

SAFETY DATA SHEET

according to the Globally Harmonized System



Valifenalate 6% + Mancozeb 60% WG

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	12.12.2023	50001984	Date of first issue: 12.12.2023

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Valifenalate 6% + Mancozeb 60% WG

Manufacturer or supplier's details

Company : FMC Corporation

Address : 2929 WALNUT ST
PHILADELPHIA PA 19104
USA

Telephone : (215) 299-6000

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

Emergency telephone : 1 703 / 741-5970 (CHEMTREC - International)
1 703 / 527-3887 (CHEMTREC - Alternate)

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

Recommended use of the chemical and restrictions on use

Recommended use : Fungicide

Restrictions on use : Use as recommended by the label.

2. HAZARDS IDENTIFICATION

GHS Classification

Skin sensitization : Category 1

Carcinogenicity : Category 2

Reproductive toxicity : Category 1B

Specific target organ toxicity - repeated exposure : Category 2 (Nervous system, Endocrine system)

Short-term (acute) aquatic hazard : Category 1

Long-term (chronic) aquatic hazard : Category 1

GHS label elements

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Hazard pictograms



Signal Word

: Danger

Hazard Statements

: H317 May cause an allergic skin reaction.
H351 Suspected of causing cancer.
H360D May damage the unborn child.
H373 May cause damage to organs (Nervous system, Endocrine system) through prolonged or repeated exposure.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary Statements

: **Prevention:**

P203 Obtain, read and follow all safety instructions before use.
P260 Do not breathe dust.
P272 Contaminated work clothing should not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.

Response:

P302 + P352 IF ON SKIN: Wash with plenty of water.
P318 IF exposed or concerned, get medical advice.
P333 + P317 If skin irritation or rash occurs: Get medical help.
P362 + P364 Take off contaminated clothing and wash it before reuse.
P391 Collect spillage.

Storage:

P405 Store locked up.

Disposal:

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

Other hazards which do not result in classification

None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture

: Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
mancozeb (ISO)	8018-01-7	>= 50 - < 70
Valifenalate	283159-90-0	>= 2.5 - < 10
Lignosulfonic acid, ammonium salt	8061-53-8	>= 1 - < 10

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Sulfuric acid, mono-C12-18-alkyl esters, sodium salts	68955-19-1	>= 3 - < 10
Naphthalenesulfonic acid, methyl-, polymer with formaldehyde, sodium salt	81065-51-2	>= 2.5 - < 10

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 : 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 : Small amounts splashed into eyes can cause irreversible tissue damage and blindness.
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Continue rinsing eyes during transport to hospital.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.
- If swallowed : 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 : Contains a cholinesterase inhibitor. Symptoms may include nausea, diarrhea, vomiting, decreased appetite, indigestion, muscle cramps, fatigue, insomnia, dizziness, headache, and lack of energy.
Exposure to skin may result in mild symptoms include itching, hives or rash, and skin redness. More severe symptoms include sneezing, itchy watery eyes, and difficulty breathing.
May cause an allergic skin reaction.
Suspected of causing cancer.
May damage the unborn child.
May cause damage to organs through prolonged or repeated exposure.
- Protection of first-aiders : Avoid inhalation, ingestion and contact with skin and eyes.
- Notes to physician : Treat symptomatically.

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5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : Dry chemical, CO₂, water spray or regular foam.
- Unsuitable extinguishing media : High volume water jet
- Hazardous combustion products : Fire may produce irritating, corrosive and/or toxic gases.
Hydrogen cyanide
Chlorinated compounds
Hydrogen chloride
Carbon oxides
Sulfur oxides
- Specific extinguishing methods : Use a water spray to cool fully closed containers.
Remove undamaged containers from fire area if it is safe to do so.
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Standard procedure for chemical fires.
- Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
- Special protective equipment for fire-fighters : Firefighters should wear protective clothing and self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Do not touch or walk through the spilled material.
If it can be safely done, stop the leak.
Evacuate personnel to safe areas.
- Environmental precautions : If the product contaminates rivers and lakes or drains inform respective authorities.
Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
- Methods and materials for containment and cleaning up : Never return spills in original containers for re-use.
Pick up and transfer to properly labeled containers without creating dust.
Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

- Advice on protection against fire and explosion : Avoid dust formation.
Provide appropriate exhaust ventilation at places where dust

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is formed.

- Advice on safe handling : Avoid formation of respirable particles.
Do not breathe vapors/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.
Persons susceptible to skin sensitization problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
- Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Observe label precautions.
Electrical installations / working materials must comply with the technological safety standards.
- Further information on storage stability : No decomposition if stored and applied as directed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Contains no substances with occupational exposure limit values.

Personal protective equipment

- Respiratory protection : In the case of dust or aerosol formation use respirator with an approved filter.
- Hand protection
Material : Protective gloves
- 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 : Dust impervious protective suit
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.

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Hygiene measures : General industrial hygiene practice.
Do not breathe dust.
Avoid contact with skin, eyes and clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	: solid
Form	: Microgranules
Color	: yellow
Odor	: mild aromatic
Odor Threshold	: No data available
pH	: 6.49 In a 1% aqueous dispersion
Melting point/range	: No data available
Boiling point/boiling range	: No data available
Flash point	: Not applicable
Evaporation rate	: Not applicable
Flammability (solid, gas)	: Not highly flammable Method: Directive 67/548/EEC, Annex V, A.10
Self-ignition	: 382 °C Method: Tested according to Annex V of Directive 67/548/EEC.
Upper explosion limit / Upper flammability limit	: No data available
Lower explosion limit / Lower flammability limit	: No data available
Vapor pressure	: Not applicable
Relative vapor density	: Not applicable
Relative density	: No data available

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Density	:	No data available
Bulk density	:	0.66 g/cm ³ Pour density 0.72 g/cm ³ Tap density
Solubility(ies)	:	
Water solubility	:	dispersible
Partition coefficient: n-octanol/water	:	No data available
Autoignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity	:	
Viscosity, dynamic	:	Not applicable
Viscosity, kinematic	:	Not applicable
Explosive properties	:	Not explosive Method: Directive 67/548/EEC, Annex V, A.14
Oxidizing properties	:	Non-oxidizing
Surface tension	:	0.05 mN/m, (1% solution in water)
Molecular weight	:	Not applicable
Metal corrosion rate	:	Not corrosive to metals.
Particle size	:	> 0.25 mm

10. STABILITY AND REACTIVITY

Reactivity	:	No decomposition if stored and applied as directed.
Chemical stability	:	No decomposition if stored and applied as directed.
Possibility of hazardous reactions	:	No decomposition if stored and applied as directed. Dust may form explosive mixture in air.
Conditions to avoid	:	Avoid extreme temperatures. Avoid dust formation.
Incompatible materials	:	Avoid strong acids, bases, and oxidizers.

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Hazardous decomposition products : Stable under recommended storage conditions.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Not classified due to lack of data.

Product:

Acute oral toxicity : LD50(Rat, female): > 5,000 mg/kg
Method: OECD Test Guideline 423

Acute inhalation toxicity : Acute toxicity estimate: > 10 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Calculation method

Acute dermal toxicity : LD50(Rat, male and female): > 5,000 mg/kg
Method: OECD Test Guideline 402

Components:

mancozeb (ISO):

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

Acute inhalation toxicity : LC50 (Rat, male and female): > 1.766 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
Assessment: The substance or mixture has no acute inhalation toxicity

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

Valifenalate:

Acute oral toxicity : LD50 (Rat, male and female): > 5,000 mg/kg
Method: OECD Test Guideline 401
GLP: yes
Assessment: The substance or mixture has no acute oral toxicity
Remarks: no mortality

NOAEL (No observed adverse effect level) (Rat): 2,000 mg/kg
Method: OECD Test Guideline 424

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Acute inhalation toxicity : LC50 (Rat): > 3.118 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
GLP: yes
Assessment: The component/mixture is minimally toxic after short term inhalation.
Remarks: no mortality

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 402
GLP: yes
Assessment: The component/mixture is minimally toxic after single contact with skin.
Remarks: no mortality

Lignosulfonic acid, ammonium salt:

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg

Sulfuric acid, mono-C12-18-alkyl esters, sodium salts:

Acute oral toxicity : LD50 (Rat, male and female): 4,010 mg/kg

Acute dermal toxicity : LD0 (Rat, male and female): > 2,000 mg/kg
Method: OECD Test Guideline 402
Remarks: Based on data from similar materials
no mortality

Naphthalenesulfonic acid, methyl-, polymer with formaldehyde, sodium salt:

Acute oral toxicity : LD50 (Rat): 4,786 mg/kg

Skin corrosion/irritation

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

Product:

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

Components:

mancozeb (ISO):

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

Valifenalate:

Species : Rabbit
Assessment : Not classified as irritant

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Method	:	OECD Test Guideline 404
Result	:	No skin irritation
GLP	:	yes

Sulfuric acid, mono-C12-18-alkyl esters, sodium salts:

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

Naphthalenesulfonic acid, methyl-, polymer with formaldehyde, sodium salt:

Result	:	slight irritation
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Serious eye damage/eye irritation

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

Product:

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

Components:

mancozeb (ISO):

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

Valifenalate:

Species	:	Rabbit
Assessment	:	Not classified as irritant
Method	:	OECD Test Guideline 405
Result	:	Slight or no eye irritation
GLP	:	yes

Sulfuric acid, mono-C12-18-alkyl esters, sodium salts:

Species	:	Rabbit
Method	:	OECD Test Guideline 405
Result	:	Irreversible effects on the eye
Remarks	:	Based on data from similar materials

Naphthalenesulfonic acid, methyl-, polymer with formaldehyde, sodium salt:

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

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Respiratory or skin sensitization

Skin sensitization

May cause an allergic skin reaction.

Respiratory sensitization

Not classified due to lack of data.

Product:

Test Type	: Maximization Test
Routes of exposure	: Skin contact
Species	: Guinea pig
Method	: OECD Test Guideline 406
Result	: May cause sensitization by skin contact.

Remarks	: Causes sensitization.
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Components:

mancozeb (ISO):

Test Type	: Maximization Test
Routes of exposure	: Skin contact
Species	: Guinea pig
Method	: OECD Test Guideline 406
Result	: May cause sensitization by skin contact.

Valifenalate:

Species	: Guinea pig
Method	: OECD Test Guideline 406
Result	: Does not cause skin sensitization.
GLP	: yes

Sulfuric acid, mono-C12-18-alkyl esters, sodium salts:

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

Naphthalenesulfonic acid, methyl-, polymer with formaldehyde, sodium salt:

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

Germ cell mutagenicity

Not classified due to lack of data.

Components:

mancozeb (ISO):

Genotoxicity in vitro	: Test Type: Micronucleus test
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Test system: Human lymphocytes
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 487
Result: negative

Genotoxicity in vivo : Test Type: Micronucleus test
Species: mice
Method: OECD Test Guideline 474
Result: negative

Valifenalate:

Genotoxicity in vitro : Test Type: Ames test
Method: OECD Test Guideline 471
Result: negative
GLP: yes

Test Type: Chromosome aberration test in vitro
Test system: lymphocytes
Method: OECD Test Guideline 473
Result: positive
GLP: yes

Test Type: gene mutation test
Method: OECD Test Guideline 476
Result: negative
GLP: yes

Genotoxicity in vivo : Test Type: Micronucleus test
Species: Mouse
Method: OECD Test Guideline 474
Result: negative
GLP: yes

Sulfuric acid, mono-C12-18-alkyl esters, sodium salts:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test
Result: negative
Remarks: Based on data from similar materials

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

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

Test Type: chromosome aberration assay
Species: Rat (male and female)

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Application Route: Oral
Method: OECD Test Guideline 475
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.

Naphthalenesulfonic acid, methyl-, polymer with formaldehyde, sodium salt:

Genotoxicity in vitro : Test Type: Ames test
Method: OECD Test Guideline 471
Result: negative

Test Type: Mouse lymphoma assay
Method: OECD Test Guideline 476
Result: negative

Carcinogenicity

Suspected of causing cancer.

Components:

mancozeb (ISO):

Species : Rat, male and female
Exposure time : 2 Years
LOAEL : 750 ppm
Result : positive

Carcinogenicity - Assessment : Limited evidence of carcinogenicity in animal studies

Valifenalate:

Species : Mouse, male and female
Application Route : Oral
Exposure time : 78 weeks
NOAEL : 16.8 - 21.6 mg/kg bw/day
Method : OECD Test Guideline 451
Target Organs : Liver
GLP : yes

Species : Rat, male
Exposure time : 104 weeks
NOAEL : 150 mg/kg bw/day
Method : OECD Test Guideline 453
Target Organs : Thyroid, Kidney
GLP : yes

Sulfuric acid, mono-C12-18-alkyl esters, sodium salts:

Species : Rat, male and female
Application Route : Oral

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Exposure time : 2 Years
Dose : 11, 113, 1125 mg/kg bw
NOAEL : > 1,125 mg/kg bw/day
Result : negative
Remarks : Based on data from similar materials

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

Naphthalenesulfonic acid, methyl-, polymer with formaldehyde, sodium salt:

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

Reproductive toxicity

May damage the unborn child.

Components:

mancozeb (ISO):

Effects on fertility : Test Type: Two-generation study
Species: Rat
Application Route: Oral
Method: OECD Test Guideline 416
Result: negative

Effects on fetal development : Test Type: Pre-natal
Species: Rat
Application Route: Oral
Duration of Single Treatment: 6 - 15 d
Developmental Toxicity: LOAEL: 512 mg/kg bw/day
Method: EPA OPP 83-3
Result: positive

Reproductive toxicity - Assessment : Clear evidence of adverse effects on development, based on animal experiments.

Sulfuric acid, mono-C12-18-alkyl esters, sodium salts:

Effects on fetal development : Test Type: reproductive and developmental toxicity study
Species: Rat
Application Route: Oral
Dose: 0, 63, 125, 250, 500 mg/kg
General Toxicity Maternal: LOAEL: 500 mg/kg bw/day
Developmental Toxicity: LOAEL: 500 mg/kg bw/day
Result: negative
Remarks: Based on data from similar materials

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

Naphthalenesulfonic acid, methyl-, polymer with formaldehyde, sodium salt:

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

STOT-single exposure

Not classified due to lack of data.

Components:

Valifenalate:

Remarks : No significant adverse effects were reported

Naphthalenesulfonic acid, methyl-, polymer with formaldehyde, sodium salt:

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

STOT-repeated exposure

May cause damage to organs (Nervous system, Endocrine system) through prolonged or repeated exposure.

Components:

mancozeb (ISO):

Target Organs : Nervous system, Endocrine system
Assessment : The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

Naphthalenesulfonic acid, methyl-, polymer with formaldehyde, sodium salt:

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

Repeated dose toxicity

Components:

mancozeb (ISO):

Species : Rat, male and female
LOAEL : 750 ppm
Application Route : Oral - feed
Exposure time : 2 years
Method : OECD Test Guideline 453

Valifenalate:

Species : Rat
NOAEL : 134 - 148 mg/kg
Application Route : Ingestion
Exposure time : 90 d
Method : OECD Test Guideline 408
Remarks : No toxicologically significant effects were found.

Species : Dog

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NOAEL	:	50 mg/kg
Exposure time	:	1 y
Dose	:	1 - 250 mg/kg bw/day
Subsequent observation period	:	13 w
Method	:	OECD Test Guideline 452
Target Organs	:	Liver, Thyroid

Sulfuric acid, mono-C12-18-alkyl esters, sodium salts:

Species	:	Rat, female
NOAEL	:	488 mg/kg bw/day
LOAEL	:	1016 mg/kg bw/day
Application Route	:	Oral - feed
Exposure time	:	90 d
Dose	:	66,131,261,506,1070,2218mg/kgb
Remarks	:	Based on data from similar materials

Species	:	Mouse, male and female
NOAEL	:	400 mg/kg bw/day
LOAEL	:	500 mg/kg bw/day
Application Route	:	Dermal
Dose	:	0,200,400,500,600mg/kgbw/day
Symptoms	:	Necrosis, Ulceration
Remarks	:	Based on data from similar materials

Aspiration toxicity

Not classified due to lack of data.

Components:

Naphthalenesulfonic acid, methyl-, polymer with formaldehyde, sodium salt:

No aspiration toxicity classification

Further information

Product:

Remarks	:	No data available
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12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 0.507 mg/l Exposure time: 96 h Method: OECD Test Guideline 203 Remarks: Active ingredient
	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 0.0715 mg/l Exposure time: 96 h

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Method: OECD Test Guideline 203

Remarks: Active ingredient

LC50 (Oncorhynchus mykiss (rainbow trout)): 1.1 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0.282 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Remarks: Active ingredient

EC50 (Daphnia magna (Water flea)): 1.78 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Remarks: Active ingredient

EC50 (Daphnia magna (Water flea)): 4.5 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : NOEC (Pseudokirchneriella subcapitata (green algae)): 13 µg/l

Exposure time: 72 h

EbC50 (Pseudokirchneriella subcapitata (green algae)): 110 µg/l

Exposure time: 72 h

Toxicity to fish (Chronic toxicity) : EC10: 0.21 mg/l

Exposure time: 28 d

Species: Oncorhynchus mykiss (rainbow trout)

Method: OECD Test Guideline 215

EC10: 0.0128 mg/l

Exposure time: 28 d

Species: Oncorhynchus mykiss (rainbow trout)

Method: OECD Test Guideline 215

Remarks: Active ingredient

EC10: 0.127 mg/l

Exposure time: 28 d

Species: Oncorhynchus mykiss (rainbow trout)

Method: OECD Test Guideline 215

Remarks: Active ingredient

Toxicity to soil dwelling organisms : NOEC: 500 mg/kg

Exposure time: 14 d

Species: Eisenia fetida (earthworms)

Method: OECD Test Guideline 207

LC50: > 1,000 mg/kg

Exposure time: 14 d

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Species: *Eisenia fetida* (earthworms)
Method: OECD Test Guideline 207

Toxicity to terrestrial organisms : LD50: > 2,250 mg/kg
Species: *Colinus virginianus* (Bobwhite quail)

LD50: > 100 µg/bee
Exposure time: 48 d
End point: Acute contact toxicity
Species: *Apis mellifera* (bees)
Method: OECD Test Guideline 213

LD50: > 100 µg/bee
Exposure time: 48 d
End point: Acute oral toxicity
Species: *Apis mellifera* (bees)
Method: OECD Test Guideline 213

LD50: > 2,000 mg/kg
End point: Acute oral toxicity
Species: *Coturnix japonica* (Japanese quail)
Method: OECD Test Guideline 223

Components:

mancozeb (ISO):

Toxicity to fish : LC50 (*Lepomis macrochirus* (Bluegill sunfish)): 1 mg/l
Exposure time: 48 h

LC50 (*Cyprinus carpio* (Carp)): 2.57 mg/l
Exposure time: 96 h

LC50 (*Oncorhynchus mykiss* (rainbow trout)): 0.074 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (*Daphnia*): 0.01 mg/l
Exposure time: 24 h

EC50 (*Daphnia magna* (Water flea)): 0.073 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EC10 (*Raphidocelis subcapitata* (freshwater green alga)): 0.0035 mg/l
Exposure time: 120 h

EC50 (*Raphidocelis subcapitata* (freshwater green alga)): 0.008 mg/l
Exposure time: 120 h

M-Factor (Acute aquatic toxicity) : 10

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Toxicity to fish (Chronic toxicity) : EC10: 0.0013 mg/l
Exposure time: 215 d
Species: Pimephales promelas (fathead minnow)

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 0.0073 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)

M-Factor (Chronic aquatic toxicity) : 10

Toxicity to terrestrial organisms : 0.1868 mg/kg
Exposure time: 24 h
Species: Apis mellifera (bees)

0.1652 mg/kg
Exposure time: 48 h
Species: Apis mellifera (bees)

0.1406 mg/kg
Exposure time: 72 h
Species: Apis mellifera (bees)

Valifenalate:

Toxicity to fish : LC0 (Oncorhynchus mykiss (rainbow trout)): > 100 mg/l
Exposure time: 96 h
Test Type: static test
Method: OECD Test Guideline 203
GLP: yes

Toxicity to daphnia and other aquatic invertebrates : EC0 (Daphnia magna (Water flea)): > 100 mg/l
End point: Immobilization
Exposure time: 48 h
Method: OECD Test Guideline 202
GLP: yes

LC50 (Mysidopsis bahia (opossum shrimp)): 2.8 mg/l
Exposure time: 96 h

EC50 (Crassostrea virginica (atlantic oyster)): 3.1 mg/l
Exposure time: 96 h
Method: OCSPP 850.1025
GLP: yes

Toxicity to algae/aquatic plants : NOEC (Skeletonema costatum (Diatom)): 0.106 mg/l
Exposure time: 96 h

NOEC (Navicula pelliculosa (Diatom)): > 5.45 mg/l
Test Type: Growth inhibition
Method: OECD Test Guideline 201
GLP: yes

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Toxicity to fish (Chronic toxicity) : NOEC: 11 mg/l
Exposure time: 33 d
Species: Pimephales promelas (fathead minnow)
Test Type: flow-through test
Method: EPA OPPTS 850.1400

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 2.8 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Test Type: semi-static test
Method: OECD Test Guideline 211
GLP: yes

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

Toxicity to terrestrial organisms : NOEC: 36.4 µg/bee
End point: honey bee larval toxicity test
Species: Apis mellifera (bees)
Method: OECD 237
GLP: yes

NOEC: 1,250 ppm
End point: Reproduction Test
Species: Anas platyrhynchos (Mallard duck)
Method: OECD Test Guideline 206
GLP: yes

Lignosulfonic acid, ammonium salt:

Toxicity to fish : LC50 (Fish): > 100 mg/l

Toxicity to microorganisms : (activated sludge): > 5 mg/l

Sulfuric acid, mono-C12-18-alkyl esters, sodium salts:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 1.3 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 2.8 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : NOEC (Desmodesmus subspicatus (green algae)): 3 mg/l
Exposure time: 72 h
Method: EU Method C3

EC50 (Desmodesmus subspicatus (green algae)): 14 mg/l
Exposure time: 72 h

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Method: EU Method C3

Toxicity to microorganisms : EC50 (activated sludge): 680 mg/l
Exposure time: 3 h
Method: EU Method C11

Toxicity to fish (Chronic toxicity) : NOEC: 0.11 mg/l
Exposure time: 34 d
Species: Pimephales promelas (fathead minnow)
Test Type: flow-through test
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 0.14 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Test Type: static test
Remarks: Based on data from similar materials

NOEC: 0.88 mg/l
Exposure time: 7 d
Species: Ceriodaphnia dubia (water flea)
Test Type: flow-through test
Remarks: Based on data from similar materials

Naphthalenesulfonic acid, methyl-, polymer with formaldehyde, sodium salt:

Toxicity to fish : LC50 (Fish): > 100 mg/l

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 34 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : ErC50 (Desmodesmus subspicatus (green algae)): 74.4 mg/l
Exposure time: 96 h
Test Type: static test

Toxicity to microorganisms : EC50 (Pseudomonas putida): 133 mg/l
Exposure time: 30 min
Test Type: Respiration inhibition

Persistence and degradability

Components:

mancozeb (ISO):

Biodegradability : Result: Not readily biodegradable.
Biodegradation: 5 - 6 %
Exposure time: 36 d
Method: OECD Test Guideline 301B

Valifenalate:

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Biodegradability : Result: Not readily biodegradable.

Lignosulfonic acid, ammonium salt:

Biodegradability : Result: Not readily biodegradable.

Sulfuric acid, mono-C12-18-alkyl esters, sodium salts:

Biodegradability : Inoculum: activated sludge, non-adapted
Result: Readily biodegradable.
Biodegradation: 93 %
Exposure time: 28 d
Method: Regulation (EC) No. 440/2008, Annex, C.4-C

Naphthalenesulfonic acid, methyl-, polymer with formaldehyde, sodium salt:

Biodegradability : Result: Not biodegradable

Bioaccumulative potential

Components:

mancozeb (ISO):

Bioaccumulation : Remarks: Bioaccumulation is unlikely.

Valifenalate:

Bioaccumulation : Species: Oncorhynchus mykiss (rainbow trout)
Exposure time: 14 d
Bioconcentration factor (BCF): 4
Method: OECD Test Guideline 305
Remarks: Bioaccumulation is unlikely.

Sulfuric acid, mono-C12-18-alkyl esters, sodium salts:

Partition coefficient: n- : log Pow: -2.1 (20 °C)
octanol/water

Naphthalenesulfonic acid, methyl-, polymer with formaldehyde, sodium salt:

Bioaccumulation : Remarks: Bioaccumulation is unlikely.

Mobility in soil

Components:

mancozeb (ISO):

Distribution among environ- : Medium: Soil
mental compartments Remarks: Moderately mobile in soils

Valifenalate:

Distribution among environ- : Remarks: The product is not expected to be mobile in soils.
mental compartments

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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.

13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Send to a licensed waste management company.
Do not contaminate ponds, waterways or ditches with chemical or used container.
The product should not be allowed to enter drains, water courses or the soil.

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.
Do not re-use empty containers.
Dispose of as unused product.
Empty remaining contents.

14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number : UN 3077
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
(Mancozeb, Valifenalate)
Class : 9
Subsidiary risk : ENVIRONM.
Packing group : III
Labels : 9 (ENVIRONM.)
Environmentally hazardous : yes

IATA-DGR

UN/ID No. : UN 3077
Proper shipping name : Environmentally hazardous substance, solid, n.o.s.
(Mancozeb, Valifenalate)
Class : 9
Packing group : III
Labels : Miscellaneous
Packing instruction (cargo aircraft) : 956
Packing instruction (passenger aircraft) : 956
Environmentally hazardous : yes

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IMDG-Code

UN number	: UN 3077
Proper shipping name	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Mancozeb, Valifenalate)
Class	: 9
Packing group	: III
Labels	: 9
EmS Code	: F-A, S-F
Marine pollutant	: yes

Transport in bulk according to IMO instruments

Not applicable for product as supplied.

Special precautions for user

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

15. REGULATORY INFORMATION

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

The ingredients 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. mancozeb (ISO) METHYL (3RS)-3-(4-CHLOROPHENYL)-N-[N-(ISOPROPOXYCARBONYL)-L-VALYL]-B-ALANINATE Naphthalenesulfonic acid, methyl-, polymer with formaldehyde, sodium salt
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

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NZIoC : Not in compliance with the inventory

TECI : Not in compliance with the inventory

16. OTHER INFORMATION

Revision Date : 12.12.2023

Date format : dd.mm.yyyy

Full text of other abbreviations

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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used in combination with any other materials or in any process. The user is responsible for determining whether the product is fit for a particular purpose and suitable for the user's conditions and methods of use. Since the conditions and methods of use are beyond the control of FMC Corporation, FMC Corporation expressly disclaims any and all liability as to any results obtained or arising from any use of the products or reliance on such information.

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