SAFETY DATA SHEET

BECARA

Version	Revision Date:	SDS Number:	Date of last issue: 2023/09/14
1.2	2025/05/06	50002433	Date of first issue: 2023/09/14

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : BECARA

Recommended use of the chemical and restrictions on use

Recommended use : Crop nutrition

Restrictions on use : Use as recommended by the label.

Manufacturer or supplier's details

Company : FMC Vietnam Company Limited

Address : No.12, Lot B, Thong Nhat Road Song Than 2 Industrial Zone, D
Di An Town, Binh Duong Province
Vietnam

Telephone : +842743790503

Telefax : +842743790501

E-mail address : SDS-Info@fmc.com

Emergency telephone number : For leak, fire, spill or accident emergencies, call:
+(84)-444581938 (CHEMTREC Vietnam)

Medical emergency:
All other countries: +1 651 / 632-6793 (Collect)

2. HAZARDS IDENTIFICATION

GHS Classification

Corrosive to metals : Category 1

Skin corrosion/irritation : Category 1A

Serious eye damage/eye irritation : Category 2A

Reproductive toxicity : Category 1B

Short-term (acute) aquatic hazard : Category 3

Long-term (chronic) aquatic hazard : Category 3

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.
H319 Causes serious eye irritation.
H360 May damage fertility or the unborn child.
H412 Harmful to aquatic life with long lasting effects.

Precautionary statements :

Prevention:

P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P234 Keep only in original packaging.
P264 Wash skin thoroughly after handling.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P363 Wash contaminated clothing before reuse.
P390 Absorb spillage to prevent material damage.

Storage:

P405 Store locked up.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards which do not result in classification

None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
phosphoric acid	7664-38-2	>= 5 -< 7
boric acid	10043-35-3	>= 0,3 -< 0,5
Manganese sulfate, monohydrate	10034-96-5	>= 0,25 -< 0,5
Zinc sulphate, monohydrate	7446-19-7	>= 0,1 -< 0,25
1,2-benzisothiazol-3(2H)-one	2634-33-5	>= 0,0025 -< 0,025

4. 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.

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 : Wash off with soap and water.
If symptoms persist, call a physician.
Wash contaminated clothing before re-use.

In case of eye contact : Rinse thoroughly with plenty of water, also under the eyelids.
If eye irritation persists, consult a specialist.

If swallowed : Gently wipe or rinse the inside of the mouth with water.
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.

Most important symptoms and effects, both acute and delayed : Causes serious eye irritation.
May damage fertility or the unborn child.
Causes severe burns.

Protection of first-aiders : Avoid inhalation, ingestion and contact with skin and eyes.
First Aid responders should pay attention to self-protection and use the recommended protective clothing
If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Notes to physician : Treat symptomatically.

5. FIREFIGHTING MEASURES

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	:	Do not spread spilled material with high-pressure water streams. High volume water jet
Specific hazards during firefighting	:	Do not allow run-off from fire fighting to enter drains or water courses.
Hazardous combustion products	:	Fire may produce irritating, corrosive and/or toxic gases. Sulphur oxides Metal oxides Oxides of phosphorus metal fumes Fire may produce irritating, corrosive and/or toxic gases.
Specific extinguishing methods	:	Remove undamaged containers from fire area if it is safe to do so. Use a water spray to cool fully closed containers. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. 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.
Special protective equipment for firefighters	:	Firefighters should wear protective clothing and self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	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.
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.

Methods and materials for containment and cleaning up	:	Never return spills in original containers for re-use. Collect as much of the spill as possible with a suitable absorbent material. Pick up and transfer to properly labelled containers. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Advice on protection against fire and explosion	:	Normal measures for preventive fire protection.
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.
Conditions for safe storage	:	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.
Further information on storage stability	:	No decomposition if stored and applied as directed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
phosphoric acid	7664-38-2	TWA	1 mg/m3	VN OEL
		STEL	3 mg/m3	VN OEL
		TWA STEL	1 mg/m3 3 mg/m3	ACGIH ACGIH
boric acid	10043-35-3	TWA	0,5 mg/m3	VN OEL
		STEL	1 mg/m3	VN OEL
		TWA (Inhalable particulate matter) STEL (Inhalable particulate matter)	2 mg/m3 (Borate) 6 mg/m3 (Borate)	ACGIH ACGIH

Manganese sulfate, monohydrate	10034-96-5	TWA	0,3 mg/m3 (Manganese)	VN OEL
		TWA (Inhalable particulate matter)	0,1 mg/m3 (Manganese)	ACGIH
		TWA (Respirable particulate matter)	0,02 mg/m3 (Manganese)	ACGIH

Personal protective equipment

Respiratory protection : In the case of dust or aerosol formation use respirator with an approved filter.

No personal respiratory protective equipment normally required.

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.

Eye protection : Tightly fitting safety goggles
Ensure that eyewash stations and safety showers are close to the workstation location.

Skin and body protection : Impervious clothing
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Protective measures : Plan first aid action before beginning work with this product.

Hygiene measures : Avoid contact with skin, eyes and clothing.
Do not inhale aerosol.
When using do not eat or drink.
When using do not smoke.
Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state : liquid

Form : No data available

Colour : dark brown

Odour : characteristic

Odour Threshold	:	No data available
pH	:	3,0 - 5,0 Concentration: 100 %
Melting point/ range	:	No data available
Boiling point/boiling range	:	No data available
Flash point	:	No data available
Evaporation rate	:	No data available
Self-ignition	:	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 - 1,25
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	:	Not explosive
Oxidizing properties	:	Non-oxidizing
Molecular weight	:	Not applicable

10. STABILITY AND REACTIVITY

Reactivity	:	No decomposition if stored and applied as directed.
Chemical stability	:	No decomposition if stored and applied as directed.
Possibility of hazardous reactions	:	No decomposition if stored and applied as directed.
Conditions to avoid	:	Avoid extreme temperatures Avoid formation of aerosol.
Incompatible materials	:	Avoid strong acids, bases, and oxidizers
Hazardous decomposition products	:	No hazardous decomposition products are known.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

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

Product:

Acute oral toxicity	:	Acute toxicity estimate: > 5.000 mg/kg Method: Calculation method Acute toxicity estimate: > 5.000 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 Assessment: The substance or mixture has no acute inhalation toxicity
Acute dermal toxicity	:	Acute toxicity estimate: > 5.000 mg/kg Method: Calculation method Assessment: The substance or mixture has no acute dermal toxicity

Components:

phosphoric acid:

Acute oral toxicity	:	LD50 (Rat, female): 2.600 mg/kg Method: OECD Test Guideline 423

boric acid:

Acute oral toxicity	:	LD50 (Rat, male): > 2.600 mg/kg Method: OECD Test Guideline 401 Remarks: no mortality
Acute inhalation toxicity	:	LC0 (Rat, male and female): > 2,03 mg/l Exposure time: 5 h Test atmosphere: dust/mist Method: OECD Test Guideline 403 Remarks: no mortality
Acute dermal toxicity	:	LD50 (Rabbit, male and female): > 2.000 mg/kg Remarks: no mortality

Manganese sulfate, monohydrate:

Acute oral toxicity	:	LD50 (Rat, male and female): 2.150 mg/kg
Acute inhalation toxicity	:	LC0 (Rat, male and female): > 4,45 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: OECD Test Guideline 403 Remarks: no mortality

Zinc sulphate, monohydrate:

Acute oral toxicity	:	LD50 (Rat, male): 1.710 mg/kg
Acute dermal toxicity	:	LD50 (Rat): > 2.000 mg/kg Method: OECD Test Guideline 402 Symptoms: irritating Remarks: no mortality

1,2-benzisothiazol-3(2H)-one:

Acute oral toxicity	:	LD50 (Rat, male and female): 490 mg/kg Method: OECD Test Guideline 401
Acute dermal toxicity	:	LD50 (Rat, male and female): > 2.000 mg/kg Method: OECD Test Guideline 402 Assessment: The substance or mixture has no acute dermal toxicity

Skin corrosion/irritation

Causes severe burns.

Product:

Remarks	:	No data available

Components:

phosphoric acid:

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

boric acid:

Species	:	Rabbit
Result	:	No skin irritation

Manganese sulfate, monohydrate:

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

Zinc sulphate, monohydrate:

Species	:	Mouse
Result	:	slight irritation
Remarks	:	Based on data from similar materials

Species	:	Rabbit
Result	:	slight irritation
Remarks	:	Based on data from similar materials

Species	:	Guinea pig
Result	:	slight irritation
Remarks	:	Based on data from similar materials

1,2-benzisothiazol-3(2H)-one:

Species	:	Rabbit
Exposure time	:	72 h
Method	:	OECD Test Guideline 404
Result	:	No skin irritation

Serious eye damage/eye irritation

Causes serious eye irritation.

Product:

Result	:	Eye irritation
Assessment	:	Irritating to eyes.
Remarks	:	Eye irritation

Components:

phosphoric acid:

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

boric acid:

Species	:	Rabbit
Result	:	slight irritation

Manganese sulfate, monohydrate:

Species	:	Rabbit
Result	:	irritating
Exposure time	:	72 h
Method	:	OECD Test Guideline 405

Zinc sulphate, monohydrate:

Result	:	Irreversible effects on the eye

1,2-benzisothiazol-3(2H)-one:

Species	:	Bovine cornea
Result	:	No eye irritation
Method	:	OECD Test Guideline 437

Species	:	Rabbit
Result	:	Irreversible effects on the eye
Method	:	EPA OPP 81-4

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:

Result	:	No data available
Remarks	:	Not expected to cause skin sensitisation

Components:

boric acid:

Test Type	:	Buehler Test
Species	:	Guinea pig
Method	:	OECD Test Guideline 406
Result	:	Does not cause skin sensitisation.

Manganese sulfate, monohydrate:

Test Type	:	Patch test
Exposure routes	:	Dermal
Species	:	Humans
Result	:	Not a skin sensitizer.

Zinc sulphate, monohydrate:

Exposure routes	:	Skin contact
Species	:	Mouse
Result	:	Not a skin sensitizer.

1,2-benzisothiazol-3(2H)-one:

Test Type	:	Maximisation Test
Species	:	Guinea pig
Method	:	OECD Test Guideline 406
Result	:	May cause sensitisation by skin contact.

Species	:	Guinea pig
Method	:	FIFRA 81.06
Result	:	May cause sensitisation by skin contact.

Germ cell mutagenicity

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

Components:

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

boric acid:

Genotoxicity in vitro	:	Test Type: reverse mutation assay Result: negative Test Type: sister chromatid exchange assay Result: negative Test Type: gene mutation test Result: negative
Genotoxicity in vivo	:	Test Type: Micronucleus test Species: Mouse (male and female) Application Route: Oral Result: negative
Germ cell mutagenicity - Assessment	:	Weight of evidence does not support classification as a germ cell mutagen.

Manganese sulfate, monohydrate:

Genotoxicity in vitro	:	Test Type: gene mutation test Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 476 Result: negative
Genotoxicity in vivo	:	Test Type: Micronucleus test Species: Mouse (female) Application Route: Oral Method: OECD Test Guideline 474 Result: negative

Zinc sulphate, monohydrate:

Genotoxicity in vitro	:	Test Type: gene mutation test Result: negative
Genotoxicity in vivo	:	Test Type: Chromosome aberration test in vitro Result: negative

1,2-benzisothiazol-3(2H)-one:

Genotoxicity in vitro	:	Test Type: gene mutation test Test system: mouse lymphoma cells Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 476 Result: negative Test Type: Ames test Method: OECD Test Guideline 471 Result: negative Test Type: Chromosome aberration test in vitro Method: OECD Test Guideline 473 Result: positive
Genotoxicity in vivo	:	Test Type: unscheduled DNA synthesis assay Species: Rat (male) Cell type: Liver cells Application Route: Ingestion Exposure time: 4 h Method: OECD Test Guideline 486 Result: negative Test Type: Micronucleus test Species: Mouse 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.

Carcinogenicity

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

Components:

boric acid:

Species	:	Mouse, male and female
Application Route	:	Oral
Exposure time	:	103 weeks
Dose	:	0, 446, 1150mg/kg/bw/day
	:	> 1.150 mg/kg bw/day
Result	:	negative

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

Manganese sulfate, monohydrate:

Species	:	Mouse, male and female
Application Route	:	Ingestion
Result	:	negative

Zinc sulphate, monohydrate:

Remarks	:	No human information is available.

Reproductive toxicity

May damage fertility or the unborn child.

Components:

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

boric acid:

Effects on fertility	:	Test Type: Three-generation study Species: Rat, male and female Application Route: Oral Dose: 5.9, 17.5, 58.5(mgb)/kg/bw/d General Toxicity - Parent: LOAEL: 58,5 mg/kg bw/day General Toxicity F1: LOAEL: 58,5 mg/kg bw/day General Toxicity F2: LOAEL: 58,5 mg/kg bw/day Result: negative
Effects on foetal development	:	Test Type: reproductive and developmental toxicity study Species: Rat Application Route: Oral Dose: 3.3, 6.3, 9.6, 13.3, 25mgb/kg General Toxicity Maternal: LOAEL: 13,3 mg/kg bw/day Embryo-foetal toxicity: NOAEL: >= 12,9 mg/kg bw/day Method: OECD Test Guideline 414

Result: negative

Reproductive toxicity - Assessment : Clear evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments

Manganese sulfate, monohydrate:

Effects on fertility : Test Type: Two-generation study
Species: Rat, male and female
Method: OECD Test Guideline 416
Result: negative

Effects on foetal development : Species: Rat
Application Route: Inhalation
Method: OECD Test Guideline 414
Result: negative

Zinc sulphate, monohydrate:

Effects on fertility : Remarks: No data available

Effects on foetal development : Remarks: No data available

1,2-benzisothiazol-3(2H)-one:

Effects on fertility : Species: Rat, male
Application Route: Ingestion
General Toxicity - Parent: NOAEL: 18,5 mg/kg body weight
General Toxicity F1: NOAEL: 48 mg/kg body weight
Fertility: NOAEL: 112 mg/kg bw/day
Symptoms: No effects on reproduction parameters
Method: OPPTS 870.3800
Result: negative

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

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:

boric acid:

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

Zinc sulphate, monohydrate:

Remarks : No data available

1,2-benzisothiazol-3(2H)-one:

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

Repeated dose toxicity

Components:

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

boric acid:

Species : Rat, male and female
LOAEL : 58.5 mg/kg bw/day
Application Route : Oral - feed
Exposure time : 2 years
Dose : 0, 5.9, 17.5, 58.5mg/kg/bw/d

Species : Rat, female
NOAEC : 0,47 mg/l
Application Route : inhalation (dust/mist/fume)
Dose : 0.077, 0.175, 0.47 mg/l

Manganese sulfate, monohydrate:

Species : Rat, male and female
NOAEL : 2000 mg/kg
Application Route : Ingestion
Exposure time : 13 w

1,2-benzisothiazol-3(2H)-one:

Species : Rat, male and female
NOAEL : 15 mg/kg
Application Route : Ingestion
Exposure time : 28 d
Method : OECD Test Guideline 407
Symptoms : Irritation

Species : Rat, male and female
NOAEL : 69 mg/kg
Application Route : Ingestion
Exposure time : 90 d
Symptoms : Irritation, Reduced body weight

Aspiration toxicity

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

Further information

Product:

Remarks : No data available

12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

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

boric acid:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 79,7 mg/l
Exposure time: 96 h
Test Type: static test
Remarks: Based on data from similar materials

LC50 (Limanda limanda): 74 mg/l
Exposure time: 96 h
Test Type: flow-through test
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates : LC50 (Ceriodaphnia dubia (water flea)): 102 mg/l
Exposure time: 48 h
Test Type: static test

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 40,2 mg/l
Exposure time: 74,5 h
Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 17,5

mg/l
Exposure time: 74,5 h
Method: OECD Test Guideline 201

LOEC: 3,6 mg/l
Exposure time: 10 d
Test Type: semi-static test

Toxicity to fish (Chronic toxicity) : NOEC (Danio rerio (zebra fish)): 6,4 mg/l
Exposure time: 34 d
Method: OECD Test Guideline 210

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 6,4 mg/l
Exposure time: 21 d
Test Type: semi-static test

Toxicity to microorganisms : EC50 (activated sludge): > 175 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209

NOEC (activated sludge): 17,5 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209

Toxicity to soil dwelling organisms : LC50 (Eisenia fetida (earthworms)): > 175 mg/kg
Exposure time: 14 d
Method: OECD Test Guideline 207

NOEC (Eisenia fetida (earthworms)): >= 175 mg/kg
Exposure time: 14 d
Method: OECD Test Guideline 207

Manganese sulfate, monohydrate:

Toxicity to fish : LC50 (Salmo trutta (brown trout)): 49,9 mg/l
Exposure time: 96 h
Test Type: flow-through test

Toxicity to daphnia and other aquatic invertebrates : LC50 (Crustaceans): 13,7 mg/l
Exposure time: 96 h

Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): 61 mg/l
Exposure time: 72 h
Test Type: static test
Method: OECD Test Guideline 201

Toxicity to fish (Chronic toxicity) : NOEC (Danio rerio (zebra fish)): 4,496 mg/l
Exposure time: 35 d
Method: OECD Test Guideline 210

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Crassostrea virginica): 0,020 mg/l
Exposure time: 14 d
Test Type: static test

M-Factor (Chronic aquatic toxicity)	:	1
Toxicity to microorganisms	:	EC50 (activated sludge): > 1.000 mg/l Exposure time: 3 h Test Type: Respiration inhibition Method: OECD Test Guideline 209

Zinc sulphate, monohydrate:

Toxicity to fish	:	LC50 (Fish): 0,112 mg/l Exposure time: 96 h LC50 (Oncorhynchus mykiss (rainbow trout)): 0,169 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 0,131 mg/l Exposure time: 48 h Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	NOEC (Pseudokirchneriella subcapitata (microalgae)): 0,0052 mg/l End point: Growth rate Exposure time: 72 h Method: OECD Test Guideline 201
M-Factor (Acute aquatic toxicity)	:	1
Toxicity to fish (Chronic toxicity)	:	EC10:
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC: 0,0056 mg/l Exposure time: 10 d
M-Factor (Chronic aquatic toxicity)	:	10

1,2-benzisothiazol-3(2H)-one:

Toxicity to fish	:	LC50 (Cyprinodon variegatus (sheepshead minnow)): 16,7 mg/l Exposure time: 96 h Test Type: static test LC50 (Oncorhynchus mykiss (rainbow trout)): 2,15 mg/l Exposure time: 96 h Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 2,9 mg/l Exposure time: 48 h Test Type: static test Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants	:	EC50 (Pseudokirchneriella subcapitata (green algae)): 0,070 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 NOEC (Pseudokirchneriella subcapitata (green algae)): 0,04 mg/l Exposure time: 72 h Method: OECD Test Guideline 201
M-Factor (Acute aquatic toxicity)	:	10
Toxicity to microorganisms	:	EC50 (activated sludge): 24 mg/l Exposure time: 3 h Test Type: Respiration inhibition Method: OECD Test Guideline 209 EC50 (activated sludge): 12,8 mg/l Exposure time: 3 h Test Type: Respiration inhibition Method: OECD Test Guideline 209

Persistence and degradability

Components:

phosphoric acid:

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

Zinc sulphate, monohydrate:

Biodegradability	:	Remarks: No data available

1,2-benzisothiazol-3(2H)-one:

Biodegradability	:	Result: rapidly biodegradable Method: OECD Test Guideline 301C

Bioaccumulative potential

Product:

Bioaccumulation	:	Remarks: No data available

Components:

boric acid:

Bioaccumulation	:	Species: Fish Bioconcentration factor (BCF): < 0,1 Exposure time: 60 d
Partition coefficient: n-	:	log Pow: -1,09 (22 °C)

octanol/water

Zinc sulphate, monohydrate:

Bioaccumulation : Remarks: Not inherently biodegradable.

Partition coefficient: n-octanol/water : Remarks: Not applicable

1,2-benzisothiazol-3(2H)-one:

Bioaccumulation : Species: Lepomis macrochirus (Bluegill sunfish)
Bioconcentration factor (BCF): 6,62
Exposure time: 56 d
Method: OECD Test Guideline 305
Remarks: Substance is not persistent, bioaccumulative, and toxic (PBT).

Partition coefficient: n-octanol/water : log Pow: 0,7 (20 °C)
pH: 7

log Pow: 0,99 (20 °C)
pH: 5

Mobility in soil

Components:

1,2-benzisothiazol-3(2H)-one:

Distribution among environmental compartments : Koc: 9,33 ml/g, log Koc: 0,97
Method: OECD Test Guideline 121
Remarks: Highly mobile in soils

Other adverse effects

Product:

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 information : Harmful effects on aquatic organisms also due to pH shift.

13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : 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. Dispose of the packaging in accordance with the local regulations in force.

14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number	:	UN 1805
Proper shipping name	:	PHOSPHORIC ACID, SOLUTION
Class	:	8
Packing group	:	III
Labels	:	8
Environmentally hazardous	:	no

IATA-DGR

UN/ID No.	:	UN 1805
Proper shipping name	:	Phosphoric acid, solution
Class	:	8
Packing group	:	III
Labels	:	Corrosive
Packing instruction (cargo aircraft)	:	856
Packing instruction (passenger aircraft)	:	852

IMDG-Code

UN number	:	UN 1805
Proper shipping name	:	PHOSPHORIC ACID SOLUTION
Class	:	8
Packing group	:	III
Labels	:	8
EmS Code	:	F-A, S-B
Marine pollutant	:	no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

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.

15. REGULATORY INFORMATION

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

Law on Chemicals No. 06/2007/QH12

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

TCSI	:	On the inventory, or in compliance with the inventory
TSCA	:	Product contains substance(s) not listed on TSCA inventory.
AIIC	:	On the inventory, or in compliance with the inventory
DSL	:	This product contains the following components listed on the Canadian NDSL. All other components are on the Canadian DSL. sodium [[α,α'-(ethylenediimino)bis[2-hydroxybenzene-1-acetato]](4-)]ferrate(1-)
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	:	On the inventory, or in compliance with the inventory
TECI	:	Not in compliance with the inventory

16. OTHER INFORMATION

Revision Date	:	2025/05/06
Date format	:	yyyy/mm/dd

Full text of other abbreviations

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
VN OEL	:	Vietnam. Occupational Exposure Limits
ACGIH / TWA	:	8-hour, time-weighted average
ACGIH / STEL	:	Short-term exposure limit
VN OEL / TWA	:	Time weighted average
VN OEL / STEL	:	Short term exposure limit

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); 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; ERG - Emergency Response Guide; 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; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; 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; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; 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; WHMIS - Workplace Hazardous Materials Information System

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