

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



Talstar® Xtra Granular Insecticide w/ Verge Granule Technology

Version	Revision Date:	SDS Number:	Date of last issue: 05/26/2016
1.5	11/27/2024	50000455	Date of first issue: 05/26/2016

SECTION 1. IDENTIFICATION

Product identifier

Product name Talstar® Xtra Granular Insecticide w/ Verge Granule Technology

Other means of identification

Product code 50000455

Chemical nature Mixture

Recommended use of the chemical and restrictions on use

Recommended use Can be used as insecticide only.

Restrictions on use Use as recommended by the label.

Manufacturer or supplier's details

Manufacturer FMC Corporation
2929 WALNUT ST
PHILADELPHIA PA 19104
USA
(215) 299-6000
SDS-Info@fmc.com

Supplier Address FMC Corporation
2929 Walnut Street
Philadelphia PA 19104
USA

Emergency telephone

For leak, fire, spill or accident emergencies, call:
1 800 / 424-9300 (CHEMTREC - U.S.A.)
1 703 / 741-5970 (CHEMTREC - International)
1 703 / 527-3887 (CHEMTREC - Alternate)

Medical emergency:
U.S.A. & Canada: +1 800 / 331-3148
All other countries: +1 651 / 632-6793 (Collect)

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity (Oral) : Category 4

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Acute toxicity (Inhalation) : Category 4

Skin sensitization : Category 1

Specific target organ toxicity : Category 1 (Lungs)
- repeated exposure (Inhalation)

GHS label elements

Hazard pictograms :

Signal Word : DANGER

Hazard Statements : H302 + H332 Harmful if swallowed or if inhaled.
H317 May cause an allergic skin reaction.
H372 Causes damage to organs (Lungs) through prolonged or repeated exposure if inhaled.

Precautionary Statements : **Prevention:**
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P272 Contaminated work clothing must not be allowed out of the workplace.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.
P302 + P352 IF ON SKIN: Wash with plenty of water and soap.
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P363 Wash contaminated clothing before reuse.
P330 Rinse mouth.

Storage:

P405 Store locked up.

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Disposal:

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

Other hazards

Very toxic to aquatic life.

Very toxic to aquatic life with long lasting effects.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature : Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
Bifenthrin	82657-04-3	0.2
Zeta cypermethrin	52315-07-8	0.05
Bentonite	1302-78-9	>= 80 - <= 90
Quartz (SiO ₂)	14808-60-7	>= 1 - < 5
2-methylpentane-2,4-diol	107-41-5	>= 1 - < 5

SECTION 4. FIRST AID MEASURES

- General advice : Move out of dangerous area.
Show this material 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.
If eye irritation persists, consult a specialist.
- If swallowed : 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.
Do NOT induce vomiting.

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Most important symptoms and effects, both acute and delayed : Harmful if swallowed or if inhaled.
May cause an allergic skin reaction.
Causes damage to organs through prolonged or repeated exposure if inhaled.

Notes to physician : Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Specific hazards during fire fighting : Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products : No hazardous combustion products are known

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.

Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Evacuate personnel to safe areas.
Do not touch or walk through the spilled material.
If it can be safely done, stop the leak.
Ensure adequate ventilation.
Use personal protective equipment.
Avoid dust formation.
Avoid breathing dust.
Never return spills in original containers for re-use.
Only qualified personnel equipped with suitable protective equipment may intervene.
Mark the contaminated area with signs and prevent access to unauthorized personnel.
For disposal considerations see section 13.

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

Methods and materials for containment and cleaning up : Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

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

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Quartz (SiO ₂)	14808-60-7	TWA (Respirable dust)	0.05 mg/m ³	OSHA Z-1
		TWA (respirable)	10 mg/m ³ / %SiO ₂ +2	OSHA Z-3
		TWA (respirable)	250 mppcf / %SiO ₂ +5	OSHA Z-3
		PEL (respirable)	0.05 mg/m ³	OSHA CARC
		TWA (respirable dust fraction)	0.1 mg/m ³	OSHA P0
		TWA (Respirable particulate mat-	0.025 mg/m ³ (Silica)	ACGIH

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2-methylpentane-2,4-diol	107-41-5	ter)		
		TWA (Respirable dust)	0.05 mg/m3 (Silica)	NIOSH REL
		TWA (Vapor)	25 ppm	ACGIH
		STEL (Vapor)	50 ppm	ACGIH
		STEL (Inhalable fraction, Aerosol only)	10 mg/m3	ACGIH
		C	25 ppm 125 mg/m3	NIOSH REL
		C	25 ppm 125 mg/m3	OSHA P0

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
- 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.
Always have on hand a first-aid kit, together with proper instructions.
Wear suitable protective equipment.
Ensure that eye flushing systems and safety showers are located close to the working place.
- Hygiene measures : When using do not eat or drink.
When using do not smoke.
Wash hands before breaks and at the end of workday.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : granules
- Form : granules

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Color	:	gray
Odor	:	mild
Odor Threshold	:	No data available
pH	:	No data available
Melting point/freezing point	:	No data available
Boiling point/boiling range	:	No data available
Flash point	:	No data available
Self-ignition	:	No data available
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapor pressure	:	No data available
Relative vapor density	:	No data available
Relative density	:	No data available
Density	:	No data available
Bulk density	:	55.43 lb/scf
Solubility(ies)		
Water solubility	:	dispersible
Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Autoignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity		
Viscosity, dynamic	:	No data available

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Viscosity, kinematic	:	No data available
Explosive properties	:	No data available
Oxidizing properties	:	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	:	No decomposition if stored and applied as directed. Dust may form explosive mixture in air.
Conditions to avoid	:	Heat, flames and sparks.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Harmful if swallowed or if inhaled.

Product:

Acute oral toxicity	:	LD50 (Rat): 550 mg/kg
Acute inhalation toxicity	:	LC50 (Rat): > 2.11 mg/l Exposure time: 4 h Test atmosphere: dust/mist
Acute dermal toxicity	:	LD50 (Rabbit): > 5,000 mg/kg

Components:

Bifenthrin:

Acute oral toxicity	:	LD50 (Rat, male and female): 50.2 - 58.8 mg/kg Symptoms: Convulsions, Tremors
Acute inhalation toxicity	:	LC50 (Rat, female): 0.6 - 1.2 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: OECD Test Guideline 403 Symptoms: Tremors, Convulsions LC50 (Rat, male): 1.10 mg/l Exposure time: 4 h

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Test atmosphere: dust/mist
Method: OECD Test Guideline 403
Symptoms: Tremors, Fatality

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

Zeta cypermethrin:

Acute oral toxicity : LD50 (Rat, male and female): 69.2 - 142.3 mg/kg
Method: FIFRA 81.01
GLP: yes

Acute inhalation toxicity : LC50 (Rat, female): 1.6 - 3.4 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: EPA OPP 81 - 3

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg

Bentonite:

Acute oral toxicity : LD50 (Mouse): > 5,000 mg/kg
LD50 (Rat): > 2,000 mg/kg
Assessment: The substance or mixture has no acute oral toxicity

Acute inhalation toxicity : LC50 (Rat): > 5.27 mg/l
Test atmosphere: dust/mist
Method: OECD Test Guideline 436

Quartz (SiO2):

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 5.01 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 436
Assessment: The substance or mixture has no acute inhalation toxicity
Remarks: Based on data from similar materials

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg
Assessment: The substance or mixture has no acute dermal toxicity
Remarks: Based on data from similar materials

2-methylpentane-2,4-diol:

Acute oral toxicity : LD0 (Rat, male and female): >= 2,000 mg/kg

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Method: OECD Test Guideline 420

Remarks: no mortality

Acute dermal toxicity : LD₀ (Rat, male and female): >= 2,000 mg/kg
Method: OECD Test Guideline 402
Remarks: no mortality

Skin corrosion/irritation

Not classified based on available information.

Product:

Result : slight irritation

Remarks : May cause skin irritation and/or dermatitis.

Components:

Bifenthrin:

Species : Rabbit
Result : slight or no skin irritation.
GLP : yes

Species : Rabbit
Method : OECD Test Guideline 404
Result : slight or no skin irritation.
GLP : yes

Zeta cypermethrin:

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

Bentonite:

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

Assessment : Irritating to skin.

Quartz (SiO₂):

Species : Rabbit
Method : OECD Test Guideline 404
Result : No skin irritation
Remarks : Based on data from similar materials

2-methylpentane-2,4-diol:

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

Serious eye damage/eye irritation

Not classified based on available information.

Product:

Result	:	slight irritation
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Remarks	:	Product dust may be irritating to eyes, skin and respiratory system.
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Components:

Bifenthrin:

Species	:	Rabbit
Result	:	Slight or no eye irritation
Method	:	OECD Test Guideline 405
GLP	:	yes

Zeta cypermethrin:

Species	:	Rabbit
Result	:	slight irritation
Assessment	:	Not classified as irritant

Bentonite:

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

Assessment	:	Irritating to eyes.
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Quartz (SiO₂):

Species	:	Rabbit
Result	:	No eye irritation
Method	:	OECD Test Guideline 405
Remarks	:	Based on data from similar materials

2-methylpentane-2,4-diol:

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

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Respiratory or skin sensitization

Skin sensitization

May cause an allergic skin reaction.

Respiratory sensitization

Not classified based on available information.

Product:

Assessment	:	May cause sensitization by skin contact.
Result	:	Probability or evidence of low to moderate skin sensitization rate in humans

Components:

Bifenthrin:

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

Zeta cypermethrin:

Test Type	:	Local lymph node assay (LLNA)
Routes of exposure	:	Dermal
Species	:	mice
Assessment	:	May cause sensitization by skin contact.
Method	:	OECD Test Guideline 429
Result	:	May cause sensitization by skin contact.

Bentonite:

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

Quartz (SiO₂):

Test Type	:	Local lymph node assay (LLNA)
Species	:	Mouse
Method	:	OECD Test Guideline 429
Result	:	Does not cause skin sensitization.
Remarks	:	Based on data from similar materials

2-methylpentane-2,4-diol:

Test Type	:	Maximization Test
Species	:	Guinea pig
Method	:	OECD Test Guideline 406

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Result : Does not cause skin sensitization.

Germ cell mutagenicity

Not classified based on available information.

Components:

Bifenthrin:

Genotoxicity in vitro : Test Type: gene mutation test
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Result: negative

Test Type: reverse mutation assay
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Test Type: Mouse lymphoma assay
Metabolic activation: with and without metabolic activation
Result: negative

Genotoxicity in vivo : Test Type: Sex-linked Recessive Lethal Test
Species: Drosophila melanogaster (vinegar fly)
Result: negative

Test Type: unscheduled DNA synthesis assay
Species: Rat
Method: OECD Test Guideline 486
Result: negative

Zeta cypermethrin:

Genotoxicity in vitro : Test Type: Ames test
Result: negative

Test Type: unscheduled DNA synthesis assay
Test system: rat hepatocytes
Result: negative

Test Type: Chromosome aberration test in vitro
Metabolic activation: with and without metabolic activation
Result: negative
GLP: yes

Genotoxicity in vivo : Test Type: chromosome aberration assay
Species: Chinese hamster
Cell type: Bone marrow
Application Route: Oral
Result: negative

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

Bentonite:

Genotoxicity in vitro : Method: OECD Test Guideline 471
Result: negative

Method: OECD Test Guideline 473
Result: negative

Method: OECD Test Guideline 476
Result: negative

Quartz (SiO₂):

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

Genotoxicity in vivo : Test Type: Micronucleus test
Species: Rat
Method: OECD Test Guideline 474
Result: negative
Remarks: Based on data from similar materials

2-methylpentane-2,4-diol:

Genotoxicity in vitro : Test Type: gene mutation test
Method: OECD Test Guideline 476
Result: negative

Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: negative

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

Germ cell mutagenicity - Assessment : In vitro tests did not show mutagenic effects

Carcinogenicity

Not classified based on available information.

Product:

Carcinogenicity - Assessment : Positive evidence from human epidemiological studies

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Components:

Bifenthrin:

Species	: Rat, female
Application Route	: Oral
Exposure time	: 2 Years
NOAEL	: 3 mg/kg bw/day
Result	: negative

Species	: Mouse, male
Application Route	: Oral
Exposure time	: 18 month(s)
NOAEL	: 7.6 mg/kg bw/day
Result	: positive
Symptoms	: malignant tumors

Zeta cypermethrin:

Species	: Rat
Application Route	: Oral
Exposure time	: 24 month(s)
NOAEL	: 7.5 mg/kg bw/day
Result	: negative

Bentonite:

Carcinogenicity - Assessment	: Weight of evidence does not support classification as a carcinogen
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Quartz (SiO₂):

Carcinogenicity - Assessment	: Human carcinogen.
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IARC	Group 1: Carcinogenic to humans Quartz (SiO ₂) (Silica dust, crystalline)	14808-60-7
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OSHA	OSHA specifically regulated carcinogen Quartz (SiO ₂) (crystalline silica)	14808-60-7
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NTP	Known to be human carcinogen Quartz (SiO ₂) (Silica, Crystalline (Respirable Size))	14808-60-7
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Reproductive toxicity

Not classified based on available information.

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Components:

Bifenthrin:

Effects on fertility : Test Type: Two-generation study
Species: Rat
Application Route: Oral
General Toxicity Parent: NOAEL: 3 mg/kg bw/day
General Toxicity F1: NOAEL: 5 mg/kg bw/day
Result: negative

Effects on fetal development : Test Type: Embryo-fetal development
Species: Rabbit
Application Route: Oral
General Toxicity Maternal: NOAEL: 2.7 mg/kg bw/day
Teratogenicity: NOAEL: 2.7 mg/kg bw/day
Symptoms: Maternal effects.
Result: No teratogenic effects.

Test Type: Embryo-fetal development
Species: Rat
Application Route: Oral
General Toxicity Maternal: NOAEL: 1 mg/kg bw/day
Teratogenicity: NOAEL: 2 mg/kg bw/day
Result: No teratogenic effects.

Species: Rat
Application Route: Oral
General Toxicity Maternal: LOAEL: 7.2 mg/kg bw/day
Developmental Toxicity: LOAEL: 7.2 mg/kg bw/day
Embryo-fetal toxicity.: NOEL: 9.0 mg/kg bw/day
Method: OECD Test Guideline 426
Result: Animal testing did not show any effects on fertility.,
Some evidence of adverse effects on development, based on
animal experiments.

Zeta cypermethrin:

Effects on fertility : Test Type: Two-generation study
Species: Rat
Application Route: Oral
General Toxicity F1: NOAEL: 22 mg/kg bw/day
Method: OECD Test Guideline 416
Result: negative

Effects on fetal development : Test Type: Embryo-fetal development
Species: Rat
Application Route: Oral
General Toxicity Maternal: NOAEL: 12.5 mg/kg bw/day
Developmental Toxicity: NOAEL: 35 mg/kg bw/day
Method: OECD Test Guideline 426
Result: negative

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GLP: yes

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

Bentonite:

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

2-methylpentane-2,4-diol:

Effects on fertility : Species: Rat, male and female
Application Route: Oral
Dose: 200, 500, 1000 mg/kg/day
General Toxicity Parent: NOEL: $\geq$ 1,000 mg/kg bw/day
General Toxicity F1: LOAEL: 1,000 mg/kg bw/day
Method: OECD Test Guideline 421
Result: negative

Effects on fetal development : Test Type: Pre-natal
Species: Rat
Application Route: Oral
Dose: 0,30,300,1000 mg/kgbw/day
Duration of Single Treatment: 10 d
General Toxicity Maternal: LOAEL: 1,000 mg/kg bw/day
Embryo-fetal toxicity: LOAEL: 1,000 mg/kg bw/day
Method: OECD Test Guideline 414
Result: negative

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

STOT-single exposure

Not classified based on available information.

Components:

Bifenthrin:

Target Organs : Central nervous system
Assessment : Causes damage to organs.

Zeta cypermethrin:

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

Assessment : May cause respiratory irritation.

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Bentonite:

Remarks : No significant adverse effects were reported

Assessment : May cause respiratory irritation.

2-methylpentane-2,4-diol:

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

STOT-repeated exposure

Causes damage to organs (Lungs) through prolonged or repeated exposure if inhaled.

Components:

Bifenthrin:

Target Organs : Central nervous system

Assessment : The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 1.

Zeta cypermethrin:

Target Organs : Nervous system

Assessment : The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

Bentonite:

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

Quartz (SiO₂):

Routes of exposure : Inhalation

Target Organs : Lungs

Assessment : The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 1.

Routes of exposure : Inhalation

Target Organs : Immune system, Kidney

Assessment : The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

Repeated dose toxicity

Components:

Bifenthrin:

Species : Rat, male and female

NOEL : 100 ppm

Application Route : Oral - feed

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Exposure time : 90 d
Remarks : No toxicologically significant effects were found.

Species : Dog, male and female
NOEL : 2.5 mg/kg bw/day
Application Route : Oral - feed
Exposure time : 13 w
Symptoms : Tremors

Zeta cypermethrin:

Species : Dog
NOAEL : 5 mg/kg
LOAEL : 15 mg/kg
Application Route : Oral
Exposure time : 1 yr
Dose : 1, 5, 15 mg/kg/d
Symptoms : Gastrointestinal disturbance, Neurological disorders

Species : Dog
NOAEL : 6 mg/kg bw/day
LOAEL : 18 mg/kg bw/day
Application Route : Oral
Exposure time : 90 d
Target Organs : Nervous system

Species : Rat
NOAEL : 16.7 mg/kg bw/day
LOAEL : 33.7 mg/kg bw/day
Application Route : Oral
Exposure time : 90 d
Target Organs : Nervous system

Species : Dog
NOAEL : 6 mg/kg
LOAEL : 18 mg/kg
Application Route : Oral
Exposure time : 1 yr
Dose : 3, 6, 18, 33 mg/kg/d
Method : EPA OPP 83-1
Symptoms : Tremors

Species : Rat
NOAEL : 4.5 mg/kg
Application Route : Oral
Exposure time : 2 yr
Dose : 0.6, 4.5, 30, 45 mg/kg/d
Target Organs : Liver

Quartz (SiO₂):

Species : Rat

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LOAEC	:	0.0025 mg/l
Application Route	:	Inhalation
Exposure time	:	90 day
Method	:	OECD Test Guideline 413
Target Organs	:	Lungs
Remarks	:	Based on data from similar materials

2-methylpentane-2,4-diol:

Species	:	Rat, male and female
NOAEL	:	450 mg/kg bw/day
Application Route	:	Oral
Exposure time	:	90 d
Dose	:	50, 150, 450, mg/kg bw/day
Method	:	OECD Test Guideline 408

Aspiration toxicity

Not classified based on available information.

Components:

Bifenthrin:

The substance does not have properties associated with aspiration hazard potential.

Zeta cypermethrin:

The substance does not have properties associated with aspiration hazard potential.

Experience with human exposure

Components:

Zeta cypermethrin:

General Information	:	Symptoms: May cause paraesthesia
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Further information

Product:

Remarks	:	No data available
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SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Bifenthrin:

Toxicity to fish	:	LC50 (Salmo gairdneri): 0.00015 mg/l Exposure time: 96 h
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Test Type: flow-through test

LC50 (*Lepomis macrochirus* (Bluegill sunfish)): 0.00035 mg/l
Exposure time: 96 h
Test Type: flow-through test

LC50 (*Oncorhynchus mykiss* (rainbow trout)): 0.000256 mg/l
Exposure time: 96 h
Test Type: semi-static test
Method: OECD Test Guideline 203
GLP: yes

LC50 (*Pimephales promelas* (fathead minnow)): 0.000234 mg/l
Exposure time: 96 h
Test Type: semi-static test
Method: OECD Test Guideline 203
GLP: yes

Toxicity to daphnia and other aquatic invertebrates : EC50 (*Daphnia*): 0.00011 mg/l
Exposure time: 48 h

LC50 (*Daphnia*): 0.0016 mg/l
Exposure time: 48 h

Toxicity to algae/aquatic plants : EC50 (algae): 0.822 mg/l
Exposure time: 72 h

Toxicity to fish (Chronic toxicity) : NOEC (*Oncorhynchus mykiss* (rainbow trout)): 0.00012 mg/l
Exposure time: 21 d

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (*Daphnia magna* (Water flea)): 0.0013 µg/l
Exposure time: 21 d

NOEC (*Daphnia magna* (Water flea)): 0.00095 µg/l
Exposure time: 21 d

Toxicity to soil dwelling organisms : LD50 (*Eisenia fetida* (earthworms)): > 16 mg/kg
Exposure time: 14 d

Method: OECD Test Guideline 216
Remarks: No significant adverse effect on Nitrogen mineralization.

Toxicity to terrestrial organisms : LD50 (*Colinus virginianus* (Bobwhite quail)): 1,800 mg/kg

LD50 (*Anas platyrhynchos* (Mallard duck)): > 2,150 mg/kg

LD50 (*Apis mellifera* (bees)): 0.1 - 0.35 µg/bee

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Exposure time: 24 h
End point: Acute oral toxicity
Method: OECD Test Guideline 213

LD50 (Apis mellifera (bees)): 0.1 - 0.3 µg/bee
Exposure time: 24 h
End point: Acute contact toxicity
Method: OECD Test Guideline 214

Zeta cypermethrin:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 0.69 µg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 0.141 µg/l Exposure time: 48 h
Toxicity to algae/aquatic plants	:	EC50 (algae): > 1 mg/l Exposure time: 72 h
Toxicity to fish (Chronic toxicity)	:	NOEC (Fish): 0.015 µg/l Exposure time: 21 d
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Crustaceans): 0.01 µg/l Exposure time: 21 d
Toxicity to soil dwelling organisms	:	LC50 (worms): > 100 mg/kg Exposure time: 14 d
Toxicity to terrestrial organisms	:	LD50 (Colinus virginianus (Bobwhite quail)): > 2,025 mg/kg

NOEC (Colinus virginianus (Bobwhite quail)): 150 mg/kg
End point: Reproduction Test

LD50 (Apis mellifera (bees)): 0.059 µg/bee

LC50 (Apis mellifera (bees)): 0.033 µg/bee

Ecotoxicology Assessment

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

Bentonite:

Toxicity to fish	:	LC50 (Salmo gairdneri): 8,000 mg/l Exposure time: 96 h
		LC50 (Oncorhynchus mykiss (rainbow trout)): 16,000 mg/l

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Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 100 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EC50 (algae): > 100 mg/l
Exposure time: 72 h

Quartz (SiO₂):

Toxicity to fish : LC50 (Cyprinus carpio (Carp)): > 10,000 mg/l
Exposure time: 72 h

2-methylpentane-2,4-diol:

Toxicity to fish : LC50 (Gambusia affinis (Mosquito fish)): 8,510 mg/l
Exposure time: 96 h
Test Type: flow-through test

LC50 (Pimephales promelas (fathead minnow)): 8,690 mg/l
Exposure time: 96 h
Test Type: flow-through test

LC50 (Lepomis macrochirus (Bluegill sunfish)): 12,800 mg/l
Exposure time: 96 h
Test Type: flow-through test

LC50 (Oncorhynchus mykiss (rainbow trout)): 9,450 mg/l
Exposure time: 96 h
Test Type: flow-through test

LC50 (Ictalurus punctatus (channel catfish)): 11,200 mg/l
Exposure time: 96 h
Test Type: flow-through test

LC50 (Carassius auratus (goldfish)): 12,000 mg/l
Exposure time: 96 h
Test Type: flow-through test

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 5,410 mg/l
Exposure time: 48 h
Test Type: static test

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): > 429 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 429 mg/l
Exposure time: 72 h

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Method: OECD Test Guideline 201

Toxicity to microorganisms : NOEC (Bacteria): 200 mg/l
Exposure time: 10 d
Test Type: Growth inhibition

Persistence and degradability

Components:

Bifenthrin:

Biodegradability : Result: Not readily biodegradable.

Stability in water : Degradation half life (DT50): 2.2 d
Hydrolysis: at 60 °C

Degradation half life (DT50): 15.6 d
Hydrolysis: at 40 °C

Zeta cypermethrin:

Biodegradability : Result: Not readily biodegradable.

Bentonite:

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

Quartz (SiO₂):

Biodegradability : Result: Not biodegradable

2-methylpentane-2,4-diol:

Biodegradability : Inoculum: activated sludge
Result: Readily biodegradable.
Biodegradation: 81 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

Bioaccumulative potential

Components:

Bifenthrin:

Bioaccumulation : Species: Lepomis macrochirus (Bluegill sunfish)
Bioconcentration factor (BCF): 1,709
Remarks: Due to the distribution coefficient n-octanol/water, accumulation in organisms is possible.
See section 9 for octanol-water partition coefficient.

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Partition coefficient: n-octanol/water : log Pow: 6.6

Zeta cypermethrin:

Bioaccumulation : Remarks: Accumulation in aquatic organisms is expected.

Partition coefficient: n-octanol/water : log Pow: 5 - 6 (75 °F / 24 °C)

Quartz (SiO₂):

Bioaccumulation : Remarks: Does not bioaccumulate.

Mobility in soil

Components:

Bifenthrin:

Distribution among environmental compartments : Koc: 236610 ml/g, log Koc: 5.37
Remarks: immobile

Stability in soil :

Zeta cypermethrin:

Distribution among environmental compartments : Remarks: immobile

Other adverse effects

Product:

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

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:

Zeta cypermethrin:

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.

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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 3077 |
| Proper shipping name | : | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
(Zeta-Cypermethrin, Bifenthrin) |
| 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.
(Zeta-Cypermethrin, Bifenthrin) |
| Class | : | 9 |
| Packing group | : | III |
| Labels | : | Miscellaneous |
| Packing instruction (cargo aircraft) | : | 956 |
| Packing instruction (passenger aircraft) | : | 956 |
| Environmentally hazardous | : | yes |

IMDG-Code

- | | | |
|----------------------|---|---|
| UN number | : | UN 3077 |
| Proper shipping name | : | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
(Zeta-Cypermethrin, Bifenthrin) |
| Class | : | 9 |
| Packing group | : | III |
| Labels | : | 9 |
| EmS Code | : | F-A, S-F |

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Marine pollutant : yes

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

Not applicable for product as supplied.

Domestic regulation

49 CFR Road

UN/ID/NA number	: UN 3077
Proper shipping name	: Environmentally hazardous substance, solid, n.o.s. (Zeta-Cypermethrin, Bifenthrin)
Class	: 9
Packing group	: III
Labels	: CLASS 9
ERG Code	: 171
Marine pollutant	: yes
Remarks	: Shipment by ground under DOT is non-regulated; however it may be shipped per the applicable hazard classification to facilitate multi-modal transport involving ICAO (IATA) or IMO.

Special precautions for user

Remarks : 49CFR: no dangerous good in non-bulk packaging

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

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Acute toxicity (any route of exposure)
Respiratory or skin sensitization
Carcinogenicity
Skin corrosion or irritation
Serious eye damage or eye irritation
Specific target organ toxicity (single or repeated exposure)

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

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Clean Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM Intermediate or Final VOC's (40 CFR 60.489).

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

This product does not contain any priority pollutants related to the U.S. Clean Water Act

US State Regulations

Massachusetts Right To Know

Quartz (SiO ₂)	14808-60-7
2-methylpentane-2,4-diol	107-41-5

Pennsylvania Right To Know

Bentonite	1302-78-9
Quartz (SiO ₂)	14808-60-7
2-methylpentane-2,4-diol	107-41-5
Distillates (petroleum), hydro- treated light; Kerosine — unspecified	64742-47-8

Maine Chemicals of High Concern

Quartz (SiO ₂)	14808-60-7
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Vermont Chemicals of High Concern

Product does not contain any listed chemicals

Washington Chemicals of High Concern

Product does not contain any listed chemicals

California Prop. 65

WARNING: This product can expose you to chemicals including Quartz (SiO₂), Distillates (petroleum), hydro- treated light; Kerosine — unspecified, which is/are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

California List of Hazardous Substances

2-methylpentane-2,4-diol	107-41-5
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California Permissible Exposure Limits for Chemical Contaminants

Quartz (SiO ₂)	14808-60-7
2-methylpentane-2,4-diol	107-41-5

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California Regulated Carcinogens

Quartz (SiO₂)

14808-60-7

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.
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

TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

FIFRA information

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

CAUTION

Harmful if inhaled, Harmful if swallowed, Harmful if absorbed through the skin., Avoid breathing dust or spray mist., Avoid contact with skin, eyes and clothing., Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

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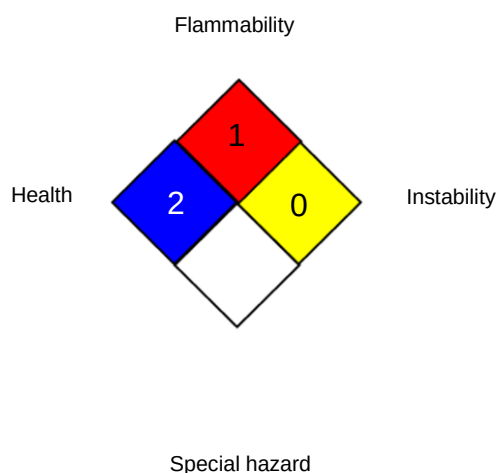
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SECTION 16. OTHER INFORMATION

Further information

NFPA 704:



0 No health threat, 1 Slightly Hazardous, 2 Hazardous, 3 Extreme danger, 4 Deadly

HMIS® IV:

HEALTH	*	3
FLAMMABILITY		1
PHYSICAL HAZARD		0

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

Full text of other abbreviations

ACGIH	: USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL	: USA. NIOSH Recommended Exposure Limits
OSHA CARC	: OSHA Specifically Regulated Chemicals/Carcinogens
OSHA P0	: USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)
OSHA Z-1	: USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
OSHA Z-3	: USA. Occupational Exposure Limits (OSHA) - Table Z-3 Mineral Dusts
ACGIH / TWA	: 8-hour, time-weighted average
ACGIH / STEL	: Short-term exposure limit
NIOSH REL / TWA	: Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
NIOSH REL / C	: Ceiling value not be exceeded at any time.
OSHA CARC / PEL	: Permissible exposure limit (PEL)
OSHA P0 / TWA	: 8-hour time weighted average
OSHA P0 / C	: Ceiling limit
OSHA Z-1 / TWA	: 8-hour time weighted average
OSHA Z-3 / TWA	: 8-hour time weighted average

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic

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Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; 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; HMIS - Hazardous Materials Identification System; 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; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; 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; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; 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

Disclaimer

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