SAFETY DATA SHEET
Deltamethrin Pour-On Formulation

1. PRODUCT AND COMPANY IDENTIFICATION
   Chemical product name : Deltamethrin Pour-On Formulation
   Supplier’s company name, address and phone number
   Company name of supplier : MSD
   Address : Kumagaya, Saitama Prefecture, Xicheng 810 MSD Co., Ltd.
   Memna factory
   Telephone : 048-588-8411
   E-mail address : EHSDATASTEWARD@msd.com
   Emergency telephone number : +1-908-423-6000

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

2. HAZARDS IDENTIFICATION
   GHS classification of chemical product
   Skin sensitisation : Category 1
   Short-term (acute) aquatic hazard : Category 1
   Long-term (chronic) aquatic hazard : Category 1

GHS label elements
   Hazard pictograms : ![Warning] ![Aquatic Hazard]
   Signal word : Warning
   Hazard statements : H317 May cause an allergic skin reaction.
   H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements :
   Prevention:
   P261 Avoid breathing mist or vapours.
   P272 Contaminated work clothing should not be allowed out of the workplace.
   P273 Avoid release to the environment.
   P280 Wear protective gloves.
   Response:
   P302 + P352 IF ON SKIN: Wash with plenty of water.
   P333 + P313 If skin irritation or rash occurs: Get medical ad-
vice/attention.
P362 + P364 Take off contaminated clothing and wash it before reuse.
P391 Collect spillage.

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

**Other hazards which do not result in classification**
None known.

### 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>
<th>ENCS No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propylene glycol</td>
<td>57-55-6</td>
<td>&gt;= 10 - &lt; 20</td>
<td>2-234</td>
</tr>
<tr>
<td>Deltamethrin (ISO)</td>
<td>52918-63-5</td>
<td>&gt;= 0.25 - &lt; 1</td>
<td></td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td>&gt;= 0.0025 - &lt; 0.025</td>
<td>2-482</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 soap and plenty of water.
Remove contaminated clothing and shoes.
Get medical attention.
Wash clothing before reuse.
Thoroughly clean shoes before reuse.

**In case of eye contact:**
Flush eyes with water as a precaution.
Get medical attention if irritation develops and persists.

**If swallowed:**
If swallowed, DO NOT induce vomiting.
Get medical attention.
Rinse mouth thoroughly with water.

**Most important symptoms and effects, both acute and delayed:**
May cause an allergic skin reaction.

**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.
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Version 4.0  Revision Date: 2021/08/27  SDS Number: 657089-00014  Date of last issue: 2020/10/02
Date of first issue: 2016/05/02

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

Unsuitable extinguishing media: None known.

Specific hazards during firefighting:
Exposure to combustion products may be a hazard to health.

Hazardous combustion products: Carbon 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.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: 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:
Soak up with inert absorbent material.
For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked 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.

7. HANDLING AND STORAGE

Handling
Technical measures: See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.
Local/Total ventilation: Use only with adequate ventilation.
Advice on safe handling: Do not get on skin or clothing.
Avoid breathing mist or vapours.
Do not swallow.
Avoid contact with eyes.
Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment
Take care to prevent spills, waste and minimize release to the environment.

Avoidance of contact:
 Oxidizing agents

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.

Storage

Conditions for safe storage:
Keep in properly labelled containers.
Store in accordance with the particular national regulations.

Materials to avoid:
Do not store with the following product types:
Strong oxidizing agents

Packaging material:
Unsuitable material: None known.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Threshold limit value and permissible exposure limits for each component in the work environment

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Reference concentration / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>deltamethrin (ISO)</td>
<td>52918-63-5</td>
<td>TWA</td>
<td>15 µg/m³ (OEB 3)</td>
<td>Internal</td>
</tr>
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<td></td>
<td>Further information: DSEN, Skin</td>
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<tr>
<td></td>
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<td></td>
<td>Wipe limit 150 µg/100 cm²</td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td>ACL</td>
<td>0.1 ppm</td>
<td>JP OEL ISHL</td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>OEL-M</td>
<td>0.1 ppm 0.12 mg/m³</td>
<td>JP OEL JSOH</td>
</tr>
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<tr>
<td></td>
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<td></td>
<td></td>
<td>Further information: Airway sensitizing agent; Group 2 substances which probably induce allergic reactions in humans, Skin sensitizing agent; Group 1 substances which induce allergic reactions in humans, Group 2A: probably carcinogenic to humans</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OEL-C</td>
<td>0.2 ppm 0.24 mg/m³</td>
<td>JP OEL JSOH</td>
</tr>
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<tr>
<td></td>
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<td></td>
<td></td>
<td>Further information: Airway sensitizing agent; Group 2 substances which probably induce allergic reactions in humans, Skin sensitizing agent; Group 1 substances which induce allergic reactions in humans</td>
</tr>
</tbody>
</table>


Humans, Group 2A: probably carcinogenic to humans

<table>
<thead>
<tr>
<th></th>
<th>TWA</th>
<th>STEL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.1 ppm</td>
<td>0.3 ppm</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 containment devices).

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**: Particulates type
- **Hand protection**

**Material**: Chemical-resistant gloves

**Remarks**: Consider double gloving.

**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.**
- **Add 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.**

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**Physical state**: Aqueous solution, suspension

**Colour**: white

**Odour**: No data available

**Odour Threshold**: No data available

**Melting point/freezing point**: No data available

**Boiling point, initial boiling point and boiling range**: No data available

**Flammability (solid, gas)**: Not applicable
Flammability (liquids) : No data available

Lower explosion limit and upper explosion limit / flammability limit
Upper explosion limit / Upper flammability limit : No data available

Lower explosion limit / Lower flammability limit : No data available

Flash point : No data available

Decomposition temperature : No data available

pH : No data available

Evaporation rate : No data available

Auto-ignition temperature : No data available

Viscosity
   Viscosity, kinematic : No data available

Solubility(ies)
   Water solubility : completely miscible

Partition coefficient: n-octanol/water : No data available

Vapour pressure : No data available

Density and / or relative density
   Relative density : No data available

Density : No data available

Relative vapour density : No data available

Explosive properties : Not explosive

Oxidizing properties : The substance or mixture is not classified as oxidizing.

Molecular weight : Not applicable

Particle characteristics
   Particle size : Not applicable

10. STABILITY AND REACTIVITY

Reactivity : Not classified as a reactivity hazard.

Chemical stability : Stable under normal conditions.

Possibility of hazardous reactions : Can react with strong oxidizing agents.
11. TOXICOLOGICAL INFORMATION

**Information on likely routes of exposure**
- Inhalation
- Skin contact
- Ingestion
- Eye contact

**Acute toxicity**
Not classified based on available information.

**Product**
- **Acute oral toxicity**
  - Acute toxicity estimate: > 2,000 mg/kg
  - Method: Calculation method
- **Acute inhalation toxicity**
  - Acute toxicity estimate: > 5 mg/l
  - Exposure time: 4 h
  - Test atmosphere: dust/mist
  - Method: Calculation method

**Components**

**Propylene glycol**
- **Acute oral toxicity**
  - LD50 (Rat): 22,000 mg/kg
- **Acute inhalation toxicity**
  - LC50 (Rat): > 44.9 mg/l
  - Exposure time: 4 h
  - Test atmosphere: dust/mist
- **Acute dermal toxicity**
  - LD50 (Rabbit): > 2,000 mg/kg
  - Assessment: The substance or mixture has no acute dermal toxicity

**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)**
  - LD50 (Rat): 2.5 mg/kg
### Administration

<table>
<thead>
<tr>
<th>Application Route: Intravenous</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 (Mouse): 10 mg/kg</td>
</tr>
<tr>
<td>Application Route: Intraperitoneal</td>
</tr>
</tbody>
</table>

### Formaldehyde:

#### Acute oral toxicity:
- Acute toxicity estimate: 100 mg/kg  
  Method: Expert judgement

#### Acute inhalation toxicity:
- Acute toxicity estimate: 100 ppm  
  Exposure time: 4 h  
  Test atmosphere: gas  
  Method: Expert judgement

#### Acute dermal toxicity:
- LD50 (Rabbit): 270 mg/kg

### Skin corrosion/irritation
Not classified based on available information.

### Components:

#### Propylene glycol:
- **Species**: Rabbit  
  **Method**: OECD Test Guideline 404  
  **Result**: No skin irritation

#### deltamethrin (ISO):
- **Species**: Rabbit  
  **Result**: No skin irritation

#### Formaldehyde:
- **Species**: Rabbit  
  **Method**: OECD Test Guideline 404  
  **Result**: Corrosive after 3 minutes to 1 hour of exposure

### Serious eye damage/eye irritation
Not classified based on available information.

### Components:

#### Propylene glycol:
- **Species**: Rabbit  
  **Result**: No eye irritation  
  **Method**: OECD Test Guideline 405

#### deltamethrin (ISO):
- **Species**: Rabbit  
  **Result**: Moderate eye irritation

#### Formaldehyde:
- **Species**: Rabbit
Result: Irreversible effects on the eye

Respiratory or skin sensitisation

Skin sensitisation
May cause an allergic skin reaction.

Respiratory sensitisation
Not classified based on available information.

Components:

Propylene glycol:
Test Type: Maximisation Test
Exposure routes: Skin contact
Species: Guinea pig
Result: negative

deltamethrin (ISO):
Test Type: Maximisation Test
Exposure routes: Dermal
Species: Guinea pig
Result: negative

Human repeat insult patch test (HRIPT):
Exposure routes: Dermal
Species: Humans
Result: positive

Formaldehyde:
Test Type: Local lymph node assay (LLNA)
Exposure routes: Skin contact
Species: Mouse
Method: OECD Test Guideline 429
Result: positive

Assessment: Probability or evidence of high skin sensitisation rate in humans

Germ cell mutagenicity
Not classified based on available information.

Components:

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

Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: negative

Genotoxicity in vivo:
Test Type: Mammalian erythrocyte micronucleus test (in vivo
deltamethrin (ISO):

<table>
<thead>
<tr>
<th>Genotoxicity in vitro</th>
<th>Genotoxicity in vivo</th>
</tr>
</thead>
<tbody>
<tr>
<td>: Test Type: Bacterial reverse mutation assay (AMES) Result: negative</td>
<td>: Test Type: Micronucleus test Species: Mouse Application Route: Oral Result: negative</td>
</tr>
<tr>
<td>Test Type: DNA Repair Test system: Escherichia coli Result: negative</td>
<td>Test Type: dominant lethal test Species: Mouse Application Route: Oral Result: negative</td>
</tr>
<tr>
<td>Test Type: Chromosomal aberration Test system: Chinese hamster ovary cells Result: negative</td>
<td>Test Type: sister chromatid exchange assay Species: Mouse Cell type: Bone marrow Application Route: Oral Result: negative</td>
</tr>
</tbody>
</table>

Formaldehyde:

<table>
<thead>
<tr>
<th>Genotoxicity in vitro</th>
<th>Genotoxicity in vivo</th>
</tr>
</thead>
<tbody>
<tr>
<td>: Test Type: Bacterial reverse mutation assay (AMES) Result: positive</td>
<td>: Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay) Species: Rat Application Route: Inhalation Result: positive</td>
</tr>
</tbody>
</table>

Germ cell mutagenicity - Assessment : Positive result(s) from in vivo mammalian somatic cell mutagenicity tests.
Carcinogenicity
Not classified based on available information.

Components:

Propylene glycol:

- Species: Rat
- Application Route: Ingestion
- Exposure time: 2 Years
- Result: negative

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

Formaldehyde:

- Species: Rat
  - Application Route: inhalation (gas)
  - Exposure time: 28 Months
  - Result: positive

Carcinogenicity - Assessment: Sufficient evidence of carcinogenicity in animal experiments

Reproductive toxicity
Not classified based on available information.

Components:

Propylene glycol:

- Effects on fertility: Test Type: Two-generation reproduction toxicity study
  - Species: Mouse
  - Application Route: Ingestion
  - Result: negative

- Effects on foetal development: Test Type: Embryo-foetal development
  - Species: Mouse
  - Application Route: Ingestion
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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

Effects on foetal 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 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

Reproductive toxicity - Assessment: Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments.

Formaldehyde:

Effects on foetal development: Test Type: Embryo-foetal development
Species: Rat
Application Route: inhalation (gas)
Result: negative
STOT - single exposure
Not classified based on available information.

Components:

**deltamethrin (ISO):**
- Assessment: May cause respiratory irritation.

**Formaldehyde:**
- Assessment: May cause respiratory irritation.

STOT - repeated exposure
Not classified based on available information.

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.

**Formaldehyde:**
- Exposure routes: Inhalation (gas)
- Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Repeated dose toxicity

Components:

**Propylene glycol:**
- Species: Rat, male
- NOAEL: >= 1,700 mg/kg
- Application Route: Ingestion
- Exposure time: 2 yr

**deltamethrin (ISO):**
- Species: Rat, male and female
- NOAEL: 1 mg/kg
- LOAEL: 2.5 mg/kg
- Application Route: Oral
- Exposure time: 13 Weeks
- Target Organs: Nervous system
- Symptoms: hyperexcitability
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Date of first issue: 2016/05/02

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**LOAEL**
- **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

**Formaldehyde:**
- **Species:** Rat
- **NOAEL:** 6 ppm
- **LOAEL:** 10 ppm
- **Application Route:** inhalation (gas)
- **Exposure time:** 28 Days

**Aspiration toxicity**
Not classified based on available information.

**Experience with human exposure**

**Components:**

**deltamethrin (ISO):**
- **Inhalation**
- **Skin contact**
- **Ingestion**

**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
## 12. ECOLOGICAL INFORMATION

### Ecotoxicity

#### Components:

**Propylene glycol:**

| Toxicity to fish | LC50 (Oncorhynchus mykiss (rainbow trout)): 40,613 mg/l |
| Exposure time: 96 h |

| Toxicity to daphnia and other aquatic invertebrates | EC50 (Ceriodaphnia dubia (water flea)): 18,340 mg/l |
| Exposure time: 48 h |

| Toxicity to algae/aquatic plants | ErC50 (Skeletonema costatum (marine diatom)): 19,300 mg/l |
| Exposure time: 72 h |
| Method: OECD Test Guideline 201 |

| Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) | NOEC (Ceriodaphnia dubia (water flea)): 13,020 mg/l |
| Exposure time: 7 d |

| Toxicity to microorganisms | NOEC (Pseudomonas putida): > 20,000 mg/l |
| Exposure time: 18 h |

**deltamethrin (ISO):**

| Toxicity to fish (Chronic toxicity) | NOEC (Pimephales promelas (fathead minnow)): 0.000022 mg/l |
| Exposure time: 36 d |

| M-Factor (Acute aquatic toxicity) | 1,000,000 |

| Toxicity to fish (Chronic toxicity) | NOEC (Pimephales promelas (fathead minnow)): 0.000017 mg/l |
| Exposure time: 36 d |

| 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 |

| Toxicity to daphnia and other aquatic invertebrates | 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 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 |

| 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 |
Exposure time: 260 d

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

M-Factor (Chronic aquatic toxicity): 1,000,000

Formaldehyde:
Toxicity to fish: LC50: 6.7 mg/l
Exposure time: 96 h
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates: EC50 (Daphnia pulex (Water flea)): 5.8 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants: EC50 (Desmodesmus subspicatus (green algae)): 4.89 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

Toxicity to fish (Chronic toxicity): NOEC (Oryzias latipes (Orange-red killifish)): >= 48 mg/l
Exposure time: 28 d

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity): NOEC (Daphnia magna (Water flea)): >= 6.4 mg/l
Exposure time: 21 d
Method: OECD Test Guideline 211

Toxicity to microorganisms: EC50: 34.1 mg/l
Exposure time: 120 h

Persistence and degradability

Components:

Propylene glycol:
Biodegradability: Result: Readily biodegradable.
Biodegradation: 98.3 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

Deltamethrin (ISO):
Stability in water: Hydrolysis: 0 %(30 d)

Formaldehyde:
Biodegradability: Result: Readily biodegradable.
Biodegradation: 91 %
Exposure time: 14 d
Method: OECD Test Guideline 301C
Remarks: Based on data from similar materials
Bioaccumulative potential

Components:

Propylene glycol:
Partition coefficient: n-octanol/water : log Pow: -1.07

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

Formaldehyde:
Partition coefficient: n-octanol/water : log Pow: 0.35

Mobility in soil

Components:

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

Hazardous to the ozone layer
Not applicable

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.
If not otherwise specified: Dispose of as unused product.

14. TRANSPORT INFORMATION

International Regulations

UNRTDG
UN number : UN 3082
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (deltamethrin (ISO))
Class : 9
Packing group : III
Labels : 9
IATA-DGR
UN/ID No. : UN 3082
SAFETY DATA SHEET

Deltamethrin Pour-On Formulation

Proper shipping name: Environmentally hazardous substance, liquid, n.o.s. (deltamethrin (ISO))
Class: 9
Packing group: III
Labels: Miscellaneous
Packing instruction (cargo aircraft): 964
Packing instruction (passenger aircraft): 964
Environmentally hazardous: yes

IMDG-Code
UN number: UN 3082
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (deltamethrin (ISO))
Class: 9
Packing group: III
Labels: 9
EmS Code: F-A, S-F
Marine pollutant: yes

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable for product as supplied.

National Regulations
Refer to section 15 for specific national regulation.

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

Related Regulations

Fire Service Law
Not applicable to dangerous materials / designated flammables.

Chemical Substance Control Law
Priority Assessment Chemical Substance

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propane-1,2-diol</td>
<td>106</td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>25</td>
</tr>
</tbody>
</table>

Industrial Safety and Health Law

Harmful Substances Prohibited from Manufacture
Not applicable

Harmful Substances Required Permission for Manufacture
Not applicable

Substances Prevented From Impairment of Health
Not applicable
Circular concerning Information on Chemicals having Mutagenicity - Annex 2: Information on Existing Chemicals having Mutagenicity
Not applicable

Circular concerning Information on Chemicals having Mutagenicity - Annex 1: Information on Notified Substances having Mutagenicity
Not applicable

Substances Subject to be Notified Names
Not applicable

Substances Subject to be Indicated Names
Not applicable

Ordinance on Prevention of Hazards Due to Specified Chemical Substances
Not applicable

Ordinance on Prevention of Lead Poisoning
Not applicable

Ordinance on Prevention of Tetraalkyl Lead Poisoning
Not applicable

Ordinance on Prevention of Organic Solvent Poisoning
Not applicable

Enforcement Order of the Industrial Safety and Health Law - Attached table 1 (Dangerous Substances)
Not applicable

Poisonous and Deleterious Substances Control Law
Not applicable

Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof
Not applicable

High Pressure Gas Safety Act
Not applicable

Explosive Control Law
Not applicable

Vessel Safety Law
Miscellaneous dangerous substances and articles (Article 2 and 3 of rules on shipping and storage of dangerous goods and its Attached Table 1)

Aviation Law
Miscellaneous dangerous substances and articles (Article 194 of The Enforcement Rules of Aviation Law and its Attached Table 1)

Marine Pollution and Sea Disaster Prevention etc Law
| Bulk transportation | Not classified as noxious liquid substance |
| Pack transportation  | Classified as marine pollutant |
SAFETY DATA SHEET

Deltamethrin Pour-On Formulation

Version 4.0  Revision Date: 2021/08/27  SDS Number: 657089-00014  Date of last issue: 2020/10/02  Date of first issue: 2016/05/02

Narcotics and Psychotropics Control Act
Narcotic or Psychotropic Raw Material (Export / Import Permission)
Not applicable
Specific Narcotic or Psychotropic Raw Material (Export / Import permission)
Not applicable

Waste Disposal and Public Cleansing Law
Industrial waste

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
Sources of key data used to compile the Safety Data Sheet

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

Date format : yyyy/mm/dd

Full text of other abbreviations
ACGIH : USA. ACGIH Threshold Limit Values (TLV)
JP OEL ISHL : Japan. Administrative Control Levels

ACGIH / TWA : 8-hour, time-weighted average
ACGIH / STEL : Short-term exposure limit
JP OEL ISHL / ACL : Administrative Control level
JP OEL JSOH / OEL-M : Occupational Exposure Limit-Mean
JP OEL JSOH / OEL-C : Occupational Exposure Limit-Ceiling

AIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Con-
centration to 50% of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

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.

JP / EN