SAFETY DATA SHEET

Deltamethrin (5%) Formulation

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

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
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
SAFETY DATA SHEET
Deltamethrin (5%) Formulation

GHS label elements in accordance with ABNT NBR 14725 Standard

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:
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:
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
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.
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>Classification</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrocarbons, C9, aromatics</td>
<td>Not Assigned</td>
<td>Flammable liquids,</td>
<td>&gt;= 30 -&lt; 50</td>
</tr>
<tr>
<td>Compound</td>
<td>CAS Number</td>
<td>Category</td>
<td>Acute toxicity (Oral), Category 5</td>
</tr>
<tr>
<td>----------</td>
<td>------------</td>
<td>----------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>2-Methoxy-1-methylethyl acetate</td>
<td>108-65-6</td>
<td>Category 3</td>
<td>Acute toxicity (Oral), Category 5</td>
</tr>
<tr>
<td>Benzenesulfonic acid, C10-13-alkyl derivs., calcium salts</td>
<td>Not Assigned</td>
<td>Acute toxicity (Oral), Category 5</td>
<td>Skin irritation, Category 2</td>
</tr>
<tr>
<td>2-Methyl-1-propanol</td>
<td>78-83-1</td>
<td>Flammable liquids, Category 3</td>
<td>Acute toxicity (Oral), Category 5</td>
</tr>
<tr>
<td>Deltamethrin (ISO)</td>
<td>52918-63-5</td>
<td>Acute toxicity (Oral), Category 3</td>
<td>Acute toxicity (Inhalation), Category 3</td>
</tr>
</tbody>
</table>

>= 20 -< 30

>= 5 -< 10

>= 5 -< 10

>= 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. 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 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.


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>LT</td>
<td>40 ppm 115 mg/m³</td>
<td>BR OEL</td>
</tr>
<tr>
<td>Deltamethrin (ISO)</td>
<td>52918-63-5</td>
<td>TWA</td>
<td>15 µg/m³ (OEB 3)</td>
<td>Internal</td>
</tr>
</tbody>
</table>

Further information: Degree of harmfulness: medium
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
Hand protection : Combined particulates and organic vapor type

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 flammability limit : No data available
Lower explosion limit / Lower flammability limit : No data available
SAFETY DATA SHEET

Deltamethrin (5%) Formulation

Version 6.0
Revision Date: 18.08.2021
SDS Number: 2333314-00012
Date of last issue: 09.04.2021
Date of first issue: 12.12.2017

flammability limit

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 : 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
Skinned contact
Ingestion
Eye contact

Acute toxicity
Harmful if swallowed.

Product:
<table>
<thead>
<tr>
<th>Component</th>
<th>Acute oral toxicity</th>
<th>Acute inhalation toxicity</th>
<th>Acute dermal toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrocarbons, C9, aromatics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute oral toxicity</td>
<td>LD50 (Rat, female): 3.492 mg/kg</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 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 (5%) Formulation

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-methyl ethyl 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.
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>
</table>

**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           

| Test Type | Human repeat insult patch test (HRIPT)  
|-----------|-----------------------------------------|
| Application Route | 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  
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Result: negative</td>
</tr>
</tbody>
</table>

| 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)  
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Result: negative</td>
</tr>
</tbody>
</table>

| Test Type | DNA damage and repair, unscheduled DNA synthesis in mammalian cells (in vitro)  
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
</tbody>
</table>

| 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)  
|-----------------------|------------------------------------------------|
Deltamethrin (5%) Formulation

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:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Species</th>
<th>Application Route</th>
<th>Exposure time</th>
<th>Result</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Methoxy-1-methylethyl acetate</td>
<td>Rat</td>
<td>inhalation (vapor)</td>
<td>2 Years</td>
<td>negative</td>
<td>Based on data from similar materials</td>
</tr>
</tbody>
</table>

**Deltamethrin (ISO):**

<table>
<thead>
<tr>
<th>Species</th>
<th>Application Route</th>
<th>Exposure time</th>
<th>NOAEL</th>
<th>LOAEL</th>
<th>Result</th>
<th>Target Organs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mouse, male and female</td>
<td>oral (feed)</td>
<td>104 weeks</td>
<td>8 mg/kg body weight</td>
<td>4 mg/kg body weight</td>
<td>positive</td>
<td>Lymph nodes</td>
</tr>
<tr>
<td>Rat, male and female</td>
<td>oral (feed)</td>
<td>2 Years</td>
<td></td>
<td></td>
<td>negative</td>
<td></td>
</tr>
<tr>
<td>Dog, male and female</td>
<td>oral (feed)</td>
<td>2 Years</td>
<td>1 mg/kg body weight</td>
<td></td>
<td>negative</td>
<td></td>
</tr>
</tbody>
</table>

Reproductive toxicity

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

**Components:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Effects on fertility</th>
<th>Effects on fetal development</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrocarbons, C9, aromatics</td>
<td>Test Type: Three-generation reproduction toxicity study</td>
<td>Test Type: Embryo-fetal development</td>
<td>OECD Test Guideline 416</td>
</tr>
<tr>
<td>2-Methoxy-1-methylethyl acetate</td>
<td>Test Type: Two-generation reproduction toxicity study</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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.
Assessment: 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.

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

Deltamethrin (5%) Formulation

Repeated dose toxicity

**Components:**

**Hydrocarbons, C9, aromatics:**

<table>
<thead>
<tr>
<th>Species</th>
<th>Rat, female</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOAEL</td>
<td>900 mg/m³</td>
</tr>
<tr>
<td>Application Route</td>
<td>inhalation (vapor)</td>
</tr>
<tr>
<td>Exposure time</td>
<td>12 Months</td>
</tr>
<tr>
<td>Remarks</td>
<td>Based on data from similar materials</td>
</tr>
</tbody>
</table>

**2-Methoxy-1-methylethyl acetate:**

<table>
<thead>
<tr>
<th>Species</th>
<th>Rat</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOAEL</td>
<td>&gt; 1,000 mg/kg</td>
</tr>
<tr>
<td>Application Route</td>
<td>Ingestion</td>
</tr>
<tr>
<td>Exposure time</td>
<td>41 - 45 Days</td>
</tr>
</tbody>
</table>

**Method:** OECD Test Guideline 422

<table>
<thead>
<tr>
<th>Species</th>
<th>Mouse</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOAEL</td>
<td>1,62 mg/l</td>
</tr>
<tr>
<td>Application Route</td>
<td>inhalation (vapor)</td>
</tr>
<tr>
<td>Exposure time</td>
<td>2 y</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>Species</th>
<th>Rat</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOAEL</td>
<td>&gt; 1,450 mg/kg</td>
</tr>
<tr>
<td>Application Route</td>
<td>Ingestion</td>
</tr>
<tr>
<td>Exposure time</td>
<td>90 Days</td>
</tr>
</tbody>
</table>

**Method:** OECD Test Guideline 408

**Deltamethrin (ISO):**

<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>
</tbody>
</table>

**Target Organs:** Nervous system

**Symptoms:** hyperexcitability

<table>
<thead>
<tr>
<th>Species</th>
<th>Rat</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOAEL</td>
<td>3 mg/m³</td>
</tr>
<tr>
<td>Application Route</td>
<td>inhalation (dust/mist/fume)</td>
</tr>
<tr>
<td>Exposure time</td>
<td>2 wk / 5 d/wk / 6 h/d</td>
</tr>
</tbody>
</table>

**Symptoms:** Local irritation, respiratory tract irritation

<table>
<thead>
<tr>
<th>Species</th>
<th>Dog</th>
</tr>
</thead>
</table>
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

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
**Ecotoxicity**

### Hydrocarbons, C9, aromatics:

**Toxicity to fish**
- LL50 (Oncorhynchus mykiss (rainbow trout)): 9.2 mg/l
  - Exposure time: 96 h
  - Test substance: Water Accommodated Fraction
  - Method: OECD Test Guideline 203

**Toxicity to daphnia and other aquatic invertebrates**
- EL50 (Daphnia magna (Water flea)): 3.2 mg/l
  - Exposure time: 48 h
  - Test substance: Water Accommodated Fraction
  - Method: OECD Test Guideline 202

**Toxicity to algae/aquatic plants**
- EL50 (Pseudokirchneriella subcapitata (green algae)): 7.9 mg/l
  - Exposure time: 72 h
  - Test substance: Water Accommodated Fraction
  - Method: OECD Test Guideline 201
  - NOELR (Pseudokirchneriella subcapitata (green algae)): 0.22 mg/l
    - Exposure time: 72 h
    - Test substance: Water Accommodated Fraction
    - Method: OECD Test Guideline 201

**Toxicity to microorganisms**
- EC50: > 99 mg/l
  - Exposure time: 10 min

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

**Toxicity to fish**
- LC50 (Oncorhynchus mykiss (rainbow trout)): > 100 - 180 mg/l
  - Exposure time: 96 h
  - Method: OECD Test Guideline 203

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

**Toxicity to algae/aquatic plants**
- ER50 (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)): >= 100 mg/l
  - Exposure time: 21 d
  - Method: OECD Test Guideline 211
SAFETY DATA SHEET

Deltamethrin (5%) Formulation

<table>
<thead>
<tr>
<th>Toxicity to microorganisms</th>
<th>EC10: &gt; 1.000 mg/l</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exposure time: 0,5 h</td>
</tr>
</tbody>
</table>

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

  NOEC (Oncorhynchus mykiss (rainbow trout)): > 0,1 - 1 mg/l
  - Exposure time: 72 d
  - Remarks: Based on data from similar materials

  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
SAFETY DATA SHEET

Deltamethrin (5%) Formulation

Exposure time: 96 h

LC₅₀ (Oncorhynchus mykiss (rainbow trout)): 0,00039 mg/l
Exposure time: 96 h

Exposure time:

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

Exposure time:

EC₅₀ (Mysidopsis bahia (opossum shrimp)): > 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:

: 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)

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**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

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**Mobility in soil**

**Components:**

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

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**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**

**ANTT**
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
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

<table>
<thead>
<tr>
<th>National List of Carcinogenic Agents for Humans - (LINACH)</th>
<th>: Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil. List of chemicals controlled by the Federal Police</td>
<td>: 2-Methyl-1-propanol Hydrocarbons, C9, aromatics</td>
</tr>
</tbody>
</table>

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.

Full text of other abbreviations:

- ACGIH: USA. ACGIH Threshold Limit Values (TLV)
- BR OEL: Brazil. NR 15 - Unhealthy activities and operations
- ACGIH / TWA: 8-hour, time-weighted average
- BR OEL / LT: Up to 48 hours /week

AIIIC - 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 -
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.

BR / Z8