SAFETY DATA SHEET

According to REACH Regulation (EC) No 1907/2006, as amended by UK REACH Regulations SI 2019/758

VERTEX HI-N 34™

Version	Revision Date:	SDS Number:	Date of last issue: 15.05.2025
1.7	19.05.2025	50001099	Date of first issue: 19.07.2018

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product name VERTEX HI-N 34™

Other means of identification

Product code 50001099

1.2 Relevant identified uses of the substance or mixture and uses advised against

Use of the Sub-stance/Mixture : Crop nutrition

Recommended restrictions on use : Use as recommended by the label.

1.3 Details of the supplier of the safety data sheet

Supplier Address

FMC Agro Limited
Rectors Lane, Pentre
Flintshire
CH5 2DH
United Kingdom

Telephone: + 44 1244 537370
E-mail address: SDS-Info@fmc.com .

1.4 Emergency telephone number

For leak, fire, spill or accident emergencies, call:
England and Wales: 44-870-8200418 (CHEMTREC)

Medical emergency:
England and Wales: 111
Scotland: 84 54 24 2424

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008) as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567)

Skin irritation, Category 2 H315: Causes skin irritation.

Serious eye damage, Category 1	H318: Causes serious eye damage.
Long-term (chronic) aquatic hazard, Category 2	H411: Toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008) as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567)

Hazard pictograms :

Signal word : Danger

Hazard statements :
H315 Causes skin irritation.
H318 Causes serious eye damage.
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements :

Prevention:

P220 Keep away from clothing and other combustible materials.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P302 + P352 IF ON SKIN: Wash with plenty of water and soap.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
P391 Collect spillage.

Hazardous components which must be listed on the label:
manganese dinitrate
copper dinitrate

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
ammonium nitrate	6484-52-2 229-347-8	Ox. Sol. 3; H272 Eye Irrit. 2; H319	>= 20 - < 30
magnesium nitrate	10377-60-3 233-826-7	Ox. Sol. 3; H272 Eye Irrit. 2; H319	>= 1 - < 10
manganese dinitrate	10377-66-9 233-828-8 01-2119487993-17-0002	Ox. Sol. 3; H272 Acute Tox. 4; H302 Skin Corr. 1C; H314 Eye Dam. 1; H318 STOT RE 2; H373 Aquatic Chronic 1; H410 ——————— M-Factor (Chronic aquatic toxicity): 1	>= 1 - < 2.5
copper dinitrate	3251-23-8 221-838-5 01-2119969290-34-0011	Ox. Sol. 2; H272 Skin Corr. 1B; H314 Eye Dam. 1; H318 Aquatic Acute 1; H400 Aquatic Chronic 1; H410 ——————— M-Factor (Acute aquatic toxicity): 10 M-Factor (Chronic aquatic toxicity): 10	>= 1 - < 2.5

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : Move out of dangerous area.
Consult a physician.
Show this safety data sheet to the doctor in attendance.
Do not leave the victim unattended.

Protection of first-aiders	:	First Aid responders should pay attention to self-protection and use the recommended protective clothing Avoid inhalation, ingestion and contact with skin and eyes. If potential for exposure exists refer to Section 8 for specific personal protective equipment.
If inhaled	:	Move to fresh air. If unconscious, place in recovery position and seek medical advice. If symptoms persist, call a physician. If experiencing any discomfort, immediately remove from exposure. Light cases: Keep person under surveillance. Get medical attention immediately if symptoms develop. Serious cases: Get medical attention immediately or call for an ambulance.
In case of skin contact	:	Take off all contaminated clothing immediately. Wash contaminated clothing before re-use. Wash off immediately with plenty of water for at least 15 minutes. Get medical attention if irritation develops and persists.
In case of eye contact	:	Small amounts splashed into eyes can cause irreversible tissue damage and blindness. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Continue rinsing eyes during transport to hospital. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
If swallowed	:	Do not induce vomiting without medical advice. Keep respiratory tract clear. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.

4.2 Most important symptoms and effects, both acute and delayed

Risks	:	Causes skin irritation. Causes serious eye damage.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment	:	Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Dry chemical, CO2, water spray or regular foam.
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media : High volume water jet
Do not spread spilled material with high-pressure water streams.

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-fighting : Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products : Ammonia
Fire may produce irritating, corrosive and/or toxic gases.

5.3 Advice for firefighters

Special protective equipment for firefighters : Firefighters should wear protective clothing and self-contained breathing apparatus.

Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
For safety reasons in case of fire, cans should be stored separately in closed containments.
Use a water spray to cool fully closed containers.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Use personal protective equipment.
Ensure adequate ventilation.
If it can be safely done, stop the leak.
Do not touch or walk through the spilled material.
Never return spills in original containers for re-use.
Mark the contaminated area with signs and prevent access to unauthorized personnel.
Only qualified personnel equipped with suitable protective equipment may intervene.
For disposal considerations see section 13.

6.2 Environmental precautions

Environmental precautions : Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.

If the product contaminates rivers and lakes or drains inform respective authorities.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

6.4 Reference to other sections

See sections: 7, 8, 11, 12 and 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling : Do not breathe vapours/dust.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
To avoid spills during handling keep bottle on a metal tray.
Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion : Keep away from combustible material.

Hygiene measures : When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Electrical installations / working materials must comply with the technological safety standards.

Advice on common storage : Do not store near acids.

Further information on storage stability : No decomposition if stored and applied as directed.

7.3 Specific end use(s)

Specific use(s) : Crop nutrition

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
manganese dinitrate	10377-66-9	TWA (Inhalable)	0.2 mg/m3 (Manganese)	GB EH40
		TWA (Respirable fraction)	0.05 mg/m3 (Manganese)	GB EH40
		TWA (inhalable fraction)	0.2 mg/m3 (Manganese)	2017/164/EU
	Further information: Indicative			
		TWA (Respirable fraction)	0.05 mg/m3 (Manganese)	2017/164/EU
	Further information: Indicative			
copper dinitrate	3251-23-8	TWA (Dusts and mists)	1 mg/m3 (Copper)	GB EH40
		STEL (Dusts and mists)	2 mg/m3 (Copper)	GB EH40

Derived No Effect Level (DNEL)

Substance name	End Use	Exposure routes	Potential health effects	Value

Predicted No Effect Concentration (PNEC)

Substance name	Environmental Compartment	Value
ammonium nitrate	Sewage treatment plant	18 mg/l
urea	Fresh water	0.47 mg/l
	Marine water	0.047 mg/l
magnesium nitrate	Sewage treatment plant	18 mg/l
manganese dinitrate	Fresh water	0.029 - 0.0358 mg/l
	Intermittent use (freshwater)	0.029 - 0.1041 mg/l
	Marine water	400 - 2900 ng/l
	Sewage treatment plant	0.0114 mg/kg dry weight (d.w.)
	Fresh water sediment	0.00114 mg/kg dry weight (d.w.)
	Soil	25.1 mg/kg dry weight (d.w.)
copper dinitrate	Fresh water	0.0078 mg/l
	Marine water	0.0052 mg/l
	Sewage treatment plant	0.230 mg/l
	Fresh water sediment	87 mg/kg
	Marine sediment	676 mg/kg
	Soil	65 mg/kg

8.2 Exposure controls

Personal protective equipment

Eye/face protection	:	Eye wash bottle with pure water Tightly fitting safety goggles Wear face-shield and protective suit for abnormal processing problems.
Hand protection Material	:	Wear chemical resistant gloves, such as barrier laminate, butyl rubber or nitrile rubber.
Remarks	:	The suitability for a specific workplace should be discussed with the producers of the protective gloves.
Skin and body protection	:	Impervious clothing Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Respiratory protection	:	No personal respiratory protective equipment normally required.
Protective measures	:	Wear suitable protective equipment. Plan first aid action before beginning work with this product. Always have on hand a first-aid kit, together with proper instructions.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	:	liquid
Form	:	liquid
Colour	:	blue green
Odour	:	Faint odour
Odour Threshold	:	No data available
pH	:	3.0 - 4.5 Concentration: 100 %
Melting point/freezing point	:	No data available
Initial boiling point and boiling range	:	No data available
Flash point	:	No data available
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapour pressure	:	No data available
Relative vapour density	:	No data available
Relative density	:	1.33 - 1.35

Density	:	No data available
Bulk density	:	No data available
Solubility(ies)		
Water solubility	:	soluble
Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity		
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	No data available
Explosive properties	:	No data available
Oxidizing properties	:	Non-oxidizing

9.2 Other information

Particle size	:	No data available
Particle Size Distribution	:	No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

No decomposition if stored and applied as directed.

10.2 Chemical stability

No decomposition if stored and applied as directed.

10.3 Possibility of hazardous reactions

Hazardous reactions : No decomposition if stored and applied as directed.

10.4 Conditions to avoid

Conditions to avoid : Avoid extreme temperatures
Avoid formation of aerosol.

10.5 Incompatible materials

Materials to avoid : Avoid strong acids, bases, and oxidizers

10.6 Hazardous decomposition products

See subsection 5.2.
No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Based on available data, the classification criteria are not met.

Product:

Acute oral toxicity	:	Acute toxicity estimate: > 2,000 mg/kg Method: Calculation method
Acute inhalation toxicity	:	Acute toxicity estimate: > 20 mg/l Exposure time: 4 h Test atmosphere: vapour Method: Calculation method
Acute dermal toxicity	:	Remarks: No data is available on the product itself.

Components:

ammonium nitrate:

Acute oral toxicity	:	LD50 (Rat, male and female): 2,950 mg/kg Method: OECD Test Guideline 401
Acute dermal toxicity	:	LD50 (Rat, male and female): > 5,000 mg/kg Method: OECD Test Guideline 402

magnesium nitrate:

Acute oral toxicity	:	LD50 (Rat, female): > 2,000 mg/kg Method: OECD Test Guideline 423
Acute dermal toxicity	:	LD50 (Rat, male and female): > 5,000 mg/kg Method: OECD Test Guideline 402

manganese dinitrate:

Acute oral toxicity	:	LD50 Oral (Rat, female): > 300 mg/kg Method: OECD Test Guideline 420

Skin corrosion/irritation

Causes skin irritation.

Product:

Assessment	:	Irritating to skin.
Result	:	Skin irritation

Components:

ammonium nitrate:

Species	:	Rabbit
Method	:	OECD Test Guideline 404
Result	:	No skin irritation

magnesium nitrate:

Species	:	Rabbit
Method	:	OECD Test Guideline 404
Result	:	No skin irritation
Remarks	:	Based on data from similar materials

manganese dinitrate:

Species	:	Rabbit
Method	:	OECD Test Guideline 404
Result	:	Corrosive after 1 to 4 hours of exposure

copper dinitrate:

Method	:	OECD Test Guideline 431
Result	:	Corrosive after 3 minutes to 1 hour of exposure

Serious eye damage/eye irritation

Causes serious eye damage.

Product:

Assessment	:	Irritating to eyes.
Result	:	irritating

Components:

ammonium nitrate:

Species	:	Rabbit
Method	:	OECD Test Guideline 405
Result	:	Irritation to eyes, reversing within 21 days

magnesium nitrate:

Species	:	Rabbit
Method	:	OECD Test Guideline 405
Result	:	Eye irritation

manganese dinitrate:

Species	:	Bovine cornea
Result	:	Irreversible effects on the eye

Respiratory or skin sensitisation

Skin sensitisation

Based on available data, the classification criteria are not met.

Respiratory sensitisation

Based on available data, the classification criteria are not met.

Product:

Remarks : No data is available on the product itself.

Components:

ammonium nitrate:

Test Type : Local lymph node assay (LLNA)
Species : Mouse
Method : OECD Test Guideline 429
Result : Does not cause skin sensitisation.

magnesium nitrate:

Test Type : Local lymph node assay (LLNA)
Species : Mouse
Method : OECD Test Guideline 429
Result : Does not cause skin sensitisation.

manganese dinitrate:

Test Type : Local lymph node assay (LLNA)
Species : Mouse
Method : OECD Test Guideline 429
Result : Does not cause skin sensitisation.

copper dinitrate:

Test Type : Maximisation Test
Exposure routes : Dermal
Species : Guinea pig
Method : OECD Test Guideline 406
Result : Does not cause skin sensitisation.

Germ cell mutagenicity

Based on available data, the classification criteria are not met.

Components:

ammonium nitrate:

Genotoxicity in vitro : Test Type: reverse mutation assay
Method: OECD Test Guideline 471
Result: negative
Remarks: Based on data from similar materials

Test Type: In vitro mammalian cell gene mutation test
Method: OECD Test Guideline 476
Result: negative
Remarks: Based on data from similar materials

Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: negative

Germ cell mutagenicity- Assessment : In vitro tests did not show mutagenic effects

magnesium nitrate:

Genotoxicity in vitro : Test Type: reverse mutation assay
Method: OECD Test Guideline 471
Result: negative

Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: negative
Remarks: Based on data from similar materials

Test Type: In vitro mammalian cell gene mutation test
Method: OECD Test Guideline 476
Result: negative
Remarks: Based on data from similar materials

Germ cell mutagenicity- Assessment : In vitro tests did not show mutagenic effects

manganese dinitrate:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test
Method: OECD Test Guideline 476
Result: negative

Test Type: reverse mutation assay
Method: OECD Test Guideline 471
Result: negative

Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: negative

Genotoxicity in vivo : Test Type: In vivo micronucleus test
Species: Mouse (female)
Application Route: Oral
Method: OECD Test Guideline 474
Result: negative

Germ cell mutagenicity- Assessment : Weight of evidence does not support classification as a germ cell mutagen.

copper dinitrate:

Genotoxicity in vitro : Test Type: reverse mutation assay
Method: OECD Test Guideline 471

Result: negative

Genotoxicity in vivo : Test Type: unscheduled DNA synthesis assay
Species: Rat (male)
Application Route: Oral
Method: OECD Test Guideline 486
Result: negative

Test Type: Micronucleus test
Species: Mouse (male and female)
Application Route: Oral
Method: Mutagenicity (micronucleus test)
Result: negative

Carcinogenicity

Based on available data, the classification criteria are not met.

Components:

manganese dinitrate:

Species	:	Rat, male
Application Route	:	Oral
Exposure time	:	103 weeks
Dose	:	60, 200, 615 mg/kg body weight
	:	615 mg/kg body weight
Result	:	negative
Carcinogenicity - Assessment	:	Weight of evidence does not support classification as a carcinogen

Reproductive toxicity

Based on available data, the classification criteria are not met.

Components:

ammonium nitrate:

Effects on fertility : Species: Rat, male and female
Application Route: Oral
Dose: 0, 250, 750, and 1,500 milligram per kilogram
General Toxicity - Parent: NOAEL: >= 1,500 mg/kg body weight
Method: OECD Test Guideline 422
Result: negative
Remarks: Based on data from similar materials

Effects on foetal development : Species: Rat, male and female
Application Route: Oral
Dose: 0, 250, 750, and 1,500 milligram per kilogram
General Toxicity Maternal: NOAEL: >= 1,500 mg/kg body weight
Developmental Toxicity: NOAEL: >= 1,500 mg/kg body weight

Method: OECD Test Guideline 422
Result: negative
Remarks: Based on data from similar materials

Reproductive toxicity - Assessment : Weight of evidence does not support classification for reproductive toxicity

magnesium nitrate:

Effects on fertility : Species: Rat, male and female
Application Route: Oral
Dose: 0, 250, 750, and 1,500 milligram per kilogram
Duration of Single Treatment: 28 d
General Toxicity - Parent: NOAEL: > 1,500 mg/kg body weight
Method: OECD Test Guideline 422
Result: negative
Remarks: Based on data from similar materials

Effects on foetal development : Species: Rat
Application Route: Oral
Dose: 0, 250, 750, and 1,500 milligram per kilogram
Duration of Single Treatment: 28 d
General Toxicity Maternal: NOAEL: > 1,500 mg/kg body weight
Developmental Toxicity: NOAEL: > 1,500 mg/kg body weight
Method: OECD Test Guideline 422
Result: negative
Remarks: Based on data from similar materials

Reproductive toxicity - Assessment : Weight of evidence does not support classification for reproductive toxicity

manganese dinitrate:

Effects on fertility : Test Type: Two-generation study
Species: Rat, male and female
Application Route: inhalation (dust/mist/fume)
Dose: 0, 5, 10, 20 µg/L
General Toxicity - Parent: NOEC: 0.020 mg/l
General Toxicity F1: NOAEC: 0.020 mg/l
Method: OECD Test Guideline 416
Result: negative

Effects on foetal development : Species: Rat
Application Route: inhalation (dust/mist/fume)
General Toxicity Maternal: NOAEL: 0.005 mg/L
Embryo-foetal toxicity: NOAEL: 0.015 mg/L
Method: OECD Test Guideline 414

STOT - single exposure

Based on available data, the classification criteria are not met.

STOT - repeated exposure

Based on available data, the classification criteria are not met.

Components:

ammonium nitrate:

Assessment : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

magnesium nitrate:

Assessment : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

manganese dinitrate:

Assessment : The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

Repeated dose toxicity

Components:

ammonium nitrate:

Species	:	Rat, male
NOAEL	:	256 mg/kg
Application Route	:	Oral
Exposure time	:	1 year
Dose	:	42, 256, 1527 mg/kg bw/day
Method	:	OECD Test Guideline 453
Symptoms	:	No adverse effects
Remarks	:	Based on data from similar materials

Species	:	Rat, female
NOAEL	:	284 mg/kg
Application Route	:	Oral
Exposure time	:	1 year
Dose	:	48, 284, 1490 mg/kg bw/d
Method	:	OECD Test Guideline 453
Symptoms	:	No adverse effects
Remarks	:	Based on data from similar materials

Species	:	Guinea pig, male
NOAEC	:	0.001 mg/l
Application Route	:	Inhalation
Exposure time	:	4 weeks
Dose	:	1 mg/m3
Method	:	OECD Test Guideline 412
Symptoms	:	No adverse effects

Species	:	Rat, male
NOAEC	:	0.001 mg/l

Application Route	:	Inhalation
Exposure time	:	4 weeks
Dose	:	1 mg/m3
Method	:	OECD Test Guideline 412
Symptoms	:	No adverse effects

magnesium nitrate:

Species	:	Rat, male and female
NOAEL	:	> 1,500 mg/kg
Application Route	:	Oral
Exposure time	:	28d
Dose	:	0, 250, 750, 1,500 mg/kg/day
Method	:	OECD Test Guideline 422
Remarks	:	Based on data from similar materials

manganese dinitrate:

Species	:	Rat, male
NOAEL	:	1700 mg/kg bw/day
Application Route	:	Oral
Exposure time	:	13weeks
Dose	:	110 to 1700 mg/kg

Species	:	Rat, male and female
NOAEL	:	20 µg/L air
Application Route	:	inhalation (dust/mist/fume)
Dose	:	5, 10, 20 µg/L air
Method	:	OPPTS 870.3800

Aspiration toxicity

Based on available data, the classification criteria are not met.

Further information

Product:

Remarks	:	No data available

SECTION 12: Ecological information

12.1 Toxicity

Components:

ammonium nitrate:

Toxicity to fish	:	LC50 (Cyprinus carpio (Carp)): 95 - 102 mg/l Exposure time: 48 h Test Type: semi-static test
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 490 mg/l Exposure time: 48 h

Remarks: Based on data from similar materials

Toxicity to algae/aquatic plants : EC50 (Marine Diatom): > 1,700 mg/l
Exposure time: 10 d
Test Type: static test
Remarks: Based on data from similar materials

Toxicity to microorganisms : EC50 (activated sludge): > 1,000 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209
Remarks: Based on data from similar materials

magnesium nitrate:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 100 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203
Remarks: Based on data from similar materials

LC50 (Poecilia reticulata (guppy)): 1,378 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203
Remarks: Based on data from similar materials

LC50 (Cyprinus carpio (Carp)): 95 - 102 mg/l
Exposure time: 48 h
Test Type: semi-static test
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 39 mg/l
Exposure time: 96 h
Remarks: Based on data from similar materials

Toxicity to algae/aquatic plants : EC50 (diatoms): > 1,700 mg/l
Exposure time: 10 d
Test Type: static test
Remarks: Based on data from similar materials

Toxicity to microorganisms : EC50 (activated sludge): > 1,000 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209
Remarks: Based on data from similar materials

Toxicity to fish (Chronic toxicity) : NOEC: 58 mg/l
Exposure time: 30 d
Species: Pimephales promelas (fathead minnow)
Test Type: flow-through test
Remarks: Based on data from similar materials

NOEC: 157 mg/l
Exposure time: 32 d
Species: Pimephales promelas (fathead minnow)

Test Type: flow-through test
Remarks: Based on data from similar materials

manganese dinitrate:

Toxicity to fish	:	LC50 (Fish): 55.26 - 67.71 mg/l Exposure time: 96 h Test Type: static test
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 100 mg/l Exposure time: 48 h Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	LOEC (Lemna minor (duckweed)): 64.94 mg/l Exposure time: 7 d Method: OECD Test Guideline 221 Remarks: Based on data from similar materials EC10 (Lemna minor (duckweed)): 23.37 mg/l Exposure time: 7 d Method: OECD Test Guideline 221 Remarks: Based on data from similar materials
Toxicity to microorganisms	:	NOEC (activated sludge): 560 mg/l Exposure time: 3 h Method: OECD Test Guideline 209 Remarks: Based on data from similar materials
Toxicity to fish (Chronic toxicity)	:	see user defined free text: 2.9 mg/l Exposure time: 28 d Species: Oncorhynchus mykiss (rainbow trout) Test Type: semi-static test
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC: 0.02 mg/l Exposure time: 20 d Species: Daphnia magna (Water flea) Test Type: static test
M-Factor (Chronic aquatic toxicity)	:	1

copper dinitrate:

Toxicity to fish	:	LC50 (Pimephales promelas (fathead minnow)): 0.0384 mg/l Exposure time: 96 h Remarks: Based on data from similar materials
Toxicity to daphnia and other aquatic invertebrates	:	LC50 (Daphnia magna (Water flea)): 0.0098 mg/l Exposure time: 48 h Test Type: static test LC50 (Ceriodaphnia dubia (water flea)): 0.014 mg/l

Exposure time: 48 h
Test Type: semi-static test

Toxicity to algae/aquatic plants : NOEC (Raphidocelis subcapitata (freshwater green alga)): 0.0157 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

NOEC (Macrocystis pyrifera (brown algae)): 0.0102 mg/l
Exposure time: 19 d

EC10 (Phaeodactylum tricornutum): 0.0029 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

NOEC (Phaeodactylum tricornutum): 0.0057 mg/l
Exposure time: 72 h
Method: ISO 10253

NOEC (Skeletonema costatum (marine diatom)): 0.00754 mg/l
Exposure time: 72 h
Method: ISO 10253

M-Factor (Acute aquatic toxicity) : 10

Toxicity to microorganisms : NOEC (activated sludge): 0.23 - 0.45 mg/l
Exposure time: 30 d
Test Type: Growth inhibition

NOEC (Tetrahymena pyriformis): 3.563 mg/l
Exposure time: 48 h
Test Type: Growth inhibition

EC50 (activated sludge): 0.0025 mg/l
Exposure time: 100 d
Test Type: Growth inhibition

M-Factor (Chronic aquatic toxicity) : 10

12.2 Persistence and degradability

No data available

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Product:

Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects

Product:

Endocrine disrupting potential : This substance/mixture does not contain components considered to have endocrine disrupting properties for environment according to UK REACH Article 57(f).

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : The product should not be allowed to enter drains, water courses or the soil.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.
Do not burn, or use a cutting torch on, the empty drum.

SECTION 14: Transport information

14.1 UN number

ADN : UN 3082

ADR : UN 3082

RID : UN 3082

IMDG : UN 3082

IATA : UN 3082

14.2 UN proper shipping name

ADN : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

N.O.S.
(manganese dinitrate, Copper dinitrate)

ADR : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
(manganese dinitrate, Copper dinitrate)

RID : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
(manganese dinitrate, Copper dinitrate)

IMDG : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
(manganese dinitrate, Copper dinitrate)

IATA : Environmentally hazardous substance, liquid, n.o.s.
(manganese dinitrate, Copper dinitrate)

14.3 Transport hazard class(es)

	Class	Subsidiary risks
ADN	9	
ADR	9	
RID	9	
IMDG	9	
IATA	9	

14.4 Packing group

ADN

Packing group	:	III
Classification Code	:	M6
Hazard Identification Number	:	90
Labels	:	9

ADR

Packing group	:	III
Classification Code	:	M6
Hazard Identification Number	:	90
Labels	:	9
Tunnel restriction code	:	(-)

RID

Packing group	:	III
Classification Code	:	M6
Hazard Identification Number	:	90
Labels	:	9

IMDG

Packing group	:	III
Labels	:	9
EmS Code	:	F-A, S-F

IATA (Cargo)

Packing instruction (cargo aircraft)	:	964
Packing instruction (LQ)	:	Y964
Packing group	:	III
Labels	:	Miscellaneous

IATA (Passenger)

Packing instruction (passenger aircraft)	:	964
Packing instruction (LQ)	:	Y964
Packing group	:	III
Labels	:	Miscellaneous

14.5 Environmental hazards

ADN
Environmentally hazardous : yes

ADR
Environmentally hazardous : yes

RID
Environmentally hazardous : yes

IMDG
Marine pollutant : yes

IATA (Passenger)
Environmentally hazardous : yes

IATA (Cargo)
Environmentally hazardous : yes

14.6 Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable for product as supplied.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Relevant EU provisions transposed through retained EU law

UK REACH List of restrictions (Annex 17)	:	Conditions of restriction for the following entries should be considered: Number on list 58, 3 nitric acid …% [C ≤ 70 %] (Number on list 3)

ammonium nitrate (Number on list 58)

UK REACH Candidate list of substances of very high concern (SVHC) for Authorisation	:	Not applicable
The Persistent Organic Pollutants Regulations (retained Regulation (EU) 2019/1021 as amended for Great Britain)	:	Not applicable
Regulation (EU) No 2024/590 on substances that deplete the ozone layer	:	Not applicable
Regulation (EU) 2019/1148 on the marketing and use of explosives precursors	:	ammonium nitrate
UK REACH List of substances subject to authorisation (Annex XIV)	:	Not applicable

Control of Major Accident Hazards Regulations 2015 (COMAH)	E2	ENVIRONMENTAL HAZARDS
	1	Ammonium nitrate: fertilizers capable of self-sustaining decomposition
	4	Ammonium nitrate: "off-specs" material and fertilizers not fulfilling the detonation test
	3	Ammonium nitrate: technical grade
	2	Ammonium nitrate: fertilizer grade

The components of this product are reported in the following inventories:

TCSI	:	Not in compliance with the inventory
TSCA	:	Product contains substance(s) not listed on TSCA inventory.
AIIC	:	Not in compliance with the inventory
DSL	:	This product contains chemical substance(s) exempt from CEPA DSL Inventory requirements. It is regulated as a pesticide subject to Pest Control Products Act (PCPA) requirements. Read the PCPA label, authorized under the Pest Control Products Act, prior to using or handling this pest control product.

ENCS	:	Not in compliance with the inventory
ISHL	:	Not in compliance with the inventory
KECI	:	Not in compliance with the inventory
PICCS	:	Not in compliance with the inventory
IECSC	:	Not in compliance with the inventory
NZIoC	:	Not in compliance with the inventory
TECI	:	Not in compliance with the inventory

15.2 Chemical safety assessment

A chemical safety assessment is not required for this product (mixture).

SECTION 16: Other information

Full text of H-Statements

H272	:	May intensify fire; oxidizer.
H302	:	Harmful if swallowed.
H314	:	Causes severe skin burns and eye damage.
H318	:	Causes serious eye damage.
H319	:	Causes serious eye irritation.
H373	:	May cause damage to organs through prolonged or repeated exposure.
H400	:	Very toxic to aquatic life.
H410	:	Very toxic to aquatic life with long lasting effects.

Full text of other abbreviations

Acute Tox.	:	Acute toxicity
Aquatic Acute	:	Short-term (acute) aquatic hazard
Aquatic Chronic	:	Long-term (chronic) aquatic hazard
Eye Dam.	:	Serious eye damage
Eye Irrit.	:	Eye irritation
Ox. Sol.	:	Oxidizing solids
Skin Corr.	:	Skin corrosion
STOT RE	:	Specific target organ toxicity - repeated exposure
2017/164/EU	:	Europe. Commission Directive 2017/164/EU establishing a fourth list of indicative occupational exposure limit values
GB EH40	:	UK. EH40 WEL - Workplace Exposure Limits
2017/164/EU / TWA	:	Limit Value - eight hours
GB EH40 / TWA	:	Long-term exposure limit (8-hour TWA reference period)
GB EH40 / STEL	:	Short-term exposure limit (15-minute reference period)

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard

of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of very high concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Further information

Classification of the mixture:		**Classification procedure:**
Skin Irrit. 2	H315	Calculation method
Eye Dam. 1	H318	Calculation method
Aquatic Chronic 2	H411	Calculation method

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