**SAFETY DATA SHEET**

**Deltamethrin (5%) Formulation**

<table>
<thead>
<tr>
<th>Version</th>
<th>Revision Date:</th>
<th>SDS Number:</th>
<th>Date of last issue:</th>
<th>Date of first issue:</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0</td>
<td>18.08.2021</td>
<td>2333287-00011</td>
<td>09.04.2021</td>
<td>12.12.2017</td>
</tr>
</tbody>
</table>

**SECTION 1. PRODUCT AND COMPANY IDENTIFICATION**

Product name : Deltamethrin (5%) Formulation

**Manufacturer or supplier's details**

Company name of supplier : MSD
Address : 2000 Galloping Hill Road
          Kenilworth - New Jersey - U.S.A. 07033
Telephone : 908-740-4000
Emergency telephone : 1-908-423-6000
E-mail address : EHSDATASTEWARD@msd.com

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

Recommended use : Veterinary product

**SECTION 2. HAZARDS IDENTIFICATION**

**GHS Classification**

- 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 : ![Flame], ![Human], ![Skin Irritation], ![Warning]
- Signal Word : Danger
- Hazard Statements : H226 Flammable liquid and vapor.  
                       H302 Harmful if swallowed.  
                       H304 May be fatal if swallowed and enters airways.
Deltamethrin (5%) Formulation

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, hot surfaces, sparks, open flames and other ignition sources. No smoking.
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 should not be allowed out of the workplace.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

**Response:**
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304 + P340 + P312 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician 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 or doctor/ physician.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P331 Do NOT induce vomiting.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P362 + P364 Take off contaminated clothing and wash it before reuse.

**Storage:**
P405 Store locked up.

**Disposal:**
P501 Dispose of contents/ container to an approved waste disposal plant.
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SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Substance / Mixture</th>
<th>Mixture</th>
</tr>
</thead>
</table>

**Components**

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrocarbons, C9, aromatics</td>
<td>Not Assigned</td>
<td>&gt;= 30 - &lt; 50</td>
</tr>
<tr>
<td>2-Methoxy-1-methylethyl acetate</td>
<td>108-65-6</td>
<td>&gt;= 20 - &lt; 30</td>
</tr>
<tr>
<td>Benzenesulfonic acid, C10-13-alkyl derivs., calcium salts</td>
<td>Not Assigned</td>
<td>&gt;= 5 - &lt; 10</td>
</tr>
<tr>
<td>2-Methyl-1-propanol</td>
<td>78-83-1</td>
<td>&gt;= 5 - &lt; 10</td>
</tr>
<tr>
<td>Deltamethrin (ISO)</td>
<td>52918-63-5</td>
<td>&gt;= 5 - &lt; 10</td>
</tr>
</tbody>
</table>

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.

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.
Prolonged or repeated contact may dry skin and cause irritation.

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 (CO2)
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 (NOx)
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 procedures: Remove all sources of ignition.
Use personal protective equipment.
Follow safe handling advice (see section 7) and personal protective equipment recommendations (see section 8).

Environmental precautions: Avoid release to the environment.
Prevent further leakage or spillage if safe to do so.
Prevent spreading over a wide area (e.g., by containment or oil barriers).
Retain and dispose of contaminated wash water.
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.
Soak up with inert absorbent material.
Suppress (knock down) gases/vapors/mists with a water spray jet.
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.

Clean up remaining materials from spill with suitable absorbent.

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.

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.
Use explosion-proof electrical, ventilating and lighting equipment.

Advice on safe handling: Do not get on skin or clothing.
Do not breathe mist or vapors.
Do not swallow.
Do not get in eyes.
Wash skin thoroughly after handling.
Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment
Non-sparking tools should be used.
Keep container tightly closed.
Already sensitized individuals should consult their physician regarding working with respiratory irritants or sensitizers.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
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.

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.

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
- 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

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Methyl-1-propanol</td>
<td>78-83-1</td>
<td>VLE-PPT</td>
<td>50 ppm</td>
<td>NOM-010-STPS-2014</td>
</tr>
<tr>
<td>Deltamethrin (ISO)</td>
<td>52918-63-5</td>
<td>TWA</td>
<td>50 ppm</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>15 µg/m³ (OEB 3)</td>
<td>Internal</td>
</tr>
</tbody>
</table>

Further information: DSEN, Skin Wipe limit 150 µg/100 cm² Internal

Engineering measures:
Use appropriate engineering controls and manufacturing technologies to control airborne concentrations (e.g., dripless 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 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:
If adequate local exhaust ventilation is not available or exposure assessment demonstrates exposures outside the recommended guidelines, use respiratory protection.

Filter type: Combined particulates and organic vapor type

Hand protection:
Chemical-resistant gloves

Remarks:
Consider double gloving. Take note that the product is
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.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
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</tr>
<tr>
<td>Color</td>
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</tr>
<tr>
<td>Odor</td>
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</tr>
<tr>
<td>Odor Threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>3 - 5</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point</td>
<td>45 - 51 °C</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability (liquids)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Upper explosion limit / Upper flammability limit</td>
<td>No data available</td>
</tr>
<tr>
<td>Lower explosion limit / Lower flammability limit</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapor pressure</td>
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</tr>
<tr>
<td>Relative vapor density</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative density</td>
<td>No data available</td>
</tr>
<tr>
<td>Density</td>
<td>0.963 - 0.967 g/cm³</td>
</tr>
</tbody>
</table>
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.

Molecular weight : No data available
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: > 10 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 inhalation 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): > 5,000 mg/kg
Acute inhalation toxicity: LC0 (Rat): 9.48 mg/l
  Exposure time: 4 h
  Test atmosphere: vapor
Acute dermal toxicity: LD50 (Rat): > 5,000 mg/kg

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): 3,350 mg/kg
  Method: OECD Test Guideline 401
Acute inhalation toxicity: LC50 (Rat): > 24.6 mg/l
  Exposure time: 4 h
  Test atmosphere: vapor
Acute dermal toxicity: LD50 (Rabbit): 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 administration): LD50 (Rat): 2.5 mg/kg
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.

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

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
SAFETY DATA SHEET

Deltamethrin (5%) Formulation

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2-Methyl-1-propanol:
Test Type: Maximization Test
Routes of exposure: Skin contact
Species: Guinea pig
Result: negative
Remarks: Based on data from similar materials

Deltamethrin (ISO):
Test Type: Maximization Test
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: DNA damage and repair, unscheduled DNA synthesis in mammalian cells (in vitro)
Result: negative

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

Benzenesulfonic acid, C10-13-alkyl derivs., calcium salts:
Genotoxicity in vitro: Test Type: Bacterial reverse mutation assay (AMES)
Result: negative
Remarks: Based on data from similar materials

2-Methyl-1-propanol:
### Genotoxicity in vitro

- **Test Type:** Bacterial reverse mutation assay (AMES)  
  **Result:** negative

- **Test Type:** Chromosome aberration test in vitro  
  **Result:** negative

- **Test Type:** In vitro mammalian cell gene mutation test  
  **Result:** negative

### 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:

<table>
<thead>
<tr>
<th>Species</th>
<th>Rat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Route</td>
<td>inhalation (vapor)</td>
</tr>
<tr>
<td>Exposure time</td>
<td>2 Years</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
<tr>
<td>Remarks</td>
<td>Based on data from similar materials</td>
</tr>
</tbody>
</table>

Deltamethrin (ISO):

<table>
<thead>
<tr>
<th>Species</th>
<th>Mouse, male and female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Route</td>
<td>oral (feed)</td>
</tr>
<tr>
<td>Exposure time</td>
<td>104 weeks</td>
</tr>
<tr>
<td>NOAEL</td>
<td>8 mg/kg body weight</td>
</tr>
<tr>
<td>LOAEL</td>
<td>4 mg/kg body weight</td>
</tr>
<tr>
<td>Result</td>
<td>positive</td>
</tr>
<tr>
<td>Target Organs</td>
<td>Lymph nodes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Species</th>
<th>Rat, male and female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Route</td>
<td>oral (feed)</td>
</tr>
<tr>
<td>Exposure time</td>
<td>2 Years</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Species</th>
<th>Dog, male and female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Route</td>
<td>oral (feed)</td>
</tr>
<tr>
<td>Exposure time</td>
<td>2 Years</td>
</tr>
<tr>
<td>NOAEL</td>
<td>1 mg/kg body weight</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
</tbody>
</table>

Reproductive toxicity

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

Components:

Hydrocarbons, C9, aromatics:

<table>
<thead>
<tr>
<th>Effects on fertility</th>
<th>Test Type: Three-generation reproduction toxicity study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Species</td>
<td>Rat</td>
</tr>
<tr>
<td>Application Route</td>
<td>inhalation (vapor)</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Effects on fetal development</th>
<th>Test Type: Embryo-fetal development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Species</td>
<td>Mouse</td>
</tr>
<tr>
<td>Application Route</td>
<td>inhalation (vapor)</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
</tbody>
</table>

2-Methoxy-1-methylethyl acetate:

<table>
<thead>
<tr>
<th>Effects on fertility</th>
<th>Test Type: Two-generation reproduction toxicity study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Species</td>
<td>Rat</td>
</tr>
<tr>
<td>Application Route</td>
<td>inhalation (vapor)</td>
</tr>
<tr>
<td>Method</td>
<td>OECD Test Guideline 416</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
<tr>
<td>Remarks</td>
<td>Based on data from similar materials</td>
</tr>
</tbody>
</table>
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


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

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.
Repeated dose toxicity

**Components:**

**Hydrocarbons, C9, aromatics:**

- **Species:** Rat, female
- **NOAEL:** 900 mg/m³
- **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:** Mouse
- **NOAEL:** 1.62 mg/l
- **Application Route:** inhalation (vapor)
- **Exposure time:** 2 y
- **Remarks:** Based on data from similar materials

- **Species:** Rabbit
- **NOAEL:** > 1,838 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

**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

- **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
Deltamethrin (5%) Formulation

| 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
Symptoms: immune system effects

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, Palpitation, Blurred vision, muscle twitching
Skin contact: 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:**

<table>
<thead>
<tr>
<th>Toxicity to fish</th>
<th>LL50 (Oncorhynchus mykiss (rainbow trout)): 9.2 mg/l</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exposure time: 96 h</td>
</tr>
<tr>
<td></td>
<td>Test substance: Water Accommodated Fraction</td>
</tr>
<tr>
<td></td>
<td>Method: OECD Test Guideline 203</td>
</tr>
</tbody>
</table>

| Toxicity to daphnia and other         | EL50 (Daphnia magna (Water flea)): 3.2 mg/l           |
| aquatic invertebrates                 | 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:

<table>
<thead>
<tr>
<th>Toxicity to fish</th>
<th>LC50 (Oncorhynchus mykiss (rainbow trout)): &gt; 100 - 180 mg/l</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exposure time: 96 h</td>
</tr>
<tr>
<td></td>
<td>Method: OECD Test Guideline 203</td>
</tr>
</tbody>
</table>

| Toxicity to daphnia and other         | EC50 (Daphnia magna (Water flea)): > 500 mg/l            |
| aquatic invertebrates                 | Exposure time: 48 h                                      |

| Toxicity to algae/aquatic plants      | ErC50 (Pseudokirchneriella subcapitata (green algae)): > 1,000 mg/l |
|                                       | Exposure time: 96 h                                      |
|                                       | Method: OECD Test Guideline 201                          |
|                                       | NOEC (Pseudokirchneriella subcapitata (algae)): > 1,000 mg/l |
|                                       | Exposure time: 96 h                                      |
|                                       | Method: OECD Test Guideline 201                          |

| Toxicity to daphnia and other         | NOEC (Daphnia magna (Water flea)): >= 100 mg/l         |
| aquatic invertebrates (Chronic toxicity)| Exposure time: 21 d                                    |
|                                       | Method: OECD Test Guideline 211                          |
Toxicity to microorganisms:
EC10: > 1,000 mg/l
Exposure time: 0.5 h

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

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

Deltamethrin (ISO):

Toxicity to fish:
LC50 (Cyprinodon variegatus (sheepshead minnow)): 0.00048
Deltamethrin (5%) Formulation

Toxicity to daphnia and other aquatic invertebrates

Toxicity to algae/aquatic plants

Toxicity to fish (Chronic toxicity)

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)

Persistence and degradability

Components:

Hydrocarbons, C9, aromatics:

2-Methoxy-1-methylethyl acetate:

Benzenesulfonic acid, C10-13-alkyl derivs., calcium salts:
SAFETY DATA SHEET

Deltamethrin (5%) Formulation

Version 5.0 Revision Date: 18.08.2021 SDS Number: 2333287-00011 Date of last issue: 09.04.2021 Date of first issue: 12.12.2017

2-Methyl-1-propanol:
  Biodegradability: Result: Readily biodegradable.
  Biodegradation: 70 - 80%
  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

Deltamethrin (ISO):
  Bioaccumulation: Species: Lepomis macrochirus (Bluegill sunfish)
    Bioconcentration factor (BCF): 1,800
  Partition coefficient: n-octanol/water: log Pow: 4.6

Mobility in soil

Components:

Deltamethrin (ISO):
  Distribution among environmental compartments: log Koc: 7.2

Other adverse effects
  No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods
  Waste from residues: Dispose of in accordance with local regulations.
  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

**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. (Hydrocarbons, C9, aromatics, 2-Methoxy-1-methylethyl acetate, Deltamethrin (ISO))
- Class: 3
- Packing group: III
- Labels: 3
- EmS Code: F-E, S-E
- 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**

**NOM-002-SCT**
- 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
SAFETY DATA SHEET

Deltamethrin (5%) Formulation

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

SECTION 15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture
Federal Law for the control of chemical precursors, essential chemical products and machinery for producing capsules, tablets and pills.

The ingredients of this product are reported in the following inventories:
- AICS: not determined
- DSL: not determined
- IECSC: not determined

SECTION 16. OTHER INFORMATION

Full text of other abbreviations
- ACGIH: USA. ACGIH Threshold Limit Values (TLV)
- ACGIH / TWA: 8-hour, time-weighted average
- NOM-010-STPS-2014 / VLE-PPT: Time weighted average limit value

All abbreviations with full text:
Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System


Revision Date: 18.08.2021

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

The information is considered as correct, but not exhaustive, and will be used only as a guide, which is based in the current knowledge of the substance or mixture, and is applicable to proper safety precautions for the product.

MX / Z8