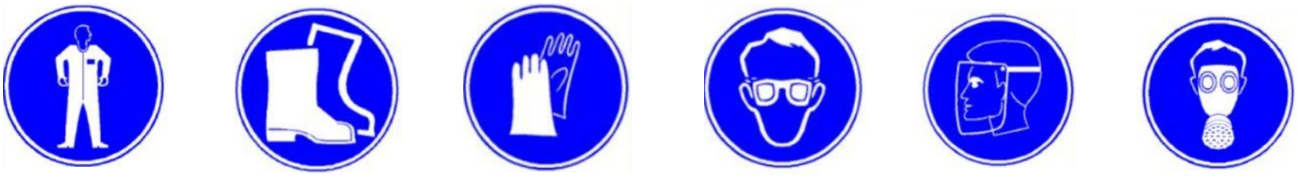
8. Exposure controls/personal protection

No occupational exposure limit values have been established for this mixture.

No biological limit values are available for this mixture. Guideline values for individual essential elements such as B, Fe and Zn are less than 5 mg/litre, while the maximum allowable levels for anions such as chloride, nitrate and sulphate are less than 500 mg/litre. For hazardous elements (As, Hg, Pb, Cd, Cr, Ni, Al, Co, Se, etcetera) the maximum allowable levels are less than 0.5 mg/litre.

Appropriate engineering controls include good general ventilation. No other control parameters are considered necessary. Safety showers and eye wash stations should be provided.

Wear personal protective equipment (protective gloves/protective clothing/face and eye protection/appropriate footwear) when handling the mixture. Avoid breathing mist or spray.



9. Physical and chemical properties

Physical state	Liquid
Clarity:	Information not available
Colour:	Dark brown
Odour:	Slight
Odour threshold:	Not known
Melting point/freezing point:	Data not available
Boiling point (or initial point and range):	Data not available
Flammability (gases, liquids, solids):	Non-flammable
Lower and upper explosion limits:	None
Lower and upper flammability limits:	None
Flash point:	Non-combustible
Autoignition temperature:	Not applicable
Decomposition temperature:	Not known
pH, neat:	4 to 6
pH, aqueous dilution (10%):	Not determined
Dissociation in water, pKa:	Not determined
Kinematic viscosity (of liquids) in mm^2/s:	Data not available
Solubility in water:	Miscible with water
Solubility in a specified non-polar solvent:	Not miscible with non-polar solvents
Partition coefficient (n-octanol/water):	Data not available
Vapour pressure (at 25 °):	Data not available
Density and/or relative density:	1.3
Relative vapour density:	Data not available
Particle characteristics:	Data not available

10. Stability and reactivity

Chemical stability:	The mixture is chemically stable and not reactive when handled or stored at ambient temperatures and below. It is not combustible.
Safety significance of any change in physical appearance:	The mixture is not expected to change in physical appearance over time, except for reversible settling, which has no safety significance.
Possibility of hazardous reactions:	There is no possibility of hazardous reactions such as polymerisation.
Conditions to avoid:	Do not allow the mixture to heat up excessively. Pressure, shock, static discharge, and vibrations have no known effect.
Incompatible materials:	Mixing with strong acid or alkali may cause precipitation of solids.
Hazardous decomposition products:	The mixture is not expected to produce hazardous decomposition products when used and stored properly, but may decompose when heated, producing oxides of carbon and nitrogen.

11. Toxicological information

Routes of exposure: Exposure to the mixture predominantly occurs through skin and eye contact. Accidental ingestion of the liquid or inhalation of the mists and sprays can occur mainly through negligence during application as fertiliser.

Effects of exposure: Exposure of the eyes can cause severe irritation and damage. Prolonged or repeated exposure may damage fertility or damage the unborn child, and may damage the brain and other organs.

Symptoms related to the physical, chemical, and toxicological characteristics of the mixture include irritation and redness upon skin contact. Eye contact can cause severe irritation, redness, and excessive tearing (epiphora) and permanent damage. Inhalation can cause irritation of the upper airways and discomfort. Delayed symptoms due to prolonged and repeated exposure may include breathing difficulties and feeling weak or sick.

No test data is available for the mixture.

Hazard class	Hazard category	Rationale for classification
Acute toxicity, oral:	Not classified	Based on available ingredient data.
Acute toxicity, dermal:	Not classified	Based on available ingredient data.
Acute toxicity, inhalation:	Not classified	Based on available ingredient data.
Skin corrosion/irritation:	Category 2 – irritation	Based on available ingredient data.
Serious eye damage/irritation:	Category 1 – serious damage	Based on available ingredient data.
Respiratory or skin sensitisation:	Not classified	Based on available ingredient data.
Germ cell mutagenicity:	Not classified	Based on available ingredient data.
Carcinogenicity:	Not classified	Based on available ingredient data.
Reproductive toxicity:	Category 1B - damaging	Based on available ingredient data.
STOT single exposure:	Not classified	Based on available ingredient data.
STOT repeated exposure:	Category 2 – organ damage	Based on available ingredient data.
Aspiration hazard:	Not classified	Based on available ingredient data.

12. Ecological information

No test data is available for the mixture.

Hazard class	Hazard category	Rationale for classification
Acute (short-term) aquatic toxicity:	Not classified	Based on available ingredient data.
Chronic (long-term) aquatic toxicity:	Category 2	Based on available ingredient data.
Toxicity for birds:		No information available.
Toxicity for earthworms:		No information available.
Toxicity for terrestrial plants:		No information available.
Toxicity for honeybees:		No information available.
Toxicity for soil micro-organisms:		No information available.
Possible impact on sewage treatment:		No information available.
Degradability:		No information available.
Persistence and mobility in soil and environmental fate:		No information available.
Bio-accumulative potential:		No information available.
Ozone depletion potential:	None	Does not contain halocarbon molecules
Photochemical ozone creation potential:	None expected	Based on characteristics of the ingredients.
Endocrine disrupting potential:	None expected	Based on characteristics of the ingredients.
Climate change potential:	None expected	Based on characteristics of the ingredients.
Other adverse effects:	None expected	

13. Disposal considerations

Avoid release to the environment. Dispose of waste residues responsibly as hazardous chemical waste through a licensed waste removal company.

Dispose of the container by rinsing it properly. Do not re-use. Destroy mechanically and dispose of as ordinary waste through a licensed waste removal company.

Refer to the manufacturer or supplier for information on recovery or recycling, for options on reclamation, and on disposal of unused material.

The physical/chemical properties of the product should have no significant effect on disposal procedures.

The product consists mainly of water and inorganic chemicals and incineration is not a practical option.

Special precautions will be necessary for landfill of bulk product to prevent environmental pollution. Rather use up the product or consider recovery or reclamation.

There is no other relevant information.

14. Transport information

UN number:	None. Not classified as dangerous in the context of transport regulations.
UN proper shipping name:	Not applicable.
UN packing group number:	Not applicable.
UN transport hazard class(es):	Not applicable.
A known marine pollutant (IMDG Code)?	Not a marine pollutant.
A known severe marine pollutant?	Not a marine pollutant.
Environmentally hazardous, ADR?	Not classified as dangerous in the context of transport regulations.
Environmentally hazardous, RID?	Not classified as dangerous in the context of transport regulations.
Environmentally hazardous, ADN?	Not classified as dangerous in the context of transport regulations.
Transport in bulk by sea, IMO?	Not classified as dangerous in the context of transport regulations.

There are no special precautions which a user needs to be aware of or needs to comply with.

15. Regulatory information

Relevant safety regulations:	Regulations for hazardous chemical agents 2021, Department of Employment and Labour (March 2021).
Relevant health regulations:	Occupational Health and Safety Act, 1993 (Act No. 85 of 1993).
Relevant environmental regulations:	The National Environmental Management Act, 107 of 1998 (NEMA). Guidelines on the administration of incidents, as described in section 30 of the NEMA, Department of Environmental Affairs (2019).
Relevant transport regulations:	The National Road Traffic Act 93 of 96 Chapter VIII and Regulations: Transportation of dangerous goods and substances by road. South African National Standard SANS 10231:2019 Edition 4.2, Transport of dangerous goods by road – Operational requirements
Subject to the Montreal Protocol?	No.
Subject to the Stockholm Convention?	No.
Subject to the Rotterdam Convention?	No.
Subject to any prohibitions?	No.
Subject to any restrictions?	No.

16. Other information

SDS identification or reference number: 034

Date of the previous revision of this SDS: Not dated. Previous revision number: Not numbered.

There is no additional information relevant to the material's nature or use, or any other relevant information.

Abbreviations that may have been used in this document:

AND means European Agreement Concerning the International Carriage of Dangerous Goods by Inland Waterways.
ADR means Agreement Concerning the International Carriage of Dangerous Goods by Road.
CAS means Chemical Abstract Service.
Cat. means Category.
GHS means Globally Harmonised System of Classification and Labelling of Chemicals.
IMDG Code means International Maritime Dangerous Goods Code.
IMO means International Maritime Organisation.
NEMA means National Environmental Management Act.
RID means Regulations Concerning the International Carriage of Dangerous Goods by Rail.
SDS means safety data sheet.
STOT means specific target organ toxicity.
UN means United Nations.

This safety data sheet was compiled in compliance with the following regulations and guidelines:

a. Regulations for hazardous chemical agents 2021, Department of Employment and Labour (March 2021).
b. The globally harmonised system of classification and labelling of chemicals (GHS), 9th Revised Edition, United Nations (2021).
c. Globally harmonised system of classification and labelling of chemicals (GHS), SANS 10234:2019, Ed. 2.00 (2019).