SAFETY DATA SHEET

Deltamethrin (5%) Formulation

SECTION 1. IDENTIFICATION

Product name : Deltamethrin (5%) Formulation

Manufacturer or supplier’s details

Company : MSD
Address : Talcahuano 750, 6th floor, Ciudad Autonoma
Buenos Aires, Argentina C1013AAP
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 2 (Central nervous system, Immune system)
Specific target organ toxicity - repeated exposure (Inhalation) : Category 2 (Central nervous system)

Aspiration hazard : Category 1
Short-term (acute) aquatic hazard : Category 1
Long-term (chronic) aquatic hazard : Category 1
**GHS label elements**

**Hazard pictograms:**
- Flammable liquid and vapor
- Pictogram for harmful substance
- Skin irritation
- Drowning or dizziness
- Eye damage
- Respiratory irritation
- Suspected of damaging fertility to unborn child
- Organ damage
- Drowsiness or dizziness

**Signal Word:** Danger

**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.
- H373 May cause damage to organs (Central nervous system, Immune system) through prolonged or repeated exposure if swallowed.
- H373 May cause damage to organs (Central nervous system) through prolonged or repeated exposure if inhaled.
- H410 Very toxic to aquatic life with long lasting effects.

**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.
- P273 Avoid release to the environment.
- P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

**Response:**
- P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
- 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 POISON CENTER/ 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/ doctor.
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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.
P391 Collect spillage.

Storage:
P405 Store locked up.

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

Other hazards which do not result in classification
Vapors may form explosive mixture with air.
Repeated exposure may cause skin dryness or cracking.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

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.
- May cause damage to organs through prolonged or repeated exposure if swallowed.
- May cause 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:
Remove all sources of ignition.
Use personal protective equipment. Follow safe handling advice (see section 7) and personal protective equipment recommendations (see section 8).

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.

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.

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.

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
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>CMP</td>
<td>50 ppm AR OEL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>50 ppm ACGIH</td>
<td></td>
</tr>
<tr>
<td>Deltamethrin (ISO)</td>
<td>52918-63-5</td>
<td>TWA</td>
<td>15 µg/m³ (OEB 3) Internal</td>
<td></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., 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 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**
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

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: 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/cm³
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

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
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SDS Number: 2334789-00012
Date of last issue: 09.04.2021
Date of first issue: 12.12.2017

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
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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**: 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

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
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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
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### 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  
- **Result:** negative  
- **Remarks:** Based on data from similar materials

#### 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

#### 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

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.

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
May cause damage to organs (Central nervous system, Immune system) through prolonged or repeated exposure if swallowed.
May cause 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.
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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
**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>
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<td>5.0</td>
<td>18.08.2021</td>
<td>2334789-00012</td>
<td>09.04.2021</td>
<td>12.12.2017</td>
</tr>
</tbody>
</table>

- **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, Palpitation, Blurred vision, muscle twitching

- **Skin contact**
  - **Symptoms**: Skin irritation, Erythema, pruritus, Headache, Nau-
Ingestion:
Symptoms: muscle pain, Small pupils

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

**Components:**

**Hydrocarbons, C9, aromatics:**

- **Toxicity to fish**: LL50 (Onchorhynchus 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 (Onchorhynchus 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

- **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 aquatic invertebrates (Chronic toxicity)

- NOEC (Daphnia magna (Water flea)): \( \geq 100 \text{ mg/l} \)
  - Exposure time: 21 d
  - Method: OECD Test Guideline 211

## Toxicity to microorganisms

- EC10: \( > 1.000 \text{ mg/l} \)
  - Exposure time: 0.5 h

## Toxicity to microorganisms

- EC10: \( > 1.000 \text{ mg/l} \)
  - Exposure time: 0.5 h

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

### Toxicity to fish

- LC50: \( > 1 \text{ - } < 10 \text{ mg/l} \)
  - Exposure time: 96 h
  - Method: OECD Test Guideline 203

### Toxicity to daphnia and other aquatic invertebrates

- EC50 (Daphnia magna (Water flea)): \( > 1 \text{ - } 10 \text{ mg/l} \)
  - 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)): \( > 10 \text{-} 100 \text{ mg/l} \)
  - Exposure time: 96 h
  - Remarks: Based on data from similar materials

### Toxicity to fish (Chronic toxicity)

- NOEC (Oncorhynchus mykiss (rainbow trout)): \( > 0.1 \text{ - } 1 \text{ mg/l} \)
  - 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)): \( > 1 \text{ mg/l} \)
  - 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 (5%) Formulation

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.

M-Factor (Acute aquatic toxicity):
- 1.000.000

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

M-Factor (Chronic aquatic toxicity):
- 1.000.000

Persistence and degradability

Components:

Hydrocarbons, C9, aromatics:
- Biodegradability: Result: Readily biodegradable.
  Biodegradation: 78 %
  Exposure time: 28 d
  Method: OECD Test Guideline 301F

2-Methoxy-1-methylethyl acetate:
- Biodegradability: Result: Readily biodegradable.
  Biodegradation: 90 %
  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: 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.
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

Argentina. Carcinogenic Substances and Agents Registry: Not applicable

Control of precursors and essential chemicals for the preparation of drugs: 2-Methyl-1-propanol, Hydrocarbons, C9, aromatics

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

<table>
<thead>
<tr>
<th>Inventory</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>DSL</td>
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<tr>
<td>IECSC</td>
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</tbody>
</table>

SECTION 16. OTHER INFORMATION

Further information


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

Full text of other abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
<tr>
<td>AR OEL</td>
<td>Argentina. Occupational Exposure Limits</td>
</tr>
<tr>
<td>ACGIH / TWA</td>
<td>8-hour, time-weighted average</td>
</tr>
<tr>
<td>AR OEL / CMP</td>
<td>TLV (Threshold Limit Value)</td>
</tr>
</tbody>
</table>

AIRC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen, or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECX - Concentration associated with x% response; ELX - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory con-
SAFETY DATA SHEET

Deltamethrin (5%) Formulation

Version 5.0 Revision Date: 18.08.2021 SDS Number: 2334789-00012 Date of last issue: 09.04.2021 Date of first issue: 12.12.2017

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.

AR / Z8