SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Deltamethrin (5%) Formulation

Manufacturer or supplier’s details
Company : MSD
Address : Rua Coronel Bento Soares, 530
Cruzeiro - Sao Paulo - Brazil  CEP 12730-340
Telephone : 908-740-4000
Emergency telephone : 1-908-423-6000
E-mail address : EHSDATASTEWARD@msd.com
Telefax : 908-735-1496

Recommended use of the chemical and restrictions on use
Recommended use : Veterinary product

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification in accordance with ABNT NBR 14725 Standard
Flammable liquids : Category 3
Acute toxicity (Oral) : Category 4
Skin irritation : Category 2
Serious eye damage : Category 1
Skin sensitization : Category 1
Germ cell mutagenicity : Category 1B
Carcinogenicity : Category 1B
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
SAFETY DATA SHEET

Deltamethrin (5%) Formulation

Version: 5.0  Revision Date: 23.03.2020  SDS Number: 2333314-00009  Date of last issue: 13.09.2019

Date of first issue: 12.12.2017

Short-term (acute) aquatic hazard: Category 1
Long-term (chronic) aquatic hazard: Category 1

GHS label elements in accordance with ABNT NBR 14725 Standard

Signal Word: Danger

Hazard pictograms:

- Flammable liquid
- Skin irritation
- Eye irritation
- Corrosion
- Health hazard

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.
H336 May cause drowsiness or dizziness.
H340 May cause genetic defects.
H350 May cause cancer.
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.
P210 Keep away from heat/ sparks/ open flames/ hot surfaces.
No smoking.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:
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.
P391 Collect spillage.

Other hazards which do not result in classification:
Vapors may form explosive mixture with air.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS
# SAFETY DATA SHEET

**Deltamethrin (5%) Formulation**

**Version**: 5.0  
**Revision Date**: 23.03.2020  
**SDS Number**: 2333314-00009  
**Date of last issue**: 13.09.2019  
**Date of first issue**: 12.12.2017

## Substance / Mixture

- **Mixture**

## Components

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Classification</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
</table>
| Solvent naphtha (petroleum), light aromatic       | 64742-95-6    | Flammable liquids, Category 3  
Skin irritation, Category 2  
Germ cell mutagenicity, Category 1B  
Carcinogenicity, Category 1B  
Specific target organ toxicity - single exposure, Category 3  
Aspiration hazard, Category 1  
Short-term (acute) aquatic hazard, Category 2  
Long-term (chronic) aquatic hazard, Category 2 | >= 30 < 50   |
| 2-Methoxy-1-methylethyl acetate                   | 108-65-6      | Flammable liquids, Category 3  
Specific target organ toxicity - single exposure, Category 3 | >= 20 < 30  |
| Benzenesulfonic acid, C10-13-alkyl derivs., calcium salts | Not Assigned | Acute toxicity (Oral), Category 5  
Skin irritation, Category 2  
Serious eye damage, Category 1  
Short-term (acute) aquatic hazard, Category 2  
Long-term (chronic) aquatic hazard, Category 3 | >= 5 < 10    |
| 2-Methyl-1-propanol                               | 78-83-1       | Flammable liquids, Category 3  
Acute toxicity (Oral), Category 5  
Acute toxicity (Dermal), Category 5  
Skin irritation, Category 2  
Serious eye damage, Category 1  
Specific target organ toxicity - single expo- | >= 5 < 10    |
### 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.

---

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspiration hazard</td>
<td>Category 3</td>
</tr>
<tr>
<td>Acute toxicity (Oral)</td>
<td>Category 3</td>
</tr>
<tr>
<td>Acute toxicity (Inhalation)</td>
<td>Category 3</td>
</tr>
<tr>
<td>Eye irritation</td>
<td>Category 2A</td>
</tr>
<tr>
<td>Skin sensitization</td>
<td>Sub-category 1A</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>Category 2</td>
</tr>
<tr>
<td>Specific target organ toxicity - single exposure</td>
<td>Category 3</td>
</tr>
<tr>
<td>Specific target organ toxicity - repeated exposure (Oral)</td>
<td>(Central nervous system, Immune system), Category 1</td>
</tr>
<tr>
<td>Specific target organ toxicity - repeated exposure (Inhalation)</td>
<td>(Central nervous system), Category 1</td>
</tr>
<tr>
<td>Short-term (acute) aquatic hazard</td>
<td>Category 1</td>
</tr>
<tr>
<td>Long-term (chronic) aquatic hazard</td>
<td>Category 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;= 5 - &lt; 10</td>
<td></td>
</tr>
</tbody>
</table>

---

**Deltamethrin (ISO):** 52918-63-5

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**SDS Number:** 2333314-00009

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**Date of first issue:** 12.12.2017

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**Revision Date:** 23.03.2020

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**Date of last issue:** 13.09.2019
### SECTION 5. FIRE-FIGHTING MEASURES

<table>
<thead>
<tr>
<th>Suitable extinguishing media</th>
<th>Water spray</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Alcohol-resistant foam</td>
</tr>
<tr>
<td></td>
<td>Carbon dioxide (CO2)</td>
</tr>
<tr>
<td></td>
<td>Dry chemical</td>
</tr>
<tr>
<td>Unsuitable extinguishing media</td>
<td>High volume water jet</td>
</tr>
<tr>
<td>Specific hazards during fire fighting</td>
<td>Do not use a solid water stream as it may scatter and spread fire.</td>
</tr>
<tr>
<td></td>
<td>Flash back possible over considerable distance.</td>
</tr>
<tr>
<td></td>
<td>Vapors may form explosive mixtures with air.</td>
</tr>
<tr>
<td></td>
<td>Exposure to combustion products may be a hazard to health.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hazardous combustion products</th>
<th>Carbon oxides</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nitrogen oxides (NOx)</td>
</tr>
<tr>
<td></td>
<td>Bromine compounds</td>
</tr>
<tr>
<td></td>
<td>Sulfur oxides</td>
</tr>
<tr>
<td></td>
<td>Metal oxides</td>
</tr>
</tbody>
</table>

| 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 and personal protective equipment recommendations.

Environmental precautions:
- Discharge into the environment must be avoided.
- 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.
- If advised by assessment of the local exposure potential, use only in an area equipped with explosion-proof exhaust ventilation.

Advice on safe handling:
- Do not get on skin or clothing.
- Do not breathe vapors or spray mist.
- Do not swallow.
- Do not get in eyes.
- 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.
- Keep away from heat and sources of ignition.
- Take precautionary measures against static discharges.
- 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 area.
When using do not eat, drink or smoke.
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>Solvent naphtha (petroleum), light aromatic</td>
<td>64742-95-6</td>
<td>TWA</td>
<td>200 mg/m³ (total hydrocarbon vapor)</td>
<td>ACGIH</td>
</tr>
<tr>
<td>2-Methyl-1-propanol</td>
<td>78-83-1</td>
<td>LT</td>
<td>40 ppm 115 mg/m³</td>
<td>BR OEL</td>
</tr>
</tbody>
</table>

Further information: Degree of harmfulness: medium

<table>
<thead>
<tr>
<th>Components</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solvent naphtha (petroleum), light aromatic</td>
<td>TWA</td>
<td>50 ppm</td>
<td>ACGIH</td>
</tr>
<tr>
<td>Deltamethrin (ISO)</td>
<td>TWA</td>
<td>15 µg/m³ (OEB 3)</td>
<td>Internal</td>
</tr>
</tbody>
</table>

Further information: DSEN, Skin

<table>
<thead>
<tr>
<th>Components</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deltamethrin (ISO)</td>
<td>Wipe limit</td>
<td>150 µg/100 cm²</td>
<td>Internal</td>
</tr>
</tbody>
</table>

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
Minimize open handling.

**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**

**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.

**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**: No data available
flammmability limit

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 reac-
tions : Flammable liquid and vapor.

Vapors may form explosive mixture with air.

Can react with strong oxidizing agents.

Conditions to avoid
Incompatible materials : Heat, flames and sparks.

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: 1.269 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:

Solvent naphtha (petroleum), light aromatic:

Acute oral toxicity: LD50 (Rat): > 5.000 mg/kg

Acute inhalation toxicity: LC50 (Rat): > 5,61 mg/l
Exposure time: 4 h
Test atmosphere: vapor

Acute dermal toxicity: LD50 (Rabbit): > 2.000 mg/kg

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:**

**Solvent naphtha (petroleum), light aromatic:**
- Species: Rabbit
- Method: OECD Test Guideline 404
- Result: Skin irritation

**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:

Solvent naphtha (petroleum), light aromatic:
Species: Rabbit
Result: No eye irritation
Method: OECD Test Guideline 405

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:

Solvent naphtha (petroleum), light aromatic:
Test Type: Buehler Test
Routes of exposure: Skin contact
Species: Guinea pig
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
### 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>23.03.2020</td>
<td>2333314-00009</td>
<td>13.09.2019</td>
<td>12.12.2017</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Magnusson-Kligman-Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routes of exposure</td>
<td>Skin contact</td>
</tr>
<tr>
<td>Species</td>
<td>Guinea pig</td>
</tr>
<tr>
<td>Method</td>
<td>OECD Test Guideline 406</td>
</tr>
<tr>
<td>Remarks</td>
<td>Based on data from similar materials</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Maximation Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routes of exposure</td>
<td>Skin contact</td>
</tr>
<tr>
<td>Species</td>
<td>Guinea pig</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>Test Type</th>
<th>Maximation Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routes of exposure</td>
<td>Dermal</td>
</tr>
<tr>
<td>Species</td>
<td>Guinea pig</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
<tr>
<td>Remarks</td>
<td>Human repeat insult patch test (HRIPT)</td>
</tr>
<tr>
<td></td>
<td>Dermal</td>
</tr>
<tr>
<td></td>
<td>Humans</td>
</tr>
<tr>
<td></td>
<td>positive</td>
</tr>
</tbody>
</table>

#### Germ cell mutagenicity

May cause genetic defects.

#### Components:

**Solvent naphtha (petroleum), light aromatic:**

<table>
<thead>
<tr>
<th>Genotoxicity in vitro</th>
<th>Test Type: Bacterial reverse mutation assay (AMES) Result: negative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Test Type: In vitro mammalian cell gene mutation test Result: positive</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Genotoxicity in vivo</th>
<th>Test Type: Sister chromatid exchange analysis in spermatogonia Species: Mouse Application Route: Intraperitoneal injection Result: positive</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Germ cell mutagenicity - Assessment</th>
<th>Positive result(s) from in vivo heritable germ cell mutagenicity tests in mammals</th>
</tr>
</thead>
</table>

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

<table>
<thead>
<tr>
<th>Genotoxicity in vitro</th>
<th>Test Type: Bacterial reverse mutation assay (AMES) Result: negative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Test Type: DNA damage and repair, unscheduled DNA synthesis in mammalian cells (in vitro)</td>
</tr>
</tbody>
</table>
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
Carcinogenicity
May cause cancer.

Components:

Solvent naphtha (petroleum), light aromatic:
Species: Mouse
Application Route: Skin contact
Exposure time: 2 Years
Result: positive

Carcinogenicity - Assessment: Sufficient evidence of carcinogenicity in animal experiments

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:

Solvent naphtha (petroleum), light aromatic:

- **Effects on fertility**: Test Type: Reproduction/Developmental toxicity screening test
  - Species: Rat
  - Application Route: inhalation (vapor)
  - Result: negative

- **Effects on fetal development**: Test Type: Embryo-fetal development
  - Species: Rat
  - 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
SAFETY DATA SHEET

Deltamethrin (5%) Formulation

<table>
<thead>
<tr>
<th>Component</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solvent naphtha (petroleum), light aromatic:</td>
<td>May cause drowsiness or dizziness.</td>
</tr>
<tr>
<td>2-Methoxy-1-methylethyl acetate:</td>
<td>May cause drowsiness or dizziness.</td>
</tr>
<tr>
<td>2-Methyl-1-propanol:</td>
<td>May cause respiratory irritation. May cause drowsiness or dizziness.</td>
</tr>
<tr>
<td>Deltamethrin (ISO):</td>
<td>May cause respiratory irritation.</td>
</tr>
</tbody>
</table>

Reproductive toxicity - Assessment:

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

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.

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.

STOT-single exposure
- May cause drowsiness or dizziness.

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.

- **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:**

**Solvent naphtha (petroleum), light aromatic:**

- **Species**: Rat
- **LOAEL**: 500 mg/kg
- **Application Route**: Ingestion
- **Exposure time**: 28 Days

**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

<table>
<thead>
<tr>
<th>Species</th>
<th>Rat, male and female</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOAEL</td>
<td>1 mg/kg</td>
</tr>
<tr>
<td>LOAEL</td>
<td>2.5 mg/kg</td>
</tr>
<tr>
<td>Application Route</td>
<td>Oral</td>
</tr>
<tr>
<td>Exposure time</td>
<td>13 Weeks</td>
</tr>
<tr>
<td>Target Organs</td>
<td>Nervous system</td>
</tr>
<tr>
<td>Symptoms</td>
<td>hyperexcitability</td>
</tr>
</tbody>
</table>

### Species

<table>
<thead>
<tr>
<th>Species</th>
<th>Rat</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOAEL</td>
<td>0.1 mg/kg</td>
</tr>
<tr>
<td>LOAEL</td>
<td>1 mg/kg</td>
</tr>
<tr>
<td>Application Route</td>
<td>Oral</td>
</tr>
<tr>
<td>Exposure time</td>
<td>13 Weeks</td>
</tr>
<tr>
<td>Target Organs</td>
<td>Nervous system</td>
</tr>
<tr>
<td>Symptoms</td>
<td>Dilatation of the pupil, Vomiting, Tremors, Diarrhea, Salivation</td>
</tr>
</tbody>
</table>

### Species

<table>
<thead>
<tr>
<th>Species</th>
<th>Rat</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOAEL</td>
<td>0.1 mg/kg</td>
</tr>
<tr>
<td>LOAEL</td>
<td>14 mg/kg</td>
</tr>
<tr>
<td>Application Route</td>
<td>Oral</td>
</tr>
<tr>
<td>Exposure time</td>
<td>91 d</td>
</tr>
<tr>
<td>Target Organs</td>
<td>Nervous system</td>
</tr>
</tbody>
</table>

### Species

<table>
<thead>
<tr>
<th>Species</th>
<th>Mouse</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOAEL</td>
<td>6 mg/kg</td>
</tr>
<tr>
<td>LOAEL</td>
<td>14 mg/kg</td>
</tr>
<tr>
<td>Application Route</td>
<td>Oral</td>
</tr>
<tr>
<td>Exposure time</td>
<td>12 Weeks</td>
</tr>
<tr>
<td>Target Organs</td>
<td>Immune system</td>
</tr>
<tr>
<td>Symptoms</td>
<td>immune system effects</td>
</tr>
</tbody>
</table>

### 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:

#### Solvent naphtha (petroleum), light aromatic:

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:**

**Solvent naphtha (petroleum), light aromatic:**

**Toxicity to fish:** LC50 (Pimephales promelas (fathead minnow)): 8,2 mg/l
Exposure time: 96 h
Test substance: Water Accommodated Fraction

**Toxicity to daphnia and other aquatic invertebrates:** EL50 (Daphnia magna (Water flea)): 4,5 mg/l
Exposure time: 48 h
Test substance: Water Accommodated Fraction
Method: OECD Test Guideline 202

**Toxicity to algae/aquatic plants:** EL50 (Pseudokirchneriella subcapitata (microalgae)): 3,1 mg/l
Exposure time: 96 h
Test substance: Water Accommodated Fraction
Method: OECD Test Guideline 201

NOELR (Pseudokirchneriella subcapitata (microalgae)): 0,5 mg/l
Exposure time: 96 h
Test substance: Water Accommodated Fraction
Method: OECD Test Guideline 201

**Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity):** NOELR (Daphnia magna (Water flea)): 2,6 mg/l
Exposure time: 21 d
Test substance: Water Accommodated Fraction
Method: OECD Test Guideline 211

**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
<table>
<thead>
<tr>
<th>Category</th>
<th>Endpoint</th>
<th>Value</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to algae/aquatic plants</td>
<td>ErC50 (Pseudokirchneriella subcapitata (green algae)):</td>
<td>&gt; 1,000 mg/l</td>
<td>Based on data from similar materials</td>
</tr>
<tr>
<td></td>
<td>NOEC (Pseudokirchneriella subcapitata (algae)) :</td>
<td>&gt; 1,000 mg/l</td>
<td></td>
</tr>
<tr>
<td>Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)</td>
<td>NOEC (Daphnia magna (Water flea)):</td>
<td>&gt;= 100 mg/l</td>
<td></td>
</tr>
<tr>
<td>Toxicity to microorganisms</td>
<td>EC10:</td>
<td>&gt; 1,000 mg/l</td>
<td></td>
</tr>
<tr>
<td>Benzenesulfonic acid, C10-13-alkyl derivs., calcium salts:</td>
<td>Toxicity to fish</td>
<td>LC50: &gt; 1 - &lt; 10 mg/l</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NOEC (Oncorhynchus mykiss (rainbow trout)):</td>
<td>0,23 mg/l</td>
<td></td>
</tr>
<tr>
<td>Toxicity to daphnia and other aquatic invertebrates</td>
<td>EC50 (Daphnia magna (Water flea)):</td>
<td>2,9 mg/l</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NOEC (Daphnia pulex (Water flea)):</td>
<td>1,180 mg/l</td>
<td></td>
</tr>
<tr>
<td>Toxicity to algae/aquatic plants</td>
<td>ErC50 (Pseudokirchneriella subcapitata (green algae)):</td>
<td>29 mg/l</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NOEC (Pseudokirchneriella subcapitata (green algae)):</td>
<td>0,5 mg/l</td>
<td></td>
</tr>
<tr>
<td>Toxicity to fish (Chronic toxicity)</td>
<td>NOEC (Oncorhynchus mykiss (rainbow trout)):</td>
<td>0,23 mg/l</td>
<td></td>
</tr>
<tr>
<td>Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)</td>
<td>NOEC (Daphnia magna (Water flea)):</td>
<td>1,18 mg/l</td>
<td></td>
</tr>
<tr>
<td>2-Methyl-1-propanol:</td>
<td>Toxicity to fish</td>
<td>LC50 (Pimephales promelas (fathead minnow)):</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NOEC (Oncorhynchus mykiss (rainbow trout)):</td>
<td>0,23 mg/l</td>
<td></td>
</tr>
<tr>
<td>Toxicity to daphnia and other aquatic invertebrates</td>
<td>EC50 (Daphnia pulex (Water flea)):</td>
<td>1,100 mg/l</td>
<td></td>
</tr>
<tr>
<td>Toxicity to algae/aquatic plants</td>
<td>ErC50 (Pseudokirchneriella subcapitata (green algae)):</td>
<td>1,799 mg/l</td>
<td></td>
</tr>
</tbody>
</table>
## Exposure time:

**72 h**

**NOEC** (Pseudokirchneriella subcapitata (green algae)): **117 mg/l**

**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 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**

### M-Factor (Chronic aquatic toxicity)

#### Toxicity to fish (Chronic toxicity)

- NOEC (Pimephales promelas (fathead minnow)): **0,00022 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:

- Solvent naphtha (petroleum), light aromatic:
Biodegradability: Result: Inherently biodegradable.
Biodegradation: 94%
Exposure time: 25 d

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:

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 macrochir (Bluegill sunfish) 
Bioconcentration factor (BCF): 1.800
Partition coefficient: n-octanol/water: log Pow: 4,6

Mobility in soil

Components:
Deltamethrin (ISO):
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. (Solvent naphtha (petroleum), light aromatic, 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. (Solvent naphtha (petroleum), light aromatic, 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. (Solvent naphtha (petroleum), light aromatic, 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

ANTT
UN number : UN 1993
Proper shipping name : FLAMMABLE LIQUID, N.O.S.
(Solvent naphtha (petroleum), light aromatic, 2-Methoxy-1-methylethyl acetate)

Class : 3
Packing group : III
Labels : 3
Hazard Identification Number : 30

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
National List of Carcinogenic Agents for Humans - (LINACH)

Group 2B: Possibly carcinogenic to humans
Solvent naphtha (petroleum), light aromatic 64742-95-6

Brazil. List of chemicals controlled by the Federal Police : 2-Methyl-1-propanol
Solvent naphtha (petroleum), light aromatic

International Regulations

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

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.