

SAFETY DATA SHEET

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



Z BEET

Version 1.3	Revision Date: 04.08.2023	SDS Number: 50001927	Date of last issue: - Date of first issue: 02.05.2019
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SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product name Z BEET

Other means of identification

Product code 50001927

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

Use of the Substance/Mixture : A fertilizer with micronutrients for use in agriculture

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

1.3 Details of the supplier of the safety data sheet

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

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

1.4 Emergency telephone number

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

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

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

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

Skin irritation, Category 2

H315: Causes skin irritation.

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Long-term (chronic) aquatic hazard, Category 2 H411: Toxic to aquatic life with long lasting effects.

2.2 Label elements

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

Hazard pictograms



Signal word

: Warning

Hazard statements

: H315 Causes skin irritation.
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements

: **Prevention:**

P264 Wash skin thoroughly after handling.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P302 + P352 IF ON SKIN: Wash with plenty of water and soap.
P332 + P313 If skin irritation occurs: Get medical advice/ attention.

Disposal:

P501 Dispose of contents and/or container in accordance with hazardous waste regulations.

Hazardous components which must be listed on the label:

ethanediol

Additional Labelling

EUH208 Contains 1,2-benzisothiazol-3(2H)-one.
May produce an allergic reaction.

2.3 Other hazards

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

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SECTION 3: Composition/information on ingredients

3.2 Mixtures

Components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
manganese carbonate	598-62-9 209-942-9	Aquatic Chronic 2; H411	>= 10 - < 20
sulfur	7704-34-9 231-722-6 016-094-00-1 01-2119487295-27-0055	Skin Irrit. 2; H315	>= 10 - < 20
zinc oxide	1314-13-2 215-222-5 030-013-00-7	Aquatic Acute 1; H400 Aquatic Chronic 1; H410 M-Factor (Acute aquatic toxicity): 1 M-Factor (Chronic aquatic toxicity): 10	>= 2.5 - < 10
ethanediol	107-21-1 203-473-3 603-027-00-1	Acute Tox. 4; H302 STOT RE 2; H373 (Kidney)	>= 1 - < 10

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

- General advice : Move out of dangerous area.
Show this safety data sheet to the doctor in attendance.
Do not leave the victim unattended.
- If inhaled : If unconscious, place in recovery position and seek medical advice.
If symptoms persist, call a physician.
- In case of skin contact : If skin irritation persists, call a physician.
If on skin, rinse well with water.
If on clothes, remove clothes.
- In case of eye contact : Flush eyes with water as a precaution.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.

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If eye irritation persists, consult a specialist.

- If swallowed : Do not induce vomiting without medical advice.
Keep respiratory tract clear.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.
Take victim immediately to hospital.

4.2 Most important symptoms and effects, both acute and delayed

- Risks : Causes skin irritation.

4.3 Indication of any immediate medical attention and special treatment needed

- Treatment : Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

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

- Unsuitable extinguishing media : High volume water jet

5.2 Special hazards arising from the substance or mixture

- Specific hazards during fire-fighting : Do not allow run-off from fire fighting to enter drains or water courses.
- Hazardous combustion products : Fire may produce irritating, corrosive and/or toxic gases.
Ammonia
Carbon oxides

5.3 Advice for firefighters

- Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if necessary.
- Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

- Personal precautions : Use personal protective equipment.

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6.2 Environmental precautions

- Environmental precautions : Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.

6.3 Methods and material for containment and cleaning up

- Methods for cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

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

SECTION 7: Handling and storage

7.1 Precautions for safe handling

- Advice on safe handling : Do not breathe vapours/dust.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Dispose of rinse water in accordance with local and national regulations.
- Advice on protection against fire and explosion : Normal measures for preventive fire protection.
- Hygiene measures : When using do not eat or drink. When using do not smoke.
Wash hands before breaks and at the end of workday.

7.2 Conditions for safe storage, including any incompatibilities

- Requirements for storage areas and containers : Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.
- Further information on storage stability : No decomposition if stored and applied as directed.

7.3 Specific end use(s)

- Specific use(s) : Fertilizers

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SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
manganese carbonate	598-62-9	TWA (Inhalable)	0.2 mg/m ³ (Manganese)	GB EH40
		TWA (Respirable fraction)	0.05 mg/m ³ (Manganese)	GB EH40
		TWA (inhalable fraction)	0.2 mg/m ³ (Manganese)	2017/164/EU
Further information	Indicative			
		TWA (Respirable fraction)	0.05 mg/m ³ (Manganese)	2017/164/EU
Further information	Indicative			
ethanediol	107-21-1	TWA (Vapour)	20 ppm 52 mg/m ³	GB EH40
Further information	Can be absorbed through the skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.			
		TWA (particles)	10 mg/m ³	GB EH40
Further information	Can be absorbed through the skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.			
		STEL (Vapour)	40 ppm 104 mg/m ³	GB EH40
Further information	Can be absorbed through the skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.			
		STEL	40 ppm 104 mg/m ³	2000/39/EC
Further information	Identifies the possibility of significant uptake through the skin, Indicative			
		TWA	20 ppm 52 mg/m ³	2000/39/EC
Further information	Identifies the possibility of significant uptake through the skin, Indicative			

8.2 Exposure controls

Personal protective equipment

- Eye protection : Eye wash bottle with pure water
Tightly fitting safety goggles
- Hand protection
Material : Wear chemical resistant gloves, such as barrier laminate, butyl rubber or nitrile rubber.
- Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves.
- Skin and body protection : Impervious clothing
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

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- Respiratory protection : No personal respiratory protective equipment normally required.
- Protective measures : Always have on hand a first-aid kit, together with proper instructions.
Plan first aid action before beginning work with this product.
Ensure that eye flushing systems and safety showers are located close to the working place.
Wear suitable protective equipment.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	: liquid
Form	: liquid
Colour	: beige
Odour	: slight
Odour Threshold	: No data available
pH	: 7.0 - 10.0 Concentration: 100 %
Melting point/range	: No data available
Boiling point/boiling range	: No data available
Flash point	: not determined
Upper explosion limit / Upper flammability limit	: No data available
Lower explosion limit / Lower flammability limit	: No data available
Vapour pressure	: No data available
Relative density	: 1.44 - 1.48
Density	: No data available
Bulk density	: No data available
Solubility(ies)	
Water solubility	: dispersible
Solubility in other solvents	: No data available

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Partition coefficient: n-octanol/water	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity		
Viscosity, dynamic	:	600 - 2,000 mPa,s
Viscosity, kinematic	:	No data available
Oxidizing properties	:	Non-oxidizing

9.2 Other information

Particle size	:	8.0 - 18.0 µm
Particle Size Distribution	:	No data available
Self-ignition	:	No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

No decomposition if stored and applied as directed.

10.2 Chemical stability

No decomposition if stored and applied as directed.

10.3 Possibility of hazardous reactions

Hazardous reactions :

No decomposition if stored and applied as directed.

10.4 Conditions to avoid

Conditions to avoid :

No data available

10.5 Incompatible materials

Materials to avoid :

No data available

10.6 Hazardous decomposition products

No decomposition if stored and applied as directed.

In case of fire hazardous decomposition products may be produced such as:
Toxic fumes

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SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Not classified based on available information.

Product:

Acute oral toxicity : Acute toxicity estimate: > 3,000 mg/kg
Method: Calculation method
Assessment: The component/mixture is moderately toxic after single ingestion.

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

sulfur:

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

Acute inhalation toxicity : LC50 (Rat, male and female): > 5.43 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403

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

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

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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

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

Skin corrosion/irritation

Causes skin irritation.

Product:

Remarks : May cause skin irritation in susceptible persons.

Components:

manganese carbonate:

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

sulfur:

Species : Rabbit
Method : OECD Test Guideline 404
Result : Skin irritation

zinc oxide:

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

ethanediol:

Species : Rabbit
Result : No skin irritation

Serious eye damage/eye irritation

Not classified based on available information.

Product:

Remarks : Vapours may cause irritation to the eyes, respiratory system

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and the skin.

Components:

manganese carbonate:

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

sulfur:

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

zinc oxide:

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

ethanediol:

Species	:	Rabbit
Result	:	No eye irritation

Respiratory or skin sensitisation

Skin sensitisation

Not classified based on available information.

Respiratory sensitisation

Not classified based on available information.

Product:

Remarks	:	No data is available on the product itself.
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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

sulfur:

Test Type	:	Magnussen-Kligman test
Species	:	Guinea pig
Method	:	OECD Test Guideline 406
Result	:	Does not cause skin sensitisation.

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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.

ethanediol:

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

Germ cell mutagenicity

Not classified based on available information.

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

Genotoxicity in vitro	:	Test Type: reverse mutation assay Method: OECD Test Guideline 471 Result: negative
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Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster ovary cells
Method: OECD Test Guideline 473
Result: negative

- Genotoxicity in vivo : Test Type: Micronucleus test
Species: Mouse (male and female)
Method: OECD Test Guideline 474
Result: negative
- Germ cell mutagenicity- Assessment : Weight of evidence does not support classification as a germ cell mutagen.

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

ethanediol:

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

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

Carcinogenicity

Not classified based on available information.

Components:

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.

ethanediol:

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

Reproductive toxicity

Not classified based on available information.

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

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Remarks: Based on data from similar materials

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

Reproductive toxicity - Assessment

: Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments.

STOT - single exposure

Not classified based on available information.

Components:

manganese carbonate:

Assessment

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

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STOT - repeated exposure

Not classified based on available information.

Components:

sulfur:

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

zinc oxide:

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

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

sulfur:

Species : Rat, male and female
NOAEL : 1,000 mg/kg
Application Route : Oral
Exposure time : 90 d
Method : OECD Test Guideline 408

Species : Rat, male and female
NOAEL : 400 - 1,000 mg/kg
Application Route : Dermal
Exposure time : 28 d
Method : OECD Test Guideline 410

zinc oxide:

Species : Rat, male and female
NOAEL : 31.52 mg/kg

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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

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

Aspiration toxicity

Not classified based on available information.

Experience with human exposure

Components:

zinc oxide:

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

Further information

Product:

- Remarks : No data available

SECTION 12: Ecological information

12.1 Toxicity

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

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

sulfur:

Toxicity to fish : LC0 (Oncorhynchus mykiss (rainbow trout)): > 0.005 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : NOEC (Daphnia magna Straus): > 0.005 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : NOEC (algae): > 0.005 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
Remarks: No toxicity at the limit of solubility

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: > 0.0025 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Method: OECD Test Guideline 211
Remarks: No toxicity at the limit of solubility

Toxicity to soil dwelling organisms : NOEC: > 1,000 mg/kg
Exposure time: 14 d
Species: Eisenia fetida (earthworms)
Method: OECD Test Guideline 207

Plant toxicity : NOEC: 25.2 kg/ha
Exposure time: 14 d
Species: Avena sativa (oats)
Method: OECD Test Guideline 208

Toxicity to terrestrial organisms : NOEC: > 1400 - < 1900 kg/ha
Exposure time: 60 d
Species: Typhlodromus pyri

LD50: > 2,000 mg/kg
Exposure time: 15 d
Species: Coturnix japonica (Japanese quail)

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

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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

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M-Factor (Acute aquatic toxicity) : 1

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

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

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

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

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

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

NOEC: 0.050 mg/l
Exposure time: 155 d
Species: Fish
Test Type: flow-through test
Remarks: Based on data from similar materials

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Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : LOEC: 0.125 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Method: OECD Test Guideline 211

M-Factor (Chronic aquatic toxicity) : 10

Toxicity to soil dwelling organisms : NOEC: 750 mg/kg
Exposure time: 21 d
Species: Eisenia fetida (earthworms)

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 microorganisms : (activated sludge): > 1,995 mg/l
Exposure time: 30 min
Method: ISO 8192

Toxicity to fish (Chronic toxicity) : 1,500 mg/l
Exposure time: 28 d
Species: Menidia peninsulae (tidewater silverside)

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : 33,911 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)

12.2 Persistence and degradability

Components:

sulfur:

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

ethanediol:

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

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12.3 Bioaccumulative potential

Components:

zinc oxide:

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

ethanediol:

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

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Product:

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

12.6 Other adverse effects

Product:

- Endocrine disrupting potential : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.
- Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Toxic to aquatic life.
Very toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

- Product : The product should not be allowed to enter drains, water courses or the soil.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Send to a licensed waste management company.
- Contaminated packaging : Empty remaining contents.
Dispose of as unused product.

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Do not re-use empty containers.

SECTION 14: Transport information

14.1 UN number

ADN	:	UN 3082
ADR	:	UN 3082
RID	:	UN 3082
IMDG	:	UN 3082
IATA	:	UN 3082

14.2 UN proper shipping name

ADN	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Zinc oxide)
ADR	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Zinc oxide)
RID	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Zinc oxide)
IMDG	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Zinc oxide)
IATA	:	Environmentally hazardous substance, liquid, n.o.s. (Zinc oxide)

14.3 Transport hazard class(es)

ADN	:	9
ADR	:	9
RID	:	9
IMDG	:	9
IATA	:	9

14.4 Packing group

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

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Hazard Identification Number : 90

Labels : 9

Tunnel restriction code : (-)

RID

Packing group : III

Classification Code : M6

Hazard Identification Number : 90

Labels : 9

IMDG

Packing group : III

Labels : 9

EmS Code : F-A, S-F

IATA (Cargo)

Packing instruction (cargo aircraft) : 964

Packing instruction (LQ) : Y964

Packing group : III

Labels : Miscellaneous

IATA (Passenger)

Packing instruction (passenger aircraft) : 964

Packing instruction (LQ) : Y964

Packing group : III

Labels : Miscellaneous

14.5 Environmental hazards

ADN

Environmentally hazardous : yes

ADR

Environmentally hazardous : yes

RID

Environmentally hazardous : yes

IMDG

Marine pollutant : yes

IATA (Passenger)

Environmentally hazardous : yes

IATA (Cargo)

Environmentally hazardous : yes

14.6 Special precautions for user

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

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

Not applicable for product as supplied.

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SECTION 15: Regulatory information

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

Relevant EU provisions transposed through retained EU law

UK REACH List of restrictions (Annex 17)	:	Conditions of restriction for the following entries should be considered: Number on list 3 ethanediol (Number on list 3)
UK REACH Candidate list of substances of very high concern (SVHC) for Authorisation	:	Not applicable
The Persistent Organic Pollutants Regulations (retained Regulation (EU) 2019/1021 as amended for Great Britain)	:	Not applicable
Regulation (EC) No 1005/2009 on substances that deplete the ozone layer	:	Not applicable
UK REACH List of substances subject to authorisation (Annex XIV)	:	Not applicable
Control of Major Accident Hazards Regulations 2015 (COMAH)	E1 E2 E1	ENVIRONMENTAL HAZARDS

Other regulations:

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

TCSI	:	Not in compliance with the inventory
TSCA	:	Product contains substance(s) not listed on TSCA inventory.
AIIC	:	Not in compliance with the inventory
DSL	:	This product contains the following components that are not on the Canadian DSL nor NDSL. Ethanol, 2,2',2"-nitrilotris-, compd. with .alpha.-[2,4,6-tris(1-phenylethyl)phenyl]-.omega.-hydroxypoly(oxy-1,2-ethanediyl) phosphate emulsion of silicone Sodium Polyacrylate Homopolymer Naphthalenesulfonic acid, methyl-, polymer with formaldehyde, sodium salt sodium acrylate

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

15.2 Chemical safety assessment

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

SECTION 16: Other information

Full text of H-Statements

H302	:	Harmful if swallowed.
H315	:	Causes skin irritation.
H373	:	May cause damage to organs through prolonged or repeated exposure if swallowed.
H400	:	Very toxic to aquatic life.
H410	:	Very toxic to aquatic life with long lasting effects.
H411	:	Toxic to aquatic life with long lasting effects.

Full text of other abbreviations

Acute Tox.	:	Acute toxicity
Aquatic Acute	:	Short-term (acute) aquatic hazard
Aquatic Chronic	:	Long-term (chronic) aquatic hazard
Skin Irrit.	:	Skin irritation
STOT RE	:	Specific target organ toxicity - repeated exposure
2000/39/EC	:	Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values
2017/164/EU	:	Europe. Commission Directive 2017/164/EU establishing a fourth list of indicative occupational exposure limit values
GB EH40	:	UK. EH40 WEL - Workplace Exposure Limits
2000/39/EC / TWA	:	Limit Value - eight hours
2000/39/EC / STEL	:	Short term exposure limit
2017/164/EU / TWA	:	Limit Value - eight hours
GB EH40 / TWA	:	Long-term exposure limit (8-hour TWA reference period)
GB EH40 / STEL	:	Short-term exposure limit (15-minute reference period)

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration

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

Classification of the mixture:

Skin Irrit. 2	H315
Aquatic Chronic 2	H411

Classification procedure:

Calculation method
Calculation method

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