SAFETY DATA SHEET

MULTIPLE PRO

Version	Revision Date:	SDS Number:	Date of last issue: -
1.3	10.12.2024	50001215	Date of first issue: 15.07.2020

Section 1: Identification

Product name : MULTIPLE PRO

Recommended use of the chemical and restrictions on use

Recommended use : A fertilizer with micronutrients for use in agriculture

Restrictions on use : Use as recommended by the label.

Manufacturer or supplier's details

Company : FMC New Zealand Ltd

Address : Level 5, 3 Te Kehu Way, Mount Wellington
1060 Auckland
New Zealand

Telephone : +640800658080

Telefax : (09)-271-2961

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

Emergency telephone number : For leak, fire, spill or accident emergencies, call:
0800 734 607 (Ixom)

Medical emergency:
0800 764 766 (NZ Poisons Information Centre)
0800 111174 (24 hour Medical Emergency)
0800 387668 (Transport Emergency)

Section 2: Hazard identification

GHS Classification

Specific target organ toxicity - repeated exposure : Category 2

Specific target organ toxicity - repeated exposure (Oral) : Category 2 (Kidney)

Hazardous to the aquatic environment - acute hazard : Category 1

Hazardous to the aquatic environment - chronic hazard : Category 1

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : H373 May cause damage to organs through prolonged or repeated exposure.
H373 May cause damage to organs (Kidney) through prolonged or repeated exposure if swallowed.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements :

Prevention:

P260 Do not breathe mist or vapours.
P273 Avoid release to the environment.

Response:

P314 Get medical advice/ attention if you feel unwell.
P391 Collect spillage.

Disposal:

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

Other hazards which do not result in classification

None known.

Section 3: Composition/information on ingredients

Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
manganese carbonate	598-62-9	>= 30 -< 50
dicopper oxide	1317-39-1	>= 2.5 -< 10
MAGNESIUM HYDROXIDE	1309-42-8	>= 1 -< 10
ethanediol	107-21-1	>= 1 -< 10
zinc oxide	1314-13-2	>= 1 -<= 10

Section 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.

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	:	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	:	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.
Most important symptoms and effects, both acute and delayed	:	May cause damage to organs through prolonged or repeated exposure.
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.
Notes to physician	:	Treat symptomatically.

Section 5: Fire-fighting measures

Unsuitable extinguishing media	:	Do not spread spilled material with high-pressure water streams. High volume water jet
Specific hazards during fire-fighting	:	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. Carbon oxides
Specific extinguishing methods	:	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	:	Firefighters should wear protective clothing and self-contained

for firefighters		breathing apparatus.
Hazchem Code	:	3Z

Section 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures	:	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.
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	:	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.

Section 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 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.
Hygiene measures	:	When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.
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. To maintain product quality, DO NOT ALLOW TO FREEZE. 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.

Recommended storage temperature : > 5 °C

Further information on storage stability : No decomposition if stored and applied as directed.
Do not freeze.

Section 8: Exposure controls/personal protection

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
manganese carbonate	598-62-9	WES-TWA (Respirable dust)	0.02 mg/m3 (Manganese)	NZ OEL
		Further information: Ototoxin		
		WES-TWA (inhalable dust)	0.2 mg/m3 (Manganese)	NZ OEL
		Further information: Ototoxin		
		TWA (Inhalable particulate matter)	0.1 mg/m3 (Manganese)	ACGIH
		TWA (Respirable particulate matter)	0.02 mg/m3 (Manganese)	ACGIH
dicopper oxide	1317-39-1	WES-TWA (Respirable dust)	0.01 mg/m3 (Copper)	NZ OEL
		Further information: Skin sensitiser		
ethanediol	107-21-1	WES-Ceiling (Vapour and mist)	50 ppm 127 mg/m3	NZ OEL
		TWA (Vapour)	25 ppm	ACGIH
		STEL (Vapour)	50 ppm	ACGIH
		STEL (Inhalable fraction, Aerosol only)	10 mg/m3	ACGIH

Personal protective equipment

Respiratory protection : 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 : Eye wash bottle with pure water
Tightly fitting safety goggles
Wear face-shield and protective suit for abnormal processing problems.

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.
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.

In the context of professional plant protection use as recommended, the end user must refer to the label and the instructions for use.

Section 9: Physical and chemical properties

Physical state	:	liquid
Form	:	suspension
Colour	:	red brown
Odour	:	Faint odour
Odour Threshold	:	No data available
pH	:	8 - 11 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	:	1.68 - 1.72
Density	:	No data available
Bulk density	:	No data available
Solubility(ies)		
Water solubility	:	dispersible
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	:	1,800 - 4,500 mPa.s
Viscosity, kinematic	:	No data available
Explosive properties	:	No data available
Oxidizing properties	:	Non-oxidizing
Particle size	:	No data available

Section 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	:	None reasonably foreseeable. No decomposition if stored and applied as directed.
Conditions to avoid	:	Avoid extreme temperatures Direct sources of heat. Protect from frost.

Incompatible materials	:	Avoid strong acids, bases, and oxidizers
Hazardous decomposition products	:	No hazardous decomposition products are known.

Section 11: Toxicological information

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: > 40 mg/l Exposure time: 4 h Test atmosphere: vapour Method: Calculation method Acute toxicity estimate: > 5 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:

manganese carbonate:

Acute oral toxicity	:	LD0 (Rat, female): > 2,000 mg/kg Method: OECD Test Guideline 420 Remarks: no mortality
Acute inhalation toxicity	:	LC0 (Rat, male and female): > 5.35 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: OECD Test Guideline 403 Remarks: no mortality Based on data from similar materials

dicopper oxide:

Acute oral toxicity	:	LD50 (Rat, male and female): 1,340 mg/kg Symptoms: Fatality, Gastrointestinal tract damage
Acute inhalation toxicity	:	LC50 (Rat, male and female): 3.34 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: OECD Test Guideline 403 Symptoms: respiratory depression, Bruising and haemorrhage

formation, Fatality, ataxia, lethargy

Acute dermal toxicity : LD50 (Rat, male and female): > 2,000 mg/kg
Method: OECD Test Guideline 402
Remarks: no mortality

ethanediol:

Acute inhalation toxicity : LC0 (Rat, male and female): > 2.5 mg/l
Exposure time: 6 h
Test atmosphere: dust/mist
Remarks: no mortality

Acute dermal toxicity : LD50 (Mouse, male and female): > 3,500 mg/kg

zinc oxide:

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

LD50 (Mouse, male and female): > 2,000 mg/kg
Method: OECD Test Guideline 401
Target Organs: Liver, Heart, spleen, Stomach, Pancreas
Symptoms: Damage
Remarks: mortality

Acute inhalation toxicity : LC0 (Rat, male and female): > 1.79 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: EPA OPP 81 - 3
Remarks: no mortality

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

Skin corrosion/irritation

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

Product:

Remarks : No data available

Components:

manganese carbonate:

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

dicopper oxide:

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

ethanediol:

Species	:	Rabbit
Result	:	No skin irritation

zinc oxide:

Species	:	reconstructed human epidermis (RhE)
Method	:	OECD Test Guideline 431
Result	:	No skin irritation

Serious eye damage/eye irritation

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

Product:

Remarks	:	No data available

Components:

manganese carbonate:

Species	:	Rabbit
Result	:	No eye irritation
Method	:	OECD Test Guideline 405

dicopper oxide:

Species	:	Rabbit
Result	:	Irreversible effects on the eye
Method	:	OECD Test Guideline 405

ethanediol:

Species	:	Rabbit
Result	:	No eye irritation

zinc oxide:

Species	:	Rabbit
Result	:	No eye irritation
Method	:	OECD Test Guideline 405

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 available

Components:

manganese carbonate:

Test Type	:	Local lymph node test
Species	:	Mouse
Method	:	OECD Test Guideline 429
Result	:	Does not cause skin sensitisation.
Remarks	:	Based on data from similar materials

dicopper oxide:

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

ethanediol:

Test Type	:	Maximisation Test
Species	:	Guinea pig
Result	:	Does not cause skin sensitisation.

zinc oxide:

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

Test Type	:	Maximisation Test
Species	:	Guinea pig
Method	:	OECD Test Guideline 406
Result	:	Substance is not considered to be potential skin sensitiser.

Chronic toxicity

Germ cell mutagenicity

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

Components:

manganese carbonate:

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

Genotoxicity in vivo : Test Type: Micronucleus test
Species: Mouse (female)
Application Route: Oral
Method: OECD Test Guideline 474
Result: negative
Remarks: Based on data from similar materials

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

dicopper oxide:

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

Genotoxicity in vivo : Test Type: Micronucleus test
Species: Mouse (male and female)
Application Route: Oral
Result: negative

Test Type: unscheduled DNA synthesis assay
Species: Rat (male)
Application Route: Oral
Result: negative

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

ethanediol:

Genotoxicity in vitro : Test Type: reverse mutation assay
Method: OPPTS 870.5100
Result: negative

Genotoxicity in vivo : Test Type: dominant lethal test
Species: Rat
Application Route: Oral
Result: negative

zinc oxide:

Genotoxicity in vitro : Test Type: reverse mutation assay
Method: Mutagenicity (Salmonella typhimurium - reverse mutation assay)
Result: negative

Test Type: In vitro mammalian cell gene mutation test
Method: OECD Test Guideline 476
Result: equivocal

Test Type: Chromosome aberration test in vitro

Test system: Chinese hamster fibroblasts
Method: OECD Test Guideline 473
Result: negative

Test Type: Chromosome aberration test in vitro
Test system: Human lymphocytes
Result: positive

Test Type: Micronucleus test
Test system: Human epithelioid cells
Method: OECD Test Guideline 487
Result: negative

Test Type: Micronucleus test
Test system: Human lymphocytes
Result: positive

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

Carcinogenicity

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

Components:

ethanediol:

Species	:	Mouse
Application Route	:	Oral
Exposure time	:	24 month(s)
Result	:	negative

zinc oxide:

Species	:	Mouse, male and female
Application Route	:	Oral
Exposure time	:	1 year
Dose	:	4400, 22000 mg/l
NOAEL	:	> 22,000 mg/l
Result	:	negative
Remarks	:	Based on data from similar materials

Carcinogenicity - Assessment : Animal testing did not show any carcinogenic effects.

Reproductive toxicity

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

Components:

manganese carbonate:

Effects on fertility : Test Type: Two-generation study

Species: Rat, male and female
Application Route: inhalation (dust/mist/fume)
Dose: 0, .005, .01, .02 mg/L
General Toxicity - Parent: NOEL: 0.02 mg/l
Method: OECD Test Guideline 416
Result: negative
Remarks: Based on data from similar materials

Effects on foetal development : Species: Rat
Application Route: inhalation (dust/mist/fume)
Duration of Single Treatment: 15 d
General Toxicity Maternal: NOAEL: 0.025 mg/L
Developmental Toxicity: LOAEL: 0.025 mg/L
Embryo-foetal toxicity: NOAEL: 0.025 mg/L
Method: OECD Test Guideline 414
Result: negative
Remarks: Based on data from similar materials

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

dicopper oxide:

Effects on fertility : Test Type: Two-generation study
Species: Rat, male and female
Application Route: Oral
Dose: 1.53, 7.7,15.2, 23.6mg/kg/bwd
General Toxicity - Parent: LOAEL: 23.6 mg/kg bw/day
General Toxicity F1: LOAEL: 23.6 mg/kg bw/day
General Toxicity F2: LOAEL: 23.6 mg/kg bw/day
Method: OECD Test Guideline 416
Result: negative

Effects on foetal development : Species: Rabbit, female
Application Route: Oral
Dose: 0, 6, 9, 18 mg Cu/mL
Duration of Single Treatment: 28 d
General Toxicity Maternal: LOAEL: 9 mg/kg bw/day
Developmental Toxicity: LOAEL: 9 mg/kg bw/day
Method: OECD Test Guideline 414
Result: negative

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

zinc oxide:

Effects on fertility : Test Type: Two-generation study
Species: Rat, male and female
Application Route: Oral
Dose: 7.5, 15, 30mg/kg bw/day
Frequency of Treatment: 7 days/week
General Toxicity - Parent: LOAEL: 7.5 mg/kg body weight
General Toxicity F1: LOAEL: 30 mg/kg body weight
Method: OECD Test Guideline 416

Result: negative
Remarks: Based on data from similar materials

Test Type: one-generation reproductive toxicity
Species: Rat, male
Application Route: Oral
Dose: 4,000 milligram per liter
Frequency of Treatment: 32 daily
General Toxicity - Parent: LOAEL: 4,000 mg/l
General Toxicity F1: LOAEL: 4,000 mg/l
Symptoms: Reduced fertility
Target Organs: male reproductive organs
Result: positive
Remarks: Based on data from similar materials

Effects on foetal development : Species: Rat
Application Route: inhalation (dust/mist/fume)
Dose: .0003, 0.002, 0.008 milligram per liter
Duration of Single Treatment: 14 d
General Toxicity Maternal: LOAEC: 0.008 mg/L
Developmental Toxicity: NOAEC: 0.008 mg/L
Embryo-foetal toxicity: NOAEC Mating/Fertility: 0.008 mg/L
Method: OECD Test Guideline 414
Result: negative

STOT - single exposure

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

Components:

manganese carbonate:

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

STOT - repeated exposure

May cause damage to organs through prolonged or repeated exposure.
May cause damage to organs (Kidney) through prolonged or repeated exposure if swallowed.

Components:

dicopper oxide:

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

ethanediol:

Exposure routes : Oral
Target Organs : Kidney
Assessment : The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

Repeated dose toxicity

Components:

manganese carbonate:

Species	:	Rabbit, male
LOAEC	:	0.0039 mg/l
Application Route	:	Inhalation
Test atmosphere	:	dust/mist
Exposure time	:	4 - 6 weeks
Dose	:	0, .001, .0039 mg/L
Remarks	:	Based on data from similar materials

dicopper oxide:

Species	:	Mouse, male and female
NOAEL	:	1000 ppm
LOAEL	:	2000 ppm
Application Route	:	Oral
Exposure time	:	92d
Dose	:	0,1000,2000,4000,8000,16000 ppm
Method	:	Regulation (EC) No. 440/2008, Annex, B.26

Species	:	Rat, male and female
NOAEL	:	1000 ppm
LOAEL	:	2000 ppm
Application Route	:	Oral
Exposure time	:	92d
Dose	:	0, 500, 1000, 2000, 4000,8000 ppm
Method	:	Regulation (EC) No. 440/2008, Annex, B.26

Species	:	Rat, male and female
NOAEL	:	> 0.002 mg/l
Application Route	:	inhalation (dust/mist/fume)
Test atmosphere	:	dust/mist
Exposure time	:	28d
Dose	:	0.2, 0.4, 0.8, 2.0 mg/m3
Method	:	OECD Test Guideline 412

ethanediol:

Species	:	Rat
NOAEL	:	150 mg/kg
Application Route	:	Oral
Exposure time	:	12 Months

Species	:	Dog
NOAEL	:	> 2,200 - < 4,400 mg/kg
Application Route	:	Dermal
Exposure time	:	4 Weeks
Method	:	OECD Test Guideline 410

zinc oxide:

Species	:	Rat, male and female

NOAEL	:	31.52 mg/kg
LOAEL	:	127.52 mg/kg
Application Route	:	Oral
Exposure time	:	13 weeks
Dose	:	0, 31.52, 127.52 mg/kg
Method	:	OECD Test Guideline 408
Target Organs	:	Pancreas
Symptoms	:	Necrosis
Remarks	:	Based on data from similar materials

Species	:	Mouse, male and female
NOEL	:	3000 ppm
Application Route	:	Oral
Exposure time	:	13 weeks
Dose	:	0, 300, 3000, 30000 ppm
Method	:	OECD Test Guideline 408
Remarks	:	Based on data from similar materials

Species	:	Rat, male
LOAEL	:	0.0045 mg/l
Application Route	:	inhalation (dust/mist/fume)
Exposure time	:	3 months
Dose	:	0.0003, 0.0015, 0.004mg/l
Method	:	OECD Test Guideline 413
Target Organs	:	Lungs
Remarks	:	mortality

Species	:	Rat, male and female
LOAEL	:	75 mg/kg bw/day
Application Route	:	Dermal
Exposure time	:	28d
Dose	:	0, 75, 180, 360 mg/kg bw/day
Method	:	OECD Test Guideline 410

Aspiration toxicity

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

Experience with human exposure

Components:

zinc oxide:

Inhalation	:	Symptoms: Fatigue, Sweating, bitter taste, chills, dry mouth, flu-like symptoms
Ingestion	:	Symptoms: Gastrointestinal discomfort

Further information

Product:

Remarks	:	No data available

Components:

MAGNESIUM HYDROXIDE:

Remarks : No data available

Section 12: Ecological information

Ecotoxicity

Components:

manganese carbonate:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 3.17 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 : EC50 (Daphnia magna (Water flea)): > 3.6 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): > 2.2 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 0.69 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

Toxicity to fish (Chronic toxicity) : NOEC (Salvelinus fontinalis (Brook trout)): 0.55 mg/l
Exposure time: 65 d
Test Type: flow-through test
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Ceriodaphnia dubia (water flea)): 1.3 mg/l
Exposure time: 8 d
Test Type: static test
Remarks: Based on data from similar materials

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

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

dicopper oxide:

Toxicity to fish	:	LC50 (Pimephales promelas (fathead minnow)): 0.0384 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 (Daphnia magna (Water flea)): 0.0098 mg/l Exposure time: 48 h Test Type: static test
Toxicity to algae/aquatic plants	:	EC50 (Raphidocelis subcapitata (freshwater green alga)): 0.032 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 NOEC (Phaeodactylum tricornutum): 0.0029 mg/l Exposure time: 72 h Method: OECD Test Guideline 201
Toxicity to fish (Chronic toxicity)	:	NOEC (Oncorhynchus mykiss (rainbow trout)): 0.0022 mg/l Exposure time: 60 d Test Type: flow-through test Remarks: Based on data from similar materials
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Ceriodaphnia dubia (water flea)): 0.004 mg/l Exposure time: 7 d Test Type: semi-static test Remarks: Based on data from similar materials
Toxicity to microorganisms	:	NOEC (activated sludge): 0.23 - 0.45 mg/l Exposure time: 30 d Test Type: Respiration inhibition
Toxicity to terrestrial organisms	:	LD50 (Colinus virginianus (Bobwhite quail)): 1,400 mg/kg Exposure time: 14 d

Ecotoxicology Assessment

Acute aquatic toxicity	:	Very toxic to aquatic life.
Chronic aquatic toxicity	:	Very toxic to aquatic life with long lasting effects.

ethanediol:

Toxicity to fish	:	LC50 (Pimephales promelas (fathead minnow)): > 72,860 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	:	IC50 (Pseudokirchneriella subcapitata (green algae)): 10,940 mg/l Exposure time: 96 h
Toxicity to fish (Chronic tox-	:	(Menidia peninsulae (tidewater silverside)): 1,500 mg/l

icity)		Exposure time: 28 d
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	(Daphnia magna (Water flea)): 33,911 mg/l Exposure time: 21 d
Toxicity to microorganisms	:	(activated sludge): > 1,995 mg/l Exposure time: 30 min Method: ISO 8192

zinc oxide:

Toxicity to fish	:	LC50 (Danio rerio (zebra fish)): 1.55 mg/l Exposure time: 96 h Test Type: static test
Toxicity to daphnia and other aquatic invertebrates	:	LC50 (Daphnia magna (Water flea)): 0.76 mg/l Exposure time: 48 h Method: OECD Test Guideline 202 LC50: 0.37 mg/l Exposure time: 96 h Test Type: static test EC50: 0.14 mg/l Exposure time: 24 h Test Type: static test EC50: 0.072 mg/l Exposure time: 96 h Test Type: static test
Toxicity to algae/aquatic plants	:	IC50 (Pseudokirchneriella subcapitata (algae)): 0.044 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 NOEC (Pseudokirchneriella subcapitata (algae)): 0.024 mg/l Exposure time: 3 d Method: OECD Test Guideline 201 IC50 (Skeletonema costatum (marine diatom)): 1.23 mg/l Exposure time: 96 h Method: OECD Test Guideline 201 IC50: 3.28 mg/l Exposure time: 96 h Method: OECD Test Guideline 201 NOEC (Dunaliella tertiolecta (marine algae)): 0.01 mg/l Exposure time: 4 d Test Type: static test EC50 (Dunaliella tertiolecta (marine algae)): 0.65 mg/l Exposure time: 4 d

Test Type: static test

(Chlorella vulgaris (Fresh water algae)): 1.16 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

EC50 (Anabaena flos-aquae (cyanobacterium)): 0.3 mg/l
Exposure time: 96 h
Test Type: static test

EC50: 0.69 mg/l
Exposure time: 3 d
Test Type: static test

EC50 (Phaeodactylum tricornutum): 1.12 mg/l
Exposure time: 24 h
Test Type: static test

M-Factor (Acute aquatic toxicity) : 1

Toxicity to fish (Chronic toxicity) : NOEC (Oncorhynchus mykiss (rainbow trout)): 0.440 mg/l
Exposure time: 72 d
Test Type: flow-through test
Remarks: Based on data from similar materials

NOEC (Jordanella floridae (flagfish)): 0.026 mg/l
Exposure time: 30 d
Method: OECD Test Guideline 210
Remarks: Based on data from similar materials

NOEC (Salvelinus fontinalis (Brook trout)): 0.530 mg/l
Exposure time: 1,095 d
Test Type: flow-through test
Remarks: Based on data from similar materials

NOEC (Salmo trutta (brown trout)): 0.056 mg/l
Exposure time: 116 d
Method: OECD Test Guideline 210
Remarks: Based on data from similar materials

NOEC (Fish): 0.025 mg/l
Exposure time: 27 d
Test Type: semi-static test
Remarks: Based on data from similar materials

NOEC (Pimephales promelas (fathead minnow)): 0.078 mg/l
Exposure time: 248 d
Test Type: flow-through test
Remarks: Based on data from similar materials

NOEC (Fish): 0.050 mg/l
Exposure time: 155 d
Test Type: flow-through test

Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	LOEC (Daphnia magna (Water flea)): 0.125 mg/l Exposure time: 21 d Method: OECD Test Guideline 211
M-Factor (Chronic aquatic toxicity)	:	10
Toxicity to microorganisms	:	EC50 (activated sludge): > 1,000 mg/l Exposure time: 3 h Method: OECD Test Guideline 209 EC50 (Tetrahymena pyriformis): 7.1 mg/l Exposure time: 24 h Test Type: Growth inhibition
Toxicity to soil dwelling organisms	:	NOEC (Eisenia fetida (earthworms)): 750 mg/kg Exposure time: 21 d

Persistence and degradability

Components:

ethanediol:

Biodegradability	:	Result: Readily biodegradable. Biodegradation: 90 - 100 % Exposure time: 10 d Method: OECD Test Guideline 301A

Bioaccumulative potential

Components:

dicopper oxide:

Bioaccumulation	:	Remarks: Bioaccumulation is unlikely.

ethanediol:

Partition coefficient: n-octanol/water	:	log Pow: -1.36

zinc oxide:

Bioaccumulation	:	Species: Oncorhynchus mykiss (rainbow trout) Bioconcentration factor (BCF): 2,060 Exposure time: 14 d

Mobility in soil

No data available

Other adverse effects

Product:

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

Components:

MAGNESIUM HYDROXIDE:

Additional ecological information	:	No data available

Section 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.

Section 14: Transport information

International Regulations

UNRTDG

UN number	:	UN 3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Zinc oxide, copper oxide)
Class	:	9
Packing group	:	III
Labels	:	9
Environmentally hazardous	:	yes

IATA-DGR

UN/ID No.	:	UN 3082
Proper shipping name	:	Environmentally hazardous substance, liquid, n.o.s. (Zinc oxide, copper oxide)
Class	:	9
Packing group	:	III
Labels	:	Miscellaneous
Packing instruction (cargo aircraft)	:	964
Packing instruction (passenger aircraft)	:	964
Environmentally hazardous	:	yes

IMDG-Code

UN number	:	UN 3082

Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Zinc oxide, copper oxide)
Class	:	9
Packing group	:	III
Labels	:	9
EmS Code	:	F-A, S-F
Marine pollutant	:	yes

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

Not applicable for product as supplied.

National Regulations

NZS 5433

UN number	:	UN 3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Zinc oxide, copper oxide)
Class	:	9
Packing group	:	III
Labels	:	9
Hazchem Code	:	3Z
Marine pollutant	:	yes

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.

Section 15: Regulatory information

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

HSNO Approval Number

HSR002571
ACVM Number: Exempt from registration

Tolerable Exposure Limits (TEL)

Not applicable

Environmental Exposure Limits (EEL)

Not applicable

HSW Controls

Certified handler certificate not required.
Tracking hazardous substance not required.
Refer to the Health and Safety at Work (Hazardous Substances) Regulations 2017, for further information.

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
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

Section 16: Other information

Revision Date	:	10.12.2024
Date format	:	dd.mm.yyyy

Full text of other abbreviations

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
NZ OEL	:	New Zealand. Workplace Exposure Standards for Atmospheric Contaminants
ACGIH / TWA	:	8-hour, time-weighted average
ACGIH / STEL	:	Short-term exposure limit
NZ OEL / WES-TWA	:	Workplace Exposure Standard - Time Weighted average
NZ OEL / WES-Ceiling	:	Workplace Exposure Standard - Ceiling

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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