# SAFETY DATA SHEET

# MULTIPLE PRO

| Version | Revision Date: | SDS Number: | Date of last issue: 04.04.2025 |
|---|---|---|---|
| 1.5 | 08.04.2025 | 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 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.<br>Wash contaminated clothing before re-use.<br>Wash off immediately with plenty of water for at least 15 minutes.<br>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.<br>Continue rinsing eyes during transport to hospital.<br>Remove contact lenses.<br>Protect unharmed eye.<br>Keep eye wide open while rinsing.<br>If eye irritation persists, consult a specialist. |
| If swallowed | : | Keep respiratory tract clear.<br>Do NOT induce vomiting.<br>Do not give milk or alcoholic beverages.<br>Never give anything by mouth to an unconscious person.<br>If symptoms persist, call a physician.<br>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<br>Avoid inhalation, ingestion and contact with skin and eyes.<br>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.<br>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.<br>Carbon oxides |
| Specific extinguishing methods | : | Collect contaminated fire extinguishing water separately. This must not be discharged into drains.<br>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.<br>Never return spills in original containers for re-use.<br>Mark the contaminated area with signs and prevent access to unauthorized personnel.<br>Only qualified personnel equipped with suitable protective equipment may intervene.<br>For disposal considerations see section 13. |
| Environmental precautions | : | Prevent product from entering drains.<br>Prevent further leakage or spillage if safe to do so.<br>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).<br>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.<br>Avoid contact with skin and eyes.<br>For personal protection see section 8.<br>Smoking, eating and drinking should be prohibited in the application area.<br>To avoid spills during handling keep bottle on a metal tray.<br>Dispose of rinse water in accordance with local and national regulations. |
| Hygiene measures | : | When using do not eat or drink.<br>When using do not smoke.<br>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.<br>Containers which are opened must be carefully resealed and kept upright to prevent leakage.<br>Observe label precautions.<br>Electrical installations / working materials must comply with the technological safety standards.<br>To maintain product quality, DO NOT ALLOW TO FREEZE.<br><br>Keep container tightly closed in a dry and well-ventilated place.<br>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<br>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<br>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.<br>No decomposition if stored and applied as directed. |
| Conditions to avoid | : | Avoid extreme temperatures<br>Direct sources of heat.<br>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<br>Method: Calculation method |
| Acute inhalation toxicity | : | Acute toxicity estimate: > 40 mg/l<br>Exposure time: 4 h<br>Test atmosphere: vapour<br>Method: Calculation method<br><br>Acute toxicity estimate: > 5 mg/l<br>Exposure time: 4 h<br>Test atmosphere: dust/mist<br>Method: Calculation method |
| Acute dermal toxicity | : | Acute toxicity estimate: > 5,000 mg/kg<br>Method: Calculation method |

**Components:**

**manganese carbonate:**

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

**dicopper oxide:**

| | | |
|---|---|---|
| Acute oral toxicity | : | LD50 (Rat, male and female): 1,340 mg/kg<br>Symptoms: Fatality, Gastrointestinal tract damage |
| Acute inhalation toxicity | : | LC50 (Rat, male and female): 3.34 mg/l<br>Exposure time: 4 h<br>Test atmosphere: dust/mist<br>Method: OECD Test Guideline 403<br>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<br>Method: OECD Test Guideline 471<br>Result: negative<br>Remarks: Based on data from similar materials<br><br>Test Type: Chromosome aberration test in vitro<br>Method: OECD Test Guideline 473<br>Result: negative<br>Remarks: Based on data from similar materials<br><br>Test Type: In vitro mammalian cell gene mutation test<br>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<br>Exposure time: 96 h<br>Test Type: flow-through test<br>Remarks: Based on data from similar materials |
| Toxicity to daphnia and other aquatic invertebrates | : | LC50 (Daphnia magna (Water flea)): 0.0098 mg/l<br>Exposure time: 48 h<br>Test Type: static test |
| Toxicity to algae/aquatic plants | : | EC50 (Raphidocelis subcapitata (freshwater green alga)): 0.032 mg/l<br>Exposure time: 72 h<br>Method: OECD Test Guideline 201<br><br>NOEC (Phaeodactylum tricornutum): 0.0029 mg/l<br>Exposure time: 72 h<br>Method: OECD Test Guideline 201 |
| Toxicity to fish (Chronic toxicity) | : | NOEC (Oncorhynchus mykiss (rainbow trout)): 0.0022 mg/l<br>Exposure time: 60 d<br>Test Type: flow-through test<br>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<br>Exposure time: 7 d<br>Test Type: semi-static test<br>Remarks: Based on data from similar materials |
| Toxicity to microorganisms | : | NOEC (activated sludge): 0.23 - 0.45 mg/l<br>Exposure time: 30 d<br>Test Type: Respiration inhibition |
| Toxicity to terrestrial organisms | : | LD50 (Colinus virginianus (Bobwhite quail)): 1,400 mg/kg<br>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<br>Exposure time: 96 h |
| Toxicity to daphnia and other aquatic invertebrates | : | EC50 (Daphnia magna (Water flea)): > 100 mg/l<br>Exposure time: 48 h<br>Method: OECD Test Guideline 202 |
| Toxicity to algae/aquatic plants | : | IC50 (Pseudokirchneriella subcapitata (green algae)): 10,940 mg/l<br>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<br>Exposure time: 21 d |
| Toxicity to microorganisms | : | (activated sludge): > 1,995 mg/l<br>Exposure time: 30 min<br>Method: ISO 8192 |

**zinc oxide:**

| | | |
|---|---|---|
| Toxicity to fish | : | LC50 (Danio rerio (zebra fish)): 1.55 mg/l<br>Exposure time: 96 h<br>Test Type: static test |
| Toxicity to daphnia and other aquatic invertebrates | : | LC50 (Daphnia magna (Water flea)): 0.76 mg/l<br>Exposure time: 48 h<br>Method: OECD Test Guideline 202<br><br>LC50: 0.37 mg/l<br>Exposure time: 96 h<br>Test Type: static test<br><br>EC50: 0.14 mg/l<br>Exposure time: 24 h<br>Test Type: static test<br><br>EC50: 0.072 mg/l<br>Exposure time: 96 h<br>Test Type: static test |
| Toxicity to algae/aquatic plants | : | IC50 (Pseudokirchneriella subcapitata (algae)): 0.044 mg/l<br>Exposure time: 72 h<br>Method: OECD Test Guideline 201<br><br>NOEC (Pseudokirchneriella subcapitata (algae)): 0.024 mg/l<br>Exposure time: 3 d<br>Method: OECD Test Guideline 201<br><br>IC50 (Skeletonema costatum (marine diatom)): 1.23 mg/l<br>Exposure time: 96 h<br>Method: OECD Test Guideline 201<br><br>IC50: 3.28 mg/l<br>Exposure time: 96 h<br>Method: OECD Test Guideline 201<br><br>NOEC (Dunaliella tertiolecta (marine algae)): 0.01 mg/l<br>Exposure time: 4 d<br>Test Type: static test<br><br>EC50 (Dunaliella tertiolecta (marine algae)): 0.65 mg/l<br>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<br>Exposure time: 21 d<br>Method: OECD Test Guideline 211 |
| M-Factor (Chronic aquatic toxicity) | : | 10 |
| Toxicity to microorganisms | : | EC50 (activated sludge): > 1,000 mg/l<br>Exposure time: 3 h<br>Method: OECD Test Guideline 209<br><br>EC50 (Tetrahymena pyriformis): 7.1 mg/l<br>Exposure time: 24 h<br>Test Type: Growth inhibition |
| Toxicity to soil dwelling organisms | : | NOEC (Eisenia fetida (earthworms)): 750 mg/kg<br>Exposure time: 21 d |

**Persistence and degradability**

**Components:**

**ethanediol:**

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

**zinc oxide:**

| | | |
|---|---|---|
| Biodegradability | : | Remarks: The methods for determining the biological degradability are not applicable to inorganic substances. |

**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)<br>Bioconcentration factor (BCF): 2,060<br>Exposure time: 14 d<br>Remarks: Bioaccumulation is unlikely. |

**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.<br>(Dicopper 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.<br>(Dicopper oxide) |
| Class | : | 9 |
| Packing group | : | III |
| Labels | : | Miscellaneous |
| Packing instruction (cargo | : | 964 |

aircraft)
Packing instruction (passenger aircraft) : 964
Environmentally hazardous : yes

**IMDG-Code**

UN number : UN 3082
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
(Dicopper 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.
(Dicopper 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 | : | 08.04.2025 |
| 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 Chemi-

cal 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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