

# SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



## Deltamethrin (5%) Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04/06/2024
6.0	07/06/2024	2333309-00020	Date of first issue: 12/12/2017

### SECTION 1. IDENTIFICATION

Product name : Deltamethrin (5%) Formulation

#### Manufacturer or supplier's details

Company name of supplier : Merck & Co., Inc  
Address : 126 E. Lincoln Avenue  
Rahway, New Jersey U.S.A. 07065  
Telephone : 908-740-4000  
Emergency telephone : 1-908-423-6000  
E-mail address : EHSDATASTEWARD@merck.com

#### Recommended use of the chemical and restrictions on use

Recommended use : Veterinary product  
Restrictions on use : Not applicable

### SECTION 2. HAZARDS IDENTIFICATION

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

Flammable liquids : Category 3  
Acute toxicity (Oral) : Category 4  
Skin irritation : Category 2  
Serious eye damage : Category 1  
Skin sensitization : Category 1  
Reproductive toxicity : Category 2  
Specific target organ toxicity - single exposure : Category 3  
Specific target organ toxicity - repeated exposure (Oral) : Category 1 (Central nervous system, Immune system)  
Specific target organ toxicity - repeated exposure (Inhalation) : Category 1 (Central nervous system)  
Aspiration hazard : Category 1

#### GHS label elements

Hazard pictograms :



Signal Word : Danger

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Hazard Statements : H226 Flammable liquid and vapor.  
H302 Harmful if swallowed.  
H304 May be fatal if swallowed and enters airways.  
H315 Causes skin irritation.  
H317 May cause an allergic skin reaction.  
H318 Causes serious eye damage.  
H335 May cause respiratory irritation.  
H336 May cause drowsiness or dizziness.  
H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.  
H372 Causes damage to organs (Central nervous system, Immune system) through prolonged or repeated exposure if swallowed.  
H372 Causes damage to organs (Central nervous system) through prolonged or repeated exposure if inhaled.

Precautionary Statements : **Prevention:**  
P201 Obtain special instructions before use.  
P202 Do not handle until all safety precautions have been read and understood.  
P210 Keep away from heat, sparks, open flame and hot surfaces. No smoking.  
P233 Keep container tightly closed.  
P241 Use explosion-proof electrical, ventilating and lighting equipment.  
P242 Use only non-sparking tools.  
P243 Take precautionary measures against static discharge.  
P260 Do not breathe mist or vapors.  
P264 Wash skin thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.  
P271 Use only outdoors or in a well-ventilated area.  
P272 Contaminated work clothing must not be allowed out of the workplace.  
P280 Wear protective gloves, protective clothing, eye protection and face protection.

### Response:

P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER.  
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.  
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a doctor if you feel unwell.  
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER.  
P308 + P313 IF exposed or concerned: Get medical attention.  
P331 Do NOT induce vomiting.  
P333 + P313 If skin irritation or rash occurs: Get medical attention.

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P362 + P364 Take off contaminated clothing and wash it before reuse.

### Storage:

P403 + P235 Store in a well-ventilated place. Keep cool.  
P405 Store locked up.

### Disposal:

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

### Other hazards

Cutaneous sensations may occur, such as burning or stinging on the face and mucosae. However, these sensations cause no lesions and are of a transitory nature (max. 24 hours).  
Vapors may form explosive mixture with air.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

### Components

Chemical name	CAS-No.	Concentration (% w/w)
Hydrocarbons, C9, aromatics	Not Assigned	$\geq 30 - < 50$
2-Methoxy-1-methylethyl acetate	108-65-6	$\geq 20 - < 30$
Benzenesulfonic acid, C10-13-alkyl derivs., calcium salts	Not Assigned	$\geq 5 - < 10$
2-Methyl-1-propanol	78-83-1	$\geq 5 - < 10$
Deltamethrin (ISO)	52918-63-5	$\geq 5 - < 10$

Actual concentration is withheld as a trade secret

## SECTION 4. FIRST AID MEASURES

- General advice : In the case of accident or if you feel unwell, seek medical advice immediately.  
When symptoms persist or in all cases of doubt seek medical advice.
- If inhaled : If inhaled, remove to fresh air.  
Get medical attention.
- In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.  
Get medical attention.  
Wash clothing before reuse.  
Thoroughly clean shoes before reuse.
- In case of eye contact : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes.  
If easy to do, remove contact lens, if worn.  
Get medical attention immediately.
- If swallowed : If swallowed, DO NOT induce vomiting.  
If vomiting occurs have person lean forward.  
Call a physician or poison control center immediately.  
Rinse mouth thoroughly with water.  
Never give anything by mouth to an unconscious person.

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Most important symptoms and effects, both acute and delayed	: Harmful if swallowed. May be fatal if swallowed and enters airways. Causes skin irritation. May cause an allergic skin reaction. Causes serious eye damage. May cause respiratory irritation. May cause drowsiness or dizziness. Suspected of damaging fertility. Suspected of damaging the unborn child. Causes damage to organs through prolonged or repeated exposure if swallowed. Causes damage to organs through prolonged or repeated exposure if inhaled. This product contains a pyrethroid. Pyrethroid poisoning should not be confused with carbamate or organophosphate poisoning.
Protection of first-aiders	: First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists (see section 8).
Notes to physician	: Treat symptomatically and supportively.

### SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	: Water spray Alcohol-resistant foam Carbon dioxide (CO <sub>2</sub> ) Dry chemical
Unsuitable extinguishing media	: High volume water jet
Specific hazards during fire fighting	: Do not use a solid water stream as it may scatter and spread fire. Flash back possible over considerable distance. Vapors may form explosive mixtures with air. Exposure to combustion products may be a hazard to health.
Hazardous combustion products	: Carbon oxides Nitrogen oxides (NO <sub>x</sub> ) Bromine compounds Sulfur oxides Metal oxides
Specific extinguishing methods	: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use water spray to cool unopened containers. Remove undamaged containers from fire area if it is safe to do so. Evacuate area.
Special protective equipment for fire-fighters	: In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment.

### SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency measures	: Remove all sources of ignition. Use personal protective equipment.
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- |                                                       |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| agency procedures                                     |   | Follow safe handling advice (see section 7) and personal protective equipment recommendations (see section 8).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Environmental precautions                             | : | Avoid release to the environment.<br>Prevent further leakage or spillage if safe to do so.<br>Prevent spreading over a wide area (e.g., by containment or oil barriers).<br>Retain and dispose of contaminated wash water.<br>Local authorities should be advised if significant spillages cannot be contained.                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Methods and materials for containment and cleaning up | : | Non-sparking tools should be used.<br>Soak up with inert absorbent material.<br>Suppress (knock down) gases/vapors/mists with a water spray jet.<br>For large spills, provide diking or other appropriate containment to keep material from spreading. If diked material can be pumped, store recovered material in appropriate container.<br>Clean up remaining materials from spill with suitable absorbent.<br>Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.<br>Sections 13 and 15 of this SDS provide information regarding certain local or national requirements. |

## SECTION 7. HANDLING AND STORAGE

- |                         |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Technical measures      | : | See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Local/Total ventilation | : | If sufficient ventilation is unavailable, use with local exhaust ventilation.<br>Use explosion-proof electrical, ventilating and lighting equipment.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Advice on safe handling | : | Do not get on skin or clothing.<br>Do not breathe mist or vapors.<br>Do not swallow.<br>Do not get in eyes.<br>Wash skin thoroughly after handling.<br>Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment<br>Non-sparking tools should be used.<br>Keep container tightly closed.<br>Already sensitized individuals, and those susceptible to asthma, allergies, chronic or recurrent respiratory disease, should consult their physician regarding working with respiratory irritants or sensitizers.<br>Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |

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- Take precautionary measures against static discharges.  
Do not eat, drink or smoke when using this product.  
Take care to prevent spills, waste and minimize release to the environment.
- Conditions for safe storage : Keep in properly labeled containers.  
Store locked up.  
Keep tightly closed.  
Keep in a cool, well-ventilated place.  
Store in accordance with the particular national regulations.  
Keep away from heat and sources of ignition.
- Materials to avoid : Do not store with the following product types:  
Strong oxidizing agents  
Self-reactive substances and mixtures  
Organic peroxides  
Flammable solids  
Pyrophoric liquids  
Pyrophoric solids  
Self-heating substances and mixtures  
Substances and mixtures which in contact with water emit flammable gases  
Explosives  
Gases  
Very acutely toxic substances and mixtures

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Hydrocarbons, C9, aromatics	Not Assigned	TWA	500 ppm 2,000 mg/m <sup>3</sup>	OSHA Z-1
2-Methoxy-1-methylethyl acetate	108-65-6	TWA	50 ppm	US WEEL
2-Methyl-1-propanol	78-83-1	TWA	50 ppm	ACGIH
		TWA	50 ppm 150 mg/m <sup>3</sup>	NIOSH REL
		TWA	100 ppm 300 mg/m <sup>3</sup>	OSHA Z-1
Deltamethrin (ISO)	52918-63-5	TWA	15 µg/m <sup>3</sup> (OEB 3)	Internal
Further information: DSEN, Skin				
		Wipe limit	100 µg/100 cm <sup>2</sup>	Internal

- Engineering measures : Use appropriate engineering controls and manufacturing technologies to control airborne concentrations (e.g., drip-less quick connections).  
All engineering controls should be implemented by facility design and operated in accordance with GMP principles to protect products, workers, and the environment.  
Containment technologies suitable for controlling compounds are required to control at source and to prevent migration of

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the compound to uncontrolled areas (e.g., open-face containment devices).

Minimize open handling.

Use explosion-proof electrical, ventilating and lighting equipment.

### Personal protective equipment

**Respiratory protection** : General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

### Hand protection

**Material** : Chemical-resistant gloves

**Remarks** : Consider double gloving. Take note that the product is flammable, which may impact the selection of hand protection.

**Eye protection** : Wear safety glasses with side shields or goggles. If the work environment or activity involves dusty conditions, mists or aerosols, wear the appropriate goggles. Wear a faceshield or other full face protection if there is a potential for direct contact to the face with dusts, mists, or aerosols.

**Skin and body protection** : Work uniform or laboratory coat. Additional body garments should be used based upon the task being performed (e.g., sleevelets, apron, gauntlets, disposable suits) to avoid exposed skin surfaces. Use appropriate degowning techniques to remove potentially contaminated clothing.

**Hygiene measures** : If exposure to chemical is likely during typical use, provide eye flushing systems and safety showers close to the working place. When using do not eat, drink or smoke. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before re-use. The effective operation of a facility should include review of engineering controls, proper personal protective equipment, appropriate degowning and decontamination procedures, industrial hygiene monitoring, medical surveillance and the use of administrative controls.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

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Appearance	:	liquid
Color	:	yellow
Odor	:	No data available
Odor Threshold	:	No data available
pH	:	3 - 5
Melting point/freezing point	:	No data available
Initial boiling point and boiling range	:	No data available
Flash point	:	113 - 124 °F / 45 - 51 °C
Evaporation rate	:	No data available
Flammability (solid, gas)	:	Not applicable
Flammability (liquids)	:	Not applicable
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	:	0.963 - 0.967 g/cm <sup>3</sup>
Solubility(ies)		
Water solubility	:	completely miscible
Partition coefficient: n-octanol/water	:	No data available
Autoignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity		
Viscosity, kinematic	:	No data available
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.



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Molecular weight : No data available

Particle characteristics  
Particle size : Not applicable

### SECTION 10. STABILITY AND REACTIVITY

Reactivity : Not classified as a reactivity hazard.  
Chemical stability : Stable under normal conditions.  
Possibility of hazardous reactions : Flammable liquid and vapor.  
Vapors may form explosive mixture with air.  
Can react with strong oxidizing agents.

Conditions to avoid : Heat, flames and sparks.  
Incompatible materials : Oxidizing agents  
Hazardous decomposition products : No hazardous decomposition products are known.

### SECTION 11. TOXICOLOGICAL INFORMATION

#### Information on likely routes of exposure

Inhalation  
Skin contact  
Ingestion  
Eye contact

#### Acute toxicity

Harmful if swallowed.

#### Product:

Acute oral toxicity : Acute toxicity estimate: 1,108 mg/kg  
Method: Calculation method

Acute inhalation toxicity : Acute toxicity estimate: 15.7 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate: > 5,000 mg/kg  
Method: Calculation method

#### Components:

##### Hydrocarbons, C9, aromatics:

Acute oral toxicity : LD50 (Rat, female): 3,492 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 6.193 mg/l  
Exposure time: 4 h  
Test atmosphere: vapor  
Assessment: The substance or mixture has no acute inhala-

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	tion toxicity
Acute dermal toxicity	: LD50 (Rabbit): > 3,160 mg/kg Assessment: The substance or mixture has no acute dermal toxicity

### 2-Methoxy-1-methylethyl acetate:

Acute oral toxicity	: LD50 (Rat, female): 5,155 mg/kg
Acute inhalation toxicity	: LC50 (Rat): > 9.34 mg/l Exposure time: 4 h Test atmosphere: vapor
Acute dermal toxicity	: LD50 (Rat): > 2,000 mg/kg Assessment: The substance or mixture has no acute dermal toxicity

### Benzenesulfonic acid, C10-13-alkyl derivs., calcium salts:

Acute oral toxicity	: LD50 (Rat): 4,445 mg/kg
Acute dermal toxicity	: LD50 (Rat): > 2,000 mg/kg Method: OECD Test Guideline 402 Remarks: Based on data from similar materials

### 2-Methyl-1-propanol:

Acute oral toxicity	: LD50 (Rat, female): 3,350 mg/kg Method: OECD Test Guideline 401
Acute inhalation toxicity	: LC50 (Rat): > 18.18 mg/l Exposure time: 6 h Test atmosphere: vapor
Acute dermal toxicity	: LD50 (Rabbit, female): 2,460 mg/kg Method: OECD Test Guideline 402

### Deltamethrin (ISO):

Acute oral toxicity	: LD50 (Rat): 66.7 mg/kg  LD50 (Rat): 9 - 139 mg/kg  LD50 (Mouse): 19 - 34 mg/kg
Acute inhalation toxicity	: LC50 (Rat): 0.8 mg/l Exposure time: 2 h Test atmosphere: dust/mist
Acute dermal toxicity	: LD50 (Rabbit): 2,000 mg/kg  LD50 (Rat): > 800 mg/kg
Acute toxicity (other routes of	: LD50 (Rat): 2.5 mg/kg

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administration)	Application Route: Intravenous
	LD50 (Mouse): 10 mg/kg
	Application Route: Intraperitoneal

### Skin corrosion/irritation

Causes skin irritation.

### Components:

#### Hydrocarbons, C9, aromatics:

Assessment	: Repeated exposure may cause skin dryness or cracking.
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#### 2-Methoxy-1-methylethyl acetate:

Species	: Rabbit
Result	: No skin irritation

#### Benzenesulfonic acid, C10-13-alkyl derivs., calcium salts:

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

#### 2-Methyl-1-propanol:

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

#### Deltamethrin (ISO):

Species	: Rabbit
Result	: No skin irritation

### Serious eye damage/eye irritation

Causes serious eye damage.

### Components:

#### Hydrocarbons, C9, aromatics:

Species	: Rabbit
Result	: No eye irritation

#### 2-Methoxy-1-methylethyl acetate:

Species	: Rabbit
Result	: No eye irritation

#### Benzenesulfonic acid, C10-13-alkyl derivs., calcium salts:

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

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### 2-Methyl-1-propanol:

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

### Deltamethrin (ISO):

Species	: Rabbit
Result	: Moderate eye irritation

### Respiratory or skin sensitization

#### Skin sensitization

May cause an allergic skin reaction.

#### Respiratory sensitization

Not classified based on available information.

### Components:

#### Hydrocarbons, C9, aromatics:

Test Type	: Maximization Test
Routes of exposure	: Skin contact
Species	: Guinea pig
Method	: OECD Test Guideline 406
Result	: negative

#### 2-Methoxy-1-methylethyl acetate:

Test Type	: Maximization Test
Routes of exposure	: Skin contact
Species	: Guinea pig
Method	: OECD Test Guideline 406
Result	: negative

#### Benzenesulfonic acid, C10-13-alkyl derivs., calcium salts:

Test Type	: Magnusson-Kligman-Test
Routes of exposure	: Skin contact
Species	: Guinea pig
Method	: OECD Test Guideline 406
Remarks	: Based on data from similar materials

#### 2-Methyl-1-propanol:

Test Type	: Buehler Test
Routes of exposure	: Skin contact
Species	: Guinea pig
Method	: OECD Test Guideline 406
Result	: negative
Remarks	: Based on data from similar materials

#### Deltamethrin (ISO):

Test Type	: Maximization Test
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Routes of exposure	: Dermal
Species	: Guinea pig
Result	: negative
Test Type	: Human repeat insult patch test (HRIPT)
Routes of exposure	: Dermal
Species	: Humans
Result	: positive

### Germ cell mutagenicity

Not classified based on available information.

### Components:

#### Hydrocarbons, C9, aromatics:

Genotoxicity in vitro	: Test Type: Chromosome aberration test in vitro Result: negative
Genotoxicity in vivo	: Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis) Species: Rat Application Route: inhalation (vapor) Result: negative

#### 2-Methoxy-1-methylethyl acetate:

Genotoxicity in vitro	: Test Type: Bacterial reverse mutation assay (AMES) Result: negative  Test Type: Chromosome aberration test in vitro Result: negative  Test Type: DNA damage and repair, unscheduled DNA synthesis in mammalian cells (in vitro) Result: negative
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#### Benzenesulfonic acid, C10-13-alkyl derivs., calcium salts:

Genotoxicity in vitro	: Test Type: Bacterial reverse mutation assay (AMES) Method: Directive 67/548/EEC, Annex V, B.13/14. Result: negative Remarks: Based on data from similar materials
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#### 2-Methyl-1-propanol:

Genotoxicity in vitro	: Test Type: Bacterial reverse mutation assay (AMES) Result: negative  Test Type: In vitro mammalian cell gene mutation test Result: negative  Test Type: in vitro micronucleus test Result: negative
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Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)  
Species: Mouse  
Application Route: Ingestion  
Method: OECD Test Guideline 474  
Result: negative

### Deltamethrin (ISO):

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)  
Result: negative  
  
Test Type: DNA Repair  
Test system: Escherichia coli  
Result: negative  
  
Test Type: Chromosomal aberration  
Test system: Chinese hamster ovary cells  
Result: negative  
  
Test Type: In vitro mammalian cell gene mutation test  
Test system: Chinese hamster lung cells  
Concentration: LOAEL: 20 mg/kg  
Result: positive

Genotoxicity in vivo : Test Type: Micronucleus test  
Species: Mouse  
Application Route: Oral  
Result: negative  
  
Test Type: dominant lethal test  
Species: Mouse  
Application Route: Oral  
Result: negative  
  
Test Type: sister chromatid exchange assay  
Species: Mouse  
Cell type: Bone marrow  
Application Route: Oral  
Result: negative

### Carcinogenicity

Not classified based on available information.

### Components:

#### 2-Methoxy-1-methylethyl acetate:

Species : Rat  
Application Route : inhalation (vapor)  
Exposure time : 2 Years  
Method : OECD Test Guideline 453  
Result : negative  
Remarks : Based on data from similar materials

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### Deltamethrin (ISO):

Species	: Mouse, male and female
Application Route	: oral (feed)
Exposure time	: 104 weeks
NOAEL	: 8 mg/kg body weight
LOAEL	: 4 mg/kg body weight
Result	: positive
Target Organs	: Lymph nodes

Species	: Rat, male and female
Application Route	: oral (feed)
Exposure time	: 2 Years
Result	: negative

Species	: Dog, male and female
Application Route	: oral (feed)
Exposure time	: 2 Years
NOAEL	: 1 mg/kg body weight
Result	: negative

**IARC** No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**OSHA** No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**NTP** No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

### Reproductive toxicity

Suspected of damaging fertility. Suspected of damaging the unborn child.

### Components:

#### Hydrocarbons, C9, aromatics:

Effects on fertility	: Test Type: Three-generation reproduction toxicity study Species: Rat Application Route: inhalation (vapor) Result: negative
Effects on fetal development	: Test Type: Embryo-fetal development Species: Mouse Application Route: inhalation (vapor) Result: negative

#### 2-Methoxy-1-methylethyl acetate:

Effects on fertility	: Test Type: Two-generation reproduction toxicity study Species: Rat Application Route: inhalation (vapor) Method: OECD Test Guideline 416 Result: negative Remarks: Based on data from similar materials
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# SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



## Deltamethrin (5%) Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04/06/2024
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Effects on fetal development : Test Type: Embryo-fetal development  
Species: Rat  
Application Route: inhalation (vapor)  
Result: negative

### 2-Methyl-1-propanol:

Effects on fertility : Test Type: Two-generation reproduction toxicity study  
Species: Rat  
Application Route: inhalation (vapor)  
Method: OPPTS 870.3800  
Result: negative

Effects on fetal development : Test Type: Embryo-fetal development  
Species: Rat  
Application Route: inhalation (vapor)  
Method: OECD Test Guideline 414  
Result: negative

### Deltamethrin (ISO):

Effects on fertility : Test Type: Three-generation reproduction toxicity study  
Species: Rat  
Application Route: oral (feed)  
Early Embryonic Development: NOAEL: 50 mg/kg body weight  
Symptoms: No effects on fertility., Embryo-fetal toxicity.  
Remarks: Significant toxicity observed in testing

Test Type: Two-generation reproduction toxicity study  
Species: Rat  
Application Route: Oral  
Early Embryonic Development: LOAEL: 84 - 149 mg/kg body weight  
Symptoms: No effects on fertility., Embryo-fetal toxicity.

Test Type: Fertility  
Species: Rat, male  
Application Route: Oral  
Fertility: LOAEL: 1 mg/kg body weight  
Symptoms: Effects on fertility.  
Target Organs: Testes

Effects on fetal development : Test Type: Development  
Species: Mouse  
Application Route: oral (gavage)  
Developmental Toxicity: LOAEL: 1 mg/kg body weight  
Result: Skeletal malformations.  
Remarks: Maternal toxicity observed.

Test Type: Development  
Species: Rat, female  
Developmental Toxicity: NOAEL: 10 mg/kg body weight  
Symptoms: No effects on fetal development.



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Test Type: Development  
Species: Rabbit, female  
Application Route: oral (gavage)  
Developmental Toxicity: NOAEL: 16 mg/kg body weight  
Symptoms: No effects on fetal development.

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

### STOT-single exposure

May cause respiratory irritation.  
May cause drowsiness or dizziness.

### Components:

#### Hydrocarbons, C9, aromatics:

Assessment : May cause drowsiness or dizziness.

Assessment : May cause respiratory irritation.

#### 2-Methoxy-1-methylethyl acetate:

Assessment : May cause drowsiness or dizziness.

#### 2-Methyl-1-propanol:

Assessment : May cause respiratory irritation., May cause drowsiness or dizziness.

#### Deltamethrin (ISO):

Assessment : May cause respiratory irritation.

### STOT-repeated exposure

Causes damage to organs (Central nervous system, Immune system) through prolonged or repeated exposure if swallowed.  
Causes damage to organs (Central nervous system) through prolonged or repeated exposure if inhaled.

### Components:

#### Deltamethrin (ISO):

Routes of exposure : Ingestion  
Target Organs : Central nervous system, Immune system  
Assessment : Causes damage to organs through prolonged or repeated exposure.

Routes of exposure : inhalation (dust/mist/fume)  
Target Organs : Central nervous system  
Assessment : Causes damage to organs through prolonged or repeated exposure.

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### Repeated dose toxicity

#### Components:

##### Hydrocarbons, C9, aromatics:

Species	: Rat, female
NOAEL	: 900 mg/m <sup>3</sup>
Application Route	: inhalation (vapor)
Exposure time	: 12 Months
Remarks	: Based on data from similar materials

##### 2-Methoxy-1-methylethyl acetate:

Species	: Rat
NOAEL	: >= 1,000 mg/kg
Application Route	: Ingestion
Exposure time	: 41 - 45 Days
Method	: OECD Test Guideline 422

Species	: Rat
NOAEL	: > 1 mg/l
Application Route	: inhalation (vapor)
Exposure time	: 2 y
Method	: OECD Test Guideline 453
Remarks	: Based on data from similar materials

Species	: Rabbit
NOAEL	: > 200 mg/kg
Application Route	: Skin contact
Exposure time	: 90 Days
Remarks	: Based on data from similar materials

##### 2-Methyl-1-propanol:

Species	: Rat
NOAEL	: > 1,450 mg/kg
Application Route	: Ingestion
Exposure time	: 90 Days
Method	: OECD Test Guideline 408

Species	: Rat
NOAEL	: >= 7.5 mg/l
Application Route	: inhalation (vapor)
Exposure time	: 17 Weeks

##### Deltamethrin (ISO):

Species	: Rat, male and female
NOAEL	: 1 mg/kg
LOAEL	: 2.5 mg/kg
Application Route	: Oral
Exposure time	: 13 Weeks
Target Organs	: Nervous system
Symptoms	: hyperexcitability

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Species	: Rat
LOAEL	: 3 mg/m3
Application Route	: inhalation (dust/mist/fume)
Exposure time	: 2 wk / 5 d/wk / 6 h/d
Symptoms	: Local irritation, respiratory tract irritation

Species	: Dog
NOAEL	: 0.1 mg/kg
LOAEL	: 1 mg/kg
Application Route	: Oral
Exposure time	: 13 Weeks
Target Organs	: Nervous system
Symptoms	: Dilatation of the pupil, Vomiting, Tremors, Diarrhea, Salivation

Species	: Rat
NOAEL	: 14 mg/kg
LOAEL	: 54 mg/kg
Application Route	: Oral
Exposure time	: 91 d
Target Organs	: Nervous system

Species	: Mouse
LOAEL	: 6 mg/kg
Application Route	: Oral
Exposure time	: 12 Weeks
Target Organs	: Immune system
Symptoms	: immune system effects

### Aspiration toxicity

May be fatal if swallowed and enters airways.

### Product:

The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

### Components:

#### Hydrocarbons, C9, aromatics:

The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

#### 2-Methyl-1-propanol:

The substance or mixture causes concern owing to the assumption that it causes a human aspiration toxicity hazard.

### Experience with human exposure

### Components:

#### Deltamethrin (ISO):

Inhalation	: Symptoms: respiratory tract irritation, Dizziness, Sweating, Headache, Nausea, Vomiting, anorexia, Fatigue, tingling,
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Skin contact	: Palpitation, Blurred vision, muscle twitching Symptoms: Skin irritation, Erythema, pruritis, Headache, Nausea, Vomiting, Dizziness, tingling, Sweating, muscle twitching, Blurred vision, Fatigue, anorexia, Allergic reactions
Ingestion	: Symptoms: muscle pain, Small pupils

## SECTION 12. ECOLOGICAL INFORMATION

### Ecotoxicity

#### Components:

#### Hydrocarbons, C9, aromatics:

Toxicity to fish	: LL50 (Oncorhynchus mykiss (rainbow trout)): 9.2 mg/l Exposure time: 96 h Test substance: Water Accommodated Fraction Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	: EL50 (Daphnia magna (Water flea)): 3.2 mg/l Exposure time: 48 h Test substance: Water Accommodated Fraction Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	: EL50 (Pseudokirchneriella subcapitata (green algae)): 7.9 mg/l Exposure time: 72 h Test substance: Water Accommodated Fraction Method: OECD Test Guideline 201  NOELR (Pseudokirchneriella subcapitata (green algae)): 0.22 mg/l Exposure time: 72 h Test substance: Water Accommodated Fraction Method: OECD Test Guideline 201
Toxicity to microorganisms	: EC50: > 99 mg/l Exposure time: 10 min

#### 2-Methoxy-1-methylethyl acetate:

Toxicity to fish	: LC50 (Oncorhynchus mykiss (rainbow trout)): > 100 - 180 mg/l Exposure time: 96 h Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)): > 500 mg/l Exposure time: 48 h Method: Directive 67/548/EEC, Annex V, C.2.
Toxicity to algae/aquatic plants	: ErC50 (Raphidocelis subcapitata (freshwater green alga)): > 1,000 mg/l Exposure time: 96 h Method: OECD Test Guideline 201

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	NOEC (Raphidocelis subcapitata (freshwater green alga)): >= 1,000 mg/l Exposure time: 96 h Method: OECD Test Guideline 201
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	: NOEC (Daphnia magna (Water flea)): >= 100 mg/l Exposure time: 21 d Method: OECD Test Guideline 211
Toxicity to microorganisms	: EC10 (activated sludge): > 1,000 mg/l Exposure time: 30 min

### Benzenesulfonic acid, C10-13-alkyl derivs., calcium salts:

Toxicity to fish	: LC50 : > 1 - < 10 mg/l Exposure time: 96 h Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)): > 1 - 10 mg/l Exposure time: 48 h Method: OECD Test Guideline 202 Remarks: Based on data from similar materials
Toxicity to algae/aquatic plants	: ErC50 (Pseudokirchneriella subcapitata (green algae)): > 10 - 100 mg/l Exposure time: 96 h Remarks: Based on data from similar materials  NOEC (Pseudokirchneriella subcapitata (green algae)): > 0.1 - 1 mg/l Exposure time: 96 h Remarks: Based on data from similar materials
Toxicity to fish (Chronic toxicity)	: NOEC (Oncorhynchus mykiss (rainbow trout)): > 0.1 - 1 mg/l Exposure time: 72 d Remarks: Based on data from similar materials
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	: NOEC (Daphnia magna (Water flea)): > 1 mg/l Exposure time: 21 d Remarks: Based on data from similar materials

### 2-Methyl-1-propanol:

Toxicity to fish	: LC50 (Pimephales promelas (fathead minnow)): 1,430 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia pulex (Water flea)): 1,100 mg/l Exposure time: 48 h
Toxicity to algae/aquatic plants	: ErC50 (Pseudokirchneriella subcapitata (green algae)): 1,799 mg/l Exposure time: 72 h Method: OECD Test Guideline 201

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		NOEC (Pseudokirchneriella subcapitata (green algae)): 117 mg/l Exposure time: 72 h Method: OECD Test Guideline 201
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Daphnia magna (Water flea)): 20 mg/l Exposure time: 21 d
Toxicity to microorganisms	:	EC50: > 1,000 mg/l Exposure time: 16 h

### Deltamethrin (ISO):

Toxicity to fish	:	LC50 (Cyprinodon variegatus (sheepshead minnow)): 0.00048 mg/l Exposure time: 96 h  LC50 (Oncorhynchus mykiss (rainbow trout)): 0.00039 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Mysidopsis bahia (opossum shrimp)): 0.0037 µg/l Exposure time: 48 h  EC50 (Daphnia magna (Water flea)): 0.0035 mg/l Exposure time: 48 h  LC50 (Gammarus fasciatus (freshwater shrimp)): 0.0003 µg/l Exposure time: 96 h
Toxicity to algae/aquatic plants	:	EC50 (Pseudokirchneriella subcapitata (green algae)): > 9.1 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 Remarks: No toxicity at the limit of solubility.
Toxicity to fish (Chronic toxicity)	:	NOEC (Pimephales promelas (fathead minnow)): 0.000022 mg/l Exposure time: 36 d  NOEC (Pimephales promelas (fathead minnow)): 0.000017 mg/l Exposure time: 260 d
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Daphnia magna (Water flea)): 0.0041 µg/l Exposure time: 21 d

### Persistence and degradability

#### Components:

#### Hydrocarbons, C9, aromatics:

Biodegradability	:	Result: Readily biodegradable. Biodegradation: 78 % Exposure time: 28 d
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Method: OECD Test Guideline 301F

### 2-Methoxy-1-methylethyl acetate:

Biodegradability : Result: Readily biodegradable.  
Biodegradation: 83 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301F

### Benzenesulfonic acid, C10-13-alkyl derivs., calcium salts:

Biodegradability : Result: Readily biodegradable.  
Biodegradation: 100 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301B

### 2-Methyl-1-propanol:

Biodegradability : Result: Readily biodegradable.  
Biodegradation: 74 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301D

### Deltamethrin (ISO):

Stability in water : Hydrolysis: 0 % (30 d)

### Bioaccumulative potential

#### Components:

#### Hydrocarbons, C9, aromatics:

Partition coefficient: n-octanol/water : log Pow: 3.7 - 4.5

#### 2-Methoxy-1-methylethyl acetate:

Partition coefficient: n-octanol/water : log Pow: 1.2

#### Benzenesulfonic acid, C10-13-alkyl derivs., calcium salts:

Partition coefficient: n-octanol/water : log Pow: 2.89

#### 2-Methyl-1-propanol:

Partition coefficient: n-octanol/water : log Pow: 1  
Method: OECD Test Guideline 117

### Deltamethrin (ISO):

Bioaccumulation : Species: Lepomis macrochirus (Bluegill sunfish)  
Bioconcentration factor (BCF): 1,800

Partition coefficient: n-octanol/water : log Pow: 4.6

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### Mobility in soil

### Components:

### Deltamethrin (ISO):

Distribution among environmental compartments : log K<sub>oc</sub>: 7.2

### Other adverse effects

No data available

## SECTION 13. DISPOSAL CONSIDERATIONS

### Disposal methods

Waste from residues	: Dispose of in accordance with local regulations. Do not dispose of waste into sewer.
Contaminated packaging	: Empty containers should be taken to an approved waste handling site for recycling or disposal. Empty containers retain residue and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury and/or death. If not otherwise specified: Dispose of as unused product.

## SECTION 14. TRANSPORT INFORMATION

### International Regulations

#### UNRTDG

UN number	: UN 1993
Proper shipping name	: FLAMMABLE LIQUID, N.O.S. (Hydrocarbons, C9, aromatics, 2-Methoxy-1-methylethyl acetate)
Class	: 3
Packing group	: III
Labels	: 3
Environmentally hazardous	: no

#### IATA-DGR

UN/ID No.	: UN 1993
Proper shipping name	: Flammable liquid, n.o.s. (Hydrocarbons, C9, aromatics, 2-Methoxy-1-methylethyl acetate)
Class	: 3
Packing group	: III
Labels	: Flammable Liquids
Packing instruction (cargo aircraft)	: 366
Packing instruction (passenger aircraft)	: 355

#### IMDG-Code

UN number	: UN 1993
Proper shipping name	: FLAMMABLE LIQUID, N.O.S.



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Date of first issue: 12/12/2017

(Hydrocarbons, C9, aromatics, 2-Methoxy-1-methylethyl acetate, Deltamethrin (ISO))

Class	: 3
Packing group	: III
Labels	: 3
EmS Code	: F-E, <u>S-E</u>
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

UN/ID/NA number	: UN 1993
Proper shipping name	: Flammable liquids, n.o.s. (Hydrocarbons, C9, aromatics, 2-Methoxy-1-methylethyl acetate)

Class	: 3
Packing group	: III
Labels	: FLAMMABLE LIQUID
ERG Code	: 128
Marine pollutant	: yes(Deltamethrin (ISO))
Remarks	: THE COMBUSTIBLE LIQUID EXCEPTION MAY BE USED FOR PACKAGES <119 GAL.

### Special precautions for user

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

## SECTION 15. REGULATORY INFORMATION

### CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
2-Methyl-1-propanol	78-83-1	5000	74074

### 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** : Flammable (gases, aerosols, liquids, or solids)  
Acute toxicity (any route of exposure)  
Respiratory or skin sensitization  
Reproductive toxicity  
Specific target organ toxicity (single or repeated exposure)  
Aspiration hazard  
Skin corrosion or irritation  
Serious eye damage or eye irritation

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**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.

### US State Regulations

#### Pennsylvania Right To Know

Hydrocarbons, C9, aromatics	Not Assigned
2-Methoxy-1-methylethyl acetate	108-65-6
Poly(oxy-1,2-ethanediyl), .alpha.-(tributylphenyl)-.omega.-hydroxy-	9046-09-7
Benzenesulfonic acid, C10-13-alkyl derivs., calcium salts	Not Assigned
2-Methyl-1-propanol	78-83-1
Deltamethrin (ISO)	52918-63-5

#### California List of Hazardous Substances

2-Methyl-1-propanol	78-83-1
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#### California Permissible Exposure Limits for Chemical Contaminants

2-Methoxy-1-methylethyl acetate	108-65-6
2-Methyl-1-propanol	78-83-1

#### The ingredients of this product are reported in the following inventories:

AICS	: not determined
DSL	: not determined
IECSC	: not determined

## SECTION 16. OTHER INFORMATION

### Further information

# SAFETY DATA SHEET

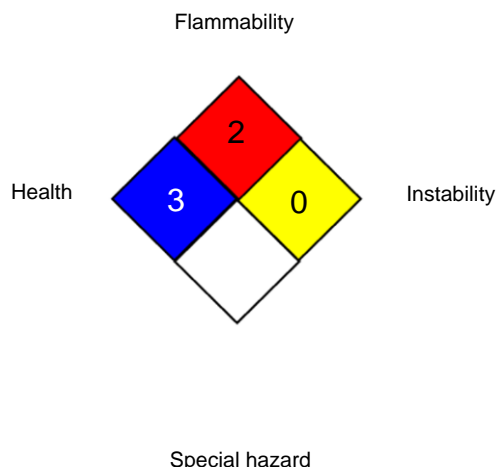
according to the OSHA Hazard Communication Standard



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### NFPA 704:



### HMIS® IV:

HEALTH	*	3
FLAMMABILITY		2
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 Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
US WEEL	:	USA. Workplace Environmental Exposure Levels (WEEL)
ACGIH / TWA	:	8-hour, time-weighted average
NIOSH REL / TWA	:	Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
OSHA Z-1 / TWA	:	8-hour time weighted average
US WEEL / TWA	:	8-hr TWA

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 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

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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

Sources of key data used to compile the Material Safety Data Sheet : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, <http://echa.europa.eu/>

Revision Date : 07/06/2024

Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.

US / Z8