FOLYX

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

1.1 Product identifier

Product name FOLYX

Other means of identification

Product code 50001924

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

Use of the Sub-stance/Mixture : A fertilizer with micronutrients for use in agriculture

Recommended restrictions on use : Use as recommended by the label.
For professional users only.

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)

Oxidizing liquids, Category 3 H272: May intensify fire; oxidizer.

Eye irritation, Category 2	H319: Causes serious eye irritation.
Long-term (chronic) aquatic hazard, Category 3	H412: Harmful 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 : Warning

Hazard statements :
H272 May intensify fire; oxidizer.
H319 Causes serious eye irritation.
H412 Harmful to aquatic life with long lasting effects.

Precautionary statements :

Prevention:

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
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/ hearing protection.

Response:

P337 + P313 If eye irritation persists: Get medical advice/ attention.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

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)
magnesium nitrate	10377-60-3 233-826-7	Ox. Sol. 3; H272 Eye Irrit. 2; H319	>= 1 - < 10
phosphoric acid	7664-38-2 231-633-2 015-011-00-6	Met. Corr. 1; H290 Acute Tox. 4; H302 Skin Corr. 1B; H314 Eye Dam. 1; H318 Aquatic Chronic 3; H412 ——————— specific concentration limit Skin Corr. 1B; H314 >= 25 % Skin Irrit. 2; H315 10 - < 25 % Eye Irrit. 2; H319 10 - < 25 %	>= 2.5 - < 3
Citric acid, monohydrate	5949-29-1	Eye Irrit. 2; H319	>= 1 - < 10
trisodium nitrilotriacetate	5064-31-3 225-768-6 607-620-00-6	Acute Tox. 4; H302 Eye Irrit. 2; H319 Carc. 2; H351 ——————— specific concentration limit Carc. 2; H351 >= 5 %	>= 1 - < 5
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	>= 0.25 - < 1

		aquatic toxicity): 1	
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	>= 0.0025 - < 0.025

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

If inhaled : Move to fresh air.
If unconscious, place in recovery position and seek medical advice.
If symptoms persist, call a physician.

If unconscious, place in recovery position and seek medical advice.
If symptoms persist, call a physician.

In case of skin contact : Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.
Take off all contaminated clothing immediately.
Wash off immediately with plenty of water for at least 15 minutes.
Wash contaminated clothing before re-use.
Get medical attention if irritation develops and persists.

Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.

If on skin, rinse well with water.
If on clothes, remove clothes.

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 : Clean mouth with water and drink afterwards plenty of water.
Keep respiratory tract clear.
Do NOT induce vomiting.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.

Clean mouth with water and drink afterwards plenty of water.
Keep respiratory tract clear.
Do NOT induce vomiting.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.
Take victim immediately to hospital.

4.2 Most important symptoms and effects, both acute and delayed

Risks : Causes serious eye irritation.

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.

Alcohol-resistant foam
Carbon dioxide (CO2)
Dry chemical

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

High volume water jet

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	:	Wear self-contained breathing apparatus for firefighting if necessary.
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. Use personal protective equipment. 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	:	Neutralize with chalk, alkali solution or ammonia. 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. Observe label precautions. 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)	:	Fertilizers

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
phosphoric acid	7664-38-2	TWA	1 mg/m3	GB EH40
		STEL	2 mg/m3	GB EH40

		TWA	1 mg/m3	2000/39/EC
	Further information: Indicative			
		STEL	2 mg/m3	2000/39/EC
	Further information: Indicative			
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
potassium dihydrogenorthophosphate	Workers	Inhalation	Long-term systemic effects	14.82 mg/m3
	Consumers	Inhalation	Long-term systemic effects	6.35 mg/m3
	Consumers	Oral	Long-term systemic effects	70 mg/kg
trisodium nitrilotriacetate	Workers	Inhalation	Long-term systemic effects	3.2 mg/m3
	Consumers	Inhalation	Long-term systemic effects	0.8 mg/m3
	Consumers	Oral	Long-term systemic effects	0.3 mg/kg bw/day

Predicted No Effect Concentration (PNEC)

Substance name	Environmental Compartment	Value
urea	Fresh water	0.47 mg/l
	Marine water	0.047 mg/l
magnesium nitrate	Sewage treatment plant	18 mg/l
Citric acid, monohydrate	Fresh water	0.440 mg/l
	Marine water	0.044 mg/l
	Sewage treatment plant	1000 mg/l
	Fresh water sediment	34.6 mg/kg dry weight (d.w.)
	Marine sediment	34.6 mg/kg dry weight (d.w.)
	Soil	33.1 mg/kg dry weight (d.w.)
trisodium nitrilotriacetate	Fresh water	0.93 mg/l

	Marine water	0.093 mg/l
	Sewage treatment plant	270 mg/l
	Intermittent use (freshwater)	0.8 mg/l
	Fresh water sediment	3.64 mg/kg dry weight (d.w.)
	Marine sediment	0.364 mg/kg dry weight (d.w.)
	Soil	0.182 mg/kg dry weight (d.w.)
	Secondary poisoning (predators)	0.200 µg/kg food
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	:	Plan first aid action before beginning work with this product. Always have on hand a first-aid kit, together with proper instructions. Ensure that eye flushing systems and safety showers are located close to the working place. Wear suitable protective equipment.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	:	liquid
Form	:	liquid
Colour	:	brown
Odour	:	characteristic
Odour Threshold	:	No data available
pH	:	1.50 - 2.50 Concentration: 100 %
Melting point/freezing point	:	No data available
Initial boiling point and boiling range	:	No data available
Flash point	:	No data available
Evaporation rate	:	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	:	1.21 - 1.22
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

Self-ignition : 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

No data available

10.5 Incompatible materials

Materials to avoid : Not applicable

10.6 Hazardous decomposition products

irritating gases
No hazardous decomposition products are known.

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: dust/mist
Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate: > 5,000 mg/kg
Method: Calculation method

Components:

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

phosphoric acid:

Acute oral toxicity	:	LD50 (Rat, female): > 300 - < 2,000 mg/kg Method: OECD Test Guideline 423

Citric acid, monohydrate:

Acute oral toxicity	:	LD50 Oral (Mouse, male and female): 5,400 mg/kg Method: OECD Test Guideline 401
Acute dermal toxicity	:	LD50 Dermal (Rat, male and female): > 2,000 mg/kg Method: OECD Test Guideline 402 Assessment: The substance or mixture has no acute dermal toxicity

trisodium nitrilotriacetate:

Acute oral toxicity	:	LD50 (Rat, female): 1,470 mg/kg
Acute inhalation toxicity	:	LC0 (Rat, male): 2.307 mg/l Exposure time: 4 d Test atmosphere: dust/mist Remarks: no mortality
Acute dermal toxicity	:	LD0 (Rabbit, male and female): 2,000 mg/kg Remarks: no mortality

manganese dinitrate:

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

Skin corrosion/irritation

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

Product:

Remarks	:	Not expected to be irritating to skin.
Remarks	:	Extremely corrosive and destructive to tissue.

Components:

magnesium nitrate:

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

Remarks : Based on data from similar materials

phosphoric acid:

Species : Rabbit
Assessment : Corrosive
Result : Corrosive after 3 minutes to 1 hour of exposure

Citric acid, monohydrate:

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

trisodium nitrilotriacetate:

Species : Rabbit
Method : Draize Test
Result : No skin irritation

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 irritation.

Product:

Assessment : Irritating to eyes.
Remarks : May cause irreversible eye damage.

Remarks : May cause irreversible eye damage.

Components:

magnesium nitrate:

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

phosphoric acid:

Result : Irreversible effects on the eye
Remarks : Based on skin corrosivity

Citric acid, monohydrate:

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

trisodium nitrilotriacetate:

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

Species	:	Rabbit
Method	:	OECD Test Guideline 405
Result	:	No 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	:	Not expected to cause skin sensitisation

Components:

magnesium nitrate:

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

trisodium nitrilotriacetate:

Test Type	:	Buehler Test
Species	:	Guinea pig
Method	:	OECD Test Guideline 406
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:

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

phosphoric acid:

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

Citric acid, monohydrate:

Genotoxicity in vitro	:	Test Type: Micronucleus test Method: OECD Test Guideline 487 Result: positive Test Type: reverse mutation assay Method: OECD Test Guideline 471 Result: negative

Genotoxicity in vivo	:	Test Type: chromosome aberration assay Species: Rat (male) Application Route: Oral Method: OECD Test Guideline 475 Result: negative Test Type: Rodent Dominant Lethal Assay Species: Rat (male and female) Application Route: Oral Method: Regulation (EC) No. 440/2008, Annex, B.22 Result: negative
Germ cell mutagenicity- Assessment	:	Animal testing did not show any mutagenic effects.

trisodium nitrilotriacetate:

Genotoxicity in vitro	:	Test Type: reverse mutation assay Result: negative Test Type: In vitro mammalian cell gene mutation test Result: negative
Genotoxicity in vivo	:	Test Type: Micronucleus test Species: Mouse (male) Application Route: Oral Method: OECD Test Guideline 474 Result: negative Test Type: Cytogenetic assay Species: Mouse (male) Application Route: Oral Result: negative
Germ cell mutagenicity- Assessment	:	Weight of evidence does not support classification as a germ cell mutagen.

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:

Citric acid, monohydrate:

Carcinogenicity - Assessment : Weight of evidence does not support classification as a carcinogen

trisodium nitrilotriacetate:

Species : Rat, male and female
Application Route : Oral
Exposure time : 104 weeks
Dose : 0, 9, 92, 921 mg/kg/d
: 9 mg/kg bw/day
LOAEL : 92 mg/kg bw/day
Result : positive

Carcinogenicity - Assessment : Limited evidence of carcinogenicity in animal studies

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:

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

phosphoric acid:

Effects on fertility	:	Test Type: reproductive and developmental toxicity study Species: Rat, male and female Application Route: Ingestion General Toxicity - Parent: NOAEL: 500 mg/kg body weight General Toxicity F1: NOAEL: 500 mg/kg body weight Method: OECD Test Guideline 422 Result: negative
Effects on foetal development	:	Test Type: Embryo-foetal development Species: Mouse Application Route: Ingestion General Toxicity Maternal: NOAEL: 370 mg/kg body weight Developmental Toxicity: NOAEL: 370 mg/kg body weight

Result: negative
Remarks: Based on data from similar materials

Citric acid, monohydrate:

Effects on foetal development : Test Type: reproductive and developmental toxicity study
Species: Mouse
Application Route: Oral
Dose: 0, 2.41, 11.2, 52.0, 241 mg/k
Duration of Single Treatment: 6 - 15 d
Teratogenicity: NOAEL: > 241 mg/kg body weight

Test Type: reproductive and developmental toxicity study
Species: Rat
Application Route: Oral
Dose: 0, 2.95, 13.7, 63.6, 295 mg/k
Duration of Single Treatment: 6 - 15 d
Teratogenicity: NOAEL: > 295 mg/kg body weight

Test Type: reproductive and developmental toxicity study
Species: Rabbit
Application Route: Oral
Dose: 0, 4.25, 19.75, 91.70, 425 mg
Duration of Single Treatment: 6 - 15 d
Teratogenicity: NOAEL: > 425 mg/kg body weight

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

trisodium nitrilotriacetate:

Effects on fertility : Test Type: Two-generation study
Species: Rat, male and female
Application Route: Oral
Dose: 90 and 450 mg/kg bw/day
General Toxicity - Parent: LOAEL: 450 mg/kg body weight
Result: negative

Effects on foetal development : Test Type: reproductive and developmental toxicity study
Species: Rat
Application Route: Oral
Dose: 90 and 450 mg/kg bw/day
General Toxicity Maternal: LOAEL: 450 mg/kg bw/day
Developmental Toxicity: NOAEL: 450 mg/kg bw/day
Result: negative

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.

Components:

trisodium nitrilotriacetate:

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

STOT - repeated exposure

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

Components:

magnesium nitrate:

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

Citric acid, monohydrate:

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:

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

phosphoric acid:

Species	:	Rat, male and female
NOAEL	:	250 mg/kg
Application Route	:	Oral - gavage
Exposure time	:	42 - 54 d
Method	:	OECD Test Guideline 422

Citric acid, monohydrate:

Species	:	Rat
NOAEL	:	4,000 mg/kg
LOAEL	:	8,000 mg/kg
Application Route	:	Oral
Exposure time	:	10d
Dose	:	2, 4, 8, 16 g/kg bw/day

Species	:	Mouse
NOAEL	:	1,000 mg/kg
LOAEL	:	2,000 mg/kg
Application Route	:	Oral
Exposure time	:	10d
Dose	:	1, 2, 4, 8 g/kg bw/day

trisodium nitrilotriacetate:

Species	:	Rat, male
NOAEL	:	9 mg/kg bw/day
Application Route	:	Oral - feed
Exposure time	:	28 d
Dose	:	0, 9 mg/kg ppm

Species	:	Rat, male and female
LOAEC	:	0.342 mg/l
Application Route	:	Inhalation
Test atmosphere	:	dust/mist
Exposure time	:	28 d
Dose	:	0.0102, 0.2131, 0.3422 mg/l

Species	:	Rabbit
NOAEL	:	50 mg/kg bw/day
Application Route	:	Dermal
Exposure time	:	28 or 91 d
Dose	:	0, 50 mg/kg

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:

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

phosphoric acid:

Toxicity to fish	:	LC50 (Lepomis macrochirus (Bluegill sunfish)): 3 - 3.25 mg/l Exposure time: 96 h
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	:	EC50 (Desmodesmus subspicatus (green algae)): > 100 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 NOEC (Desmodesmus subspicatus (green algae)): 100 mg/l Exposure time: 72 h Method: OECD Test Guideline 201
Toxicity to microorganisms	:	EC50 (activated sludge): > 1,000 mg/l Exposure time: 3 h Method: OECD Test Guideline 209

Citric acid, monohydrate:

Toxicity to fish	:	LC50 (Leuciscus idus (Golden orfe)): 440 mg/l Test Type: static test Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	LC50 (Daphnia magna (Water flea)): 1,535 mg/l Exposure time: 24 h Test Type: static test
Toxicity to algae/aquatic plants	:	NOEC (Scenedesmus quadricauda (Green algae)): 425 mg/l Exposure time: 8 d Test Type: static test
Toxicity to microorganisms	:	NOEC (Pseudomonas putida): > 10,000 mg/l Exposure time: 16 h

		Test Type: Cell multiplication inhibition test NOEC (Protozoa): 325 mg/l Exposure time: 72 h
Toxicity to terrestrial organisms	:	NOEC: > 4 mg/kg Exposure time: 14 d Species: Birds LD50: > 4 mg/kg Exposure time: 14 d Species: Birds

trisodium nitrilotriacetate:

Toxicity to fish	:	LC50 (Pimephales promelas (fathead minnow)): 114 mg/l Exposure time: 96 h Test Type: flow-through test
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Gammarus fasciatus (freshwater shrimp)): 98 mg/l Exposure time: 96 h Test Type: flow-through test
Toxicity to algae/aquatic plants	:	EC50 (Desmodesmus subspicatus (green algae)): > 91.5 mg/l Exposure time: 72 h Method: EU Method C3 NOEC (Desmodesmus subspicatus (green algae)): 1.43 mg/l Exposure time: 72 h Method: EU Method C3
Toxicity to microorganisms	:	(Protozoa): > 400 mg/l Exposure time: 48 h Test Type: Growth inhibition
Toxicity to fish (Chronic toxicity)	:	NOEC: 54 mg/l Exposure time: 229 d Species: Pimephales promelas (fathead minnow) Test Type: flow-through test
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC: 9.3 mg/l Exposure time: 147 d Species: Gammarus fasciatus (freshwater shrimp) Test Type: flow-through test

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	:	EC50 (Daphnia magna (Water flea)): > 100 mg/l

aquatic invertebrates		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

Components:

phosphoric acid:

Biodegradability : Remarks: The methods for determining biodegradability are not applicable to inorganic substances.

Citric acid, monohydrate:

Biodegradability : Result: Readily biodegradable.
Method: OECD Test Guideline 301B

Result: Readily biodegradable.
Method: OECD Test Guideline 301E

Result: Inherently biodegradable.
Method: OECD Test Guideline 302B

trisodium nitrilotriacetate:

Biodegradability	:	Inoculum: activated sludge Result: Readily biodegradable. Biodegradation: 100 % Exposure time: 14 d Method: OECD Test Guideline 301E

12.3 Bioaccumulative potential

Components:

Citric acid, monohydrate:

Bioaccumulation	:	Bioconcentration factor (BCF): 3.2 Method: QSAR
Partition coefficient: n-octanol/water	:	log Pow: -1.55

trisodium nitrilotriacetate:

Bioaccumulation	:	Remarks: Bioaccumulation is unlikely.
Partition coefficient: n-octanol/water	:	log Pow: -13.2 (25 °C) Method: QSAR

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. Harmful to aquatic life with long lasting effects.

Components:

phosphoric acid:

Additional ecological infor-	:	Harmful effects on aquatic organisms also due to pH shift.

mation

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 1805
ADR	:	UN 1805
RID	:	UN 1805
IMDG	:	UN 1805
IATA	:	UN 1805

14.2 UN proper shipping name

ADN	:	PHOSPHORIC ACID SOLUTION
ADR	:	PHOSPHORIC ACID SOLUTION
RID	:	PHOSPHORIC ACID SOLUTION
IMDG	:	PHOSPHORIC ACID SOLUTION
IATA	:	Phosphoric acid, solution

14.3 Transport hazard class(es)

		Class	Subsidiary risks
ADN	:	8	
ADR	:	8	
RID	:	8	
IMDG	:	8	
IATA	:	8	

14.4 Packing group

ADN

Packing group	:	III
Classification Code	:	C1
Hazard Identification Number	:	80
Labels	:	8

ADR

Packing group	:	III
Classification Code	:	C1
Hazard Identification Number	:	80
Labels	:	8
Tunnel restriction code	:	(E)

RID

Packing group	:	III
Classification Code	:	C1
Hazard Identification Number	:	80
Labels	:	8

IMDG

Packing group	:	III
Labels	:	8
EmS Code	:	F-A, S-B

IATA (Cargo)

Packing instruction (cargo aircraft)	:	856
Packing instruction (LQ)	:	Y841
Packing group	:	III
Labels	:	Corrosive

IATA (Passenger)

Packing instruction (passenger aircraft)	:	852
Packing instruction (LQ)	:	Y841
Packing group	:	III
Labels	:	Corrosive

14.5 Environmental hazards

ADN

Environmentally hazardous	:	no

ADR

Environmentally hazardous	:	no

RID

Environmentally hazardous	:	no

IMDG

Marine pollutant	:	no

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 3 nitric acid …% [C ≤ 70 %] (Number on list 3)
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
UK REACH List of substances subject to authorisation (Annex XIV)	:	Not applicable

Control of Major Accident Hazards Regulations 2015 (COMAH)		Not applicable
	P8	
Control of Major Accident Hazards Regulations 2015 (COMAH)	P8	OXIDIZING LIQUIDS AND SOLIDS

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	:	Not in compliance with the inventory

DSL	:	Not in compliance with the inventory
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.
H290	:	May be corrosive to metals.
H302	:	Harmful if swallowed.
H314	:	Causes severe skin burns and eye damage.
H318	:	Causes serious eye damage.
H319	:	Causes serious eye irritation.
H351	:	Suspected of causing cancer.
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.
H412	:	Harmful 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
Carc.	:	Carcinogenicity
Eye Dam.	:	Serious eye damage
Eye Irrit.	:	Eye irritation
Met. Corr.	:	Corrosive to metals
Ox. Sol.	:	Oxidizing solids
Skin Corr.	:	Skin corrosion
STOT RE	:	Specific target organ toxicity - repeated exposure
STOT SE	:	Specific target organ toxicity - single exposure
2000/39/EC	:	Europe. Commission Directive 2000/39/EC establishing a first

		list of indicative occupational exposure limit values
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
2000/39/EC / TWA	:	Limit Value - eight hours
2000/39/EC / STEL	:	Short term exposure limit
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

Other information :

Classification of the mixture:		**Classification procedure:**
Ox. Liq. 3	H272	Calculation method
Eye Irrit. 2	H319	Based on product data or assessment
Aquatic Chronic 3	H412	Calculation method

Disclaimer

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