1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Deltamethrin (5%) Formulation

Manufacturer or supplier's details
Company: MSD
Address: Briahnager - Off Pune Nagar Road
Wagholi - Pune - India 412 207
Telephone: +1-908-740-4000
Emergency telephone number: +1-908-423-6000
E-mail address: EHSDATASTEWARD@msd.com

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

2. HAZARDS IDENTIFICATION

Manufacture, Storage and Import of Hazardous Chemicals Rules 1989

Classification
Highly flammable liquids

GHS Classification
Flammable liquids: Category 3
Acute toxicity (Oral): Category 4
Skin corrosion/irritation: Category 2
Serious eye damage/eye irritation: Category 1
Skin sensitisation: 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
SAFETY DATA SHEET

Deltamethrin (5%) Formulation

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

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements :
H226 Flammable liquid and vapour.
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:
P203 Obtain, read and follow all safety instructions before use.
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260 Do not breathe mist or vapours.
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 + P316 IF SWALLOWED: Get emergency medical help immediately.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse affected areas with water.
P304 + P340 + P319 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Get medical help if you feel unwell.
P305 + P354 + P338 + P317 IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical help.
P318 IF exposed or concerned, get medical advice.
P331 Do NOT induce vomiting.
P333 + P317 IF skin irritation or rash occurs: Get medical help.
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
Vapours may form explosive mixture with air.
Repeated exposure may cause skin dryness or cracking.

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>

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 centre 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.

5. FIREFIGHTING MEASURES

Suitable extinguishing media:
- Water spray
- Alcohol-resistant foam
- Carbon dioxide (CO2)
- Dry chemical

Unsuitable extinguishing media:
- High volume water jet

Specific hazards during firefighting:
- Do not use a solid water stream as it may scatter and spread fire.
- Flash back possible over considerable distance.
- Vapours 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
- Sulphur 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 firefighters:
- In the event of fire, wear self-contained breathing apparatus.
- Use personal protective equipment.
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 vapours.
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 sensitised individuals should consult their physician regarding working with respiratory irritants or sensitisers.
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.


Materials to avoid: Do not store with the following product types: Self-reactive substances and mixtures Organic peroxides Oxidizing agents Flammable gases Pyrophoric liquids Pyrophoric solids Self-heating substances and mixtures Poisonous gases Explosives

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components 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>Hydrocarbons, C9, aromatics</td>
<td>Not Assigned</td>
<td>TWA</td>
<td>300 ppm, 900 mg/m³</td>
<td>IN OEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>500 ppm, 1,500 mg/m³</td>
<td>IN OEL</td>
</tr>
<tr>
<td>2-Methyl-1-propanol</td>
<td>78-83-1</td>
<td>TWA</td>
<td>50 ppm, 150 mg/m³</td>
<td>IN 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: 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 reco
Filter type
Hand protection

Hand protection

Filter type
Recommended guidelines, use respiratory protection. 

Hand protection

Material
Chemical-resistant gloves

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

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

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

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

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
liquid

Colour
yellow

Odour
No data available

Odour 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
### 10. STABILITY AND REACTIVITY

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reactivity</td>
<td>Not classified as a reactivity hazard.</td>
</tr>
<tr>
<td>Chemical stability</td>
<td>Stable under normal conditions.</td>
</tr>
<tr>
<td>Possibility of hazardous reactions</td>
<td>Flammable liquid and vapour. Vapours may form explosive mixture with air. Can react with strong oxidizing agents.</td>
</tr>
<tr>
<td>Conditions to avoid</td>
<td>Heat, flames and sparks.</td>
</tr>
<tr>
<td>Incompatible materials</td>
<td>Oxidizing agents</td>
</tr>
<tr>
<td>Hazardous decomposition products</td>
<td>No hazardous decomposition products are known.</td>
</tr>
</tbody>
</table>

### 11. TOXICOLOGICAL INFORMATION
Information on likely routes of exposure:
- Inhalation
- Skin contact
- Ingestion
- Eye contact

Acute toxicity:
Harmful if swallowed.

Product:

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

Acute inhalation toxicity: Acute toxicity estimate: > 10 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Calculation method

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

Components:

Hydrocarbons, C9, aromatics:

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

Acute inhalation toxicity: LC50 (Rat): > 6.193 mg/l
Exposure time: 4 h
Test atmosphere: vapour
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: vapour

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: vapour

Acute dermal toxicity: LD50 (Rabbit): 2,460 mg/kg
Method: OECD Test Guideline 402

deltamethrin (ISO):

Acute oral toxicity: LD50 (Rat): 66.7 mg/kg
LD50 (Rat): 9 - 139 mg/kg
LD50 (Mouse): 19 - 34 mg/kg

Acute inhalation toxicity: LC50 (Rat): 0.8 mg/l
Exposure time: 2 h
Test atmosphere: dust/mist

Acute dermal toxicity: LD50 (Rabbit): 2,000 mg/kg
LD50 (Rat): > 800 mg/kg

Acute toxicity (other routes of administration): LD50 (Rat): 2.5 mg/kg
Application Route: Intravenous
LD50 (Mouse): 10 mg/kg
Application Route: Intraperitoneal

Skin corrosion/irritation
Causes skin irritation.

Components:

Hydrocarbons, C9, aromatics:
Assessment: Repeated exposure may cause skin dryness or cracking.

2-Methoxy-1-methylethyl acetate:
Species: Rabbit
Result: No skin irritation

Benzenesulfonic acid, C10-13-alkyl derivs., calcium salts:
Species: Rabbit
Method: OECD Test Guideline 404
Result: Skin irritation

2-Methyl-1-propanol:
Species: Rabbit
Method: OECD Test Guideline 404
Result: Skin irritation
deltamethrin (ISO):
Species: Rabbit
Result: No skin irritation

Serious eye damage/eye irritation
Causes serious eye damage.

Components:

Hydrocarbons, C9, aromatics:
Species: Rabbit
Result: No eye irritation

2-Methoxy-1-methylethyl acetate:
Species: Rabbit
Result: No eye irritation

Benzenesulfonic acid, C10-13-alkyl derivs., calcium salts:
Species: Rabbit
Method: OECD Test Guideline 405
Result: Irreversible effects on the eye

2-Methyl-1-propanol:
Species: Rabbit
Method: OECD Test Guideline 405
Result: Irreversible effects on the eye

deltamethrin (ISO):
Species: Rabbit
Result: Moderate eye irritation

Respiratory or skin sensitisation

Skin sensitisation
May cause an allergic skin reaction.

Respiratory sensitisation
Not classified based on available information.

Components:

Hydrocarbons, C9, aromatics:
Test Type: Maximisation Test
Exposure routes: Skin contact
Species: Guinea pig
Method: OECD Test Guideline 406
Result: negative

2-Methoxy-1-methylethyl acetate:
SAFETY DATA SHEET

Deltamethrin (5%) Formulation

<table>
<thead>
<tr>
<th>Component</th>
<th>Test Type</th>
<th>Exposure routes</th>
<th>Species</th>
<th>Method</th>
<th>Result</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzenesulfonic acid, C10-13-alkyl derivs., calcium salts</td>
<td>Maximisation Test</td>
<td>Skin contact</td>
<td>Guinea pig</td>
<td>OECD Test Guideline 406</td>
<td>negative</td>
<td>Based on data from similar materials</td>
</tr>
<tr>
<td>2-Methyl-1-propanol</td>
<td>Maximisation Test</td>
<td>Skin contact</td>
<td>Guinea pig</td>
<td>negative</td>
<td>Based on data from similar materials</td>
<td></td>
</tr>
<tr>
<td>Deltamethrin (ISO)</td>
<td>Maximisation Test</td>
<td>Dermal</td>
<td>Guinea pig</td>
<td>negative</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Human repeat insult patch test (HRIPT)</td>
<td>Dermal</td>
<td>Humans</td>
<td>positive</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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 (vapour)
Result: negative

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

Genotoxicity in vitro: Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

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

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

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

2-Methyl-1-propanol:
Genotoxicity in vitro: Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

Test Type: Chromosome aberration test in vitro
Result: negative

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

Genotoxicity in vivo:

Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Mouse
Application Route: Ingestion
Method: OECD Test Guideline 474
Result: negative

deltamethrin (ISO):
Genotoxicity in vitro: Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

Test Type: DNA Repair
Test system: Escherichia coli
Result: negative

Test Type: Chromosomal aberration
Test system: Chinese hamster ovary cells
Result: negative

Test Type: In vitro mammalian cell gene mutation test
Test system: Chinese hamster lung cells
Concentration: LOAEL: 20 mg/kg
Result: positive

Genotoxicity in vivo:

Test Type: Micronucleus test
Species: Mouse
Application Route: Oral
Result: negative

Test Type: dominant lethal test
Species: Mouse
Carcinogenicity
Not classified based on available information.

Components:

2-Methoxy-1-methylethyl acetate:

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

Deltamethrin (ISO):

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

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

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

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

Components:

Hydrocarbons, C9, aromatics:

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

<table>
<thead>
<tr>
<th>Effects on foetal develop-</th>
<th>Test Type: Embryo-foetal development</th>
</tr>
</thead>
</table>
## 2-Methoxy-1-methylethyl acetate:

### Effects on fertility
- **Test Type:** Two-generation reproduction toxicity study
- **Species:** Rat
- **Application Route:** Inhalation (vapour)
- **Result:** Negative
- **Remarks:** Based on data from similar materials

### Effects on foetal development
- **Test Type:** Embryo-foetal development
- **Species:** Rat
- **Application Route:** Inhalation (vapour)
- **Result:** Negative

## 2-Methyl-1-propanol:

### Effects on fertility
- **Test Type:** Two-generation reproduction toxicity study
- **Species:** Rat
- **Application Route:** Inhalation (vapour)
- **Method:** OPPTS 870.3800
- **Result:** Negative

### Effects on foetal development
- **Test Type:** Embryo-foetal development
- **Species:** Rat
- **Application Route:** Inhalation (vapour)
- **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-foetal 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-foetal toxicity

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

Deltamethrin (5%) Formulation

<table>
<thead>
<tr>
<th>Effects on foetal development</th>
<th>Test Type: Development</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Species: Mouse</td>
</tr>
<tr>
<td></td>
<td>Application Route: oral (gavage)</td>
</tr>
<tr>
<td></td>
<td>Developmental Toxicity: LOAEL: 1 mg/kg body weight</td>
</tr>
<tr>
<td></td>
<td>Result: Skeletal malformations</td>
</tr>
<tr>
<td></td>
<td>Remarks: Maternal toxicity observed.</td>
</tr>
</tbody>
</table>

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

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

<table>
<thead>
<tr>
<th>Reproductive toxicity - Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments.</td>
</tr>
</tbody>
</table>

**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):**
- Exposure routes: Ingestion
Target Organs: Central nervous system, Immune system
Assessment: Causes damage to organs through prolonged or repeated exposure.

Exposure routes: 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 (vapour)
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 (vapour)
Exposure time: 2 yr
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: hyperekctibility

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

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

<table>
<thead>
<tr>
<th>Component</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>Respiratory tract irritation, Dizziness, Sweating, Headache, Nausea, Vomiting, anorexia, Fatigue, tingling, Palpitation, Blurred vision, muscle twitching</td>
</tr>
<tr>
<td>Skin contact</td>
<td>Skin irritation, Erythema, pruritis, Headache, Nausea, Vomiting, Dizziness, tingling, Sweating, muscle twitching, Blurred vision, Fatigue, anorexia, Allergic reactions</td>
</tr>
<tr>
<td>Ingestion</td>
<td>Symptoms: muscle pain, Small pupils</td>
</tr>
</tbody>
</table>

12. ECOLOGICAL INFORMATION

**Ecotoxicity**

**Components:**

**Hydrocarbons, C9, aromatics:**

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

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

<table>
<thead>
<tr>
<th>Component</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Toxicity to fish</strong></td>
<td>LC50 (Oncorhynchus mykiss (rainbow trout)): &gt; 100 - 180 mg/l</td>
</tr>
<tr>
<td>Exposure time: 96 h</td>
<td>Test substance: Water Accommodated Fraction</td>
</tr>
<tr>
<td>Method: OECD Test Guideline 203</td>
<td></td>
</tr>
<tr>
<td><strong>Toxicity to daphnia and other aquatic invertebrates</strong></td>
<td>EC50 (Daphnia magna (Water flea)): &gt; 500 mg/l</td>
</tr>
<tr>
<td>Exposure time: 48 h</td>
<td></td>
</tr>
</tbody>
</table>
### 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 microorganisms

**EC10**: > 1,000 mg/l  
Exposure time: 0.5 h

### Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)

**NOEC**: >= 100 mg/l  
Exposure time: 21 d  
Species: Daphnia magna (Water flea)  
Method: OECD Test Guideline 211

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

#### Toxicity to fish

**LC50**: > 1 - < 10 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203

#### Toxicity to daphnia and other aquatic invertebrates

**EC50** (Daphnia magna (Water flea)): > 1 - 10 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202  
Remarks: Based on data from similar materials

#### Toxicity to algae/aquatic plants

**ErC50** (Pseudokirchneriella subcapitata (green algae)): > 10 - 100 mg/l  
Exposure time: 96 h  
Remarks: Based on data from similar materials

**NOEC** (Pseudokirchneriella subcapitata (green algae)): > 0.1 - 1 mg/l  
Exposure time: 96 h  
Remarks: Based on data from similar materials

#### Toxicity to fish (Chronic toxicity)

**NOEC**: > 0.1 - 1 mg/l  
Exposure time: 72 d  
Species: Oncorhynchus mykiss (rainbow trout)  
Remarks: Based on data from similar materials

#### Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)

**NOEC**: > 1 mg/l  
Exposure time: 21 d  
Species: Daphnia magna (Water flea)  
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: 20 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)

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 (Mysisopsis 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: 0.000022 mg/l
Exposure time: 36 d
Species: Pimephales promelas (fathead minnow)

NOEC: 0.000017 mg/l
Exposure time: 260 d
Species: Pimephales promelas (fathead minnow)

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity):
NOEC: 0.0041 µg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)

M-Factor (Chronic aquatic): 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
SAFETY DATA SHEET

Deltamethrin (5%) Formulation

Version 5.0  Revision Date: 18.08.2021  SDS Number: 2334775-00012  Date of last issue: 09.04.2021
Date of first issue: 12.12.2017

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

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.

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
Deltamethrin (5%) Formulation

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:
(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 IMO instruments
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.

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

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

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.

Date format: dd.mm.yyyy

Full text of other abbreviations
ACGIH: USA. ACGIH Threshold Limit Values (TLV)
SAFETY DATA SHEET

Deltamethrin (5%) Formulation

IN OEL : India. Permissible levels of certain chemical substances in work environment.

ACGIH / TWA : 8-hour, time-weighted average
IN OEL / TWA : Time-Weighted Average Concentration (TWA) (8 hrs.)
IN OEL / STEL : Short-term exposure Limit STEL (15 min)

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.

IN / EN