SAFETY DATA SHEET

Deltamethrin Liquid Formulation

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier
   Trade name : Deltamethrin Liquid Formulation

1.2 Relevant identified uses of the substance or mixture and uses advised against
   Use of the Substance/Mixture : Veterinary product

1.3 Details of the supplier of the safety data sheet
   Company : MSD
             20 Spartan Road
             1619 Spartan, South Africa
   Telephone : +27119239300
   Telefax : 908-735-1496
   E-mail address of person responsible for the SDS : EHSDATASTEEWARD@msd.com

1.4 Emergency telephone number
   1-908-423-6000

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
   Classification (REGULATION (EC) No 1272/2008)
   Acute toxicity, Category 4
   Serious eye damage, Category 1
   Skin sensitisation, Category 1
   Reproductive toxicity, Category 2
   Specific target organ toxicity - repeated exposure, Category 2
   Short-term (acute) aquatic hazard, Category 1
   Long-term (chronic) aquatic hazard, Category 1
   H302: Harmful if swallowed.
   H318: Causes serious eye damage.
   H317: May cause an allergic skin reaction.
   H361fd: Suspected of damaging fertility. Suspected of damaging the unborn child.
   H373: May cause damage to organs through prolonged or repeated exposure.
   H400: Very toxic to aquatic life.
   H410: Very toxic to aquatic life with long lasting effects.

2.2 Labelling elements
   Labelling (REGULATION (EC) No 1272/2008)
   Hazard pictograms : :
   Signal word : Danger
Hazard statements:  
H302 Harmful if swallowed.  
H317 May cause an allergic skin reaction.  
H318 Causes serious eye damage.  
H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.  
H373 May cause damage to organs through prolonged or repeated exposure.  
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements:  
Prevention:  
P201 Obtain special instructions before use.  
P273 Avoid release to the environment.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:  
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.  
P308 + P313 IF exposed or concerned: Get medical advice/attention.  
P391 Collect spillage.

Hazardous components which must be listed on the label:  
Alpha-(4-(1,1,3,3-Tetramethylbutyl)phenyl)-omega-hydroxypoly(oxy-1,2-ethanediyl) Deltamethrin (ISO)

2.3 Other hazards
None known.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Index-No.</th>
<th>Classification</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpha-(4-(1,1,3,3-Tetramethylbutyl)phenyl)-omega-hydroxypoly(oxy-1,2-ethanediyl)</td>
<td>9002-93-1</td>
<td></td>
<td></td>
<td>Acute Tox.4; H302 Eye Dam.1; H318 Aquatic Chronic2; H411</td>
<td>&gt;= 50 - &lt; 70</td>
</tr>
<tr>
<td>Deltamethrin (ISO)</td>
<td>52918-63-5 258-256-6 607-319-00-X</td>
<td></td>
<td></td>
<td>Acute Tox.3; H301 Acute Tox.3; H331 Eye Irrit.2; H319 Skin Sens.1A; H317 Repr.2; H361fd STOT SE3; H335 STOT RE1; H372 STOT RE1; H372</td>
<td>&gt;= 3 - &lt; 10</td>
</tr>
</tbody>
</table>
SECTION 4: First aid measures

4.1 Description of 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.

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).

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: 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. Get medical attention. Rinse mouth thoroughly with water. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed

Risks: Harmful if swallowed. May cause an allergic skin reaction. Causes serious eye damage. Suspected of damaging fertility. Suspected of damaging the unborn child. May cause damage to organs through prolonged or repeated exposure.
4.3 Indication of any immediate medical attention and special treatment needed
Treatment:
Treat symptomatically and supportively.

SECTION 5: Firefighting measures

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

Unsuitable extinguishing media:
None known.

5.2 Special hazards arising from the substance or mixture
Specific hazards during firefighting:
Exposure to combustion products may be a hazard to health.

Hazardous combustion products:
- Carbon oxides
- Nitrogen oxides (NOx)
- Bromine compounds

5.3 Advice for firefighters
Special protective equipment for firefighters:
In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment.

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.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Personal precautions:
- Use personal protective equipment.
- Follow safe handling advice and personal protective equipment recommendations.

6.2 Environmental precautions
Environmental precautions:
- Discharge into the environment must be avoided.
- Prevent further leakage or spillage if safe to do so.
- Prevent spreading over a wide area (e.g. by containment or oil barriers).
- Retain and dispose of contaminated wash water.
- Local authorities should be advised if significant spills cannot be contained.
6.3 Methods and material for containment and cleaning up

Methods for 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.

6.4 Reference to other sections
See sections: 7, 8, 11, 12 and 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Technical measures:
See Engineering measures under EXPOSURE CONTROLS/PERSOMAL PROTECTION section.

Local/Total ventilation:
If sufficient ventilation is unavailable, use with local exhaust ventilation.

Advice on safe handling:
- Do not get on skin or clothing.
- Do not breathe vapours or spray mist.
- Do not swallow.
- Do not get in eyes.
- Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment.
- Keep container tightly closed.
- 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. 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.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers:
Keep in properly labelled containers. Store locked up. Keep tightly closed. Store in accordance with the particular national regulations.

Advice on common storage:
- Do not store with the following product types:
  - Strong oxidizing agents
  - Organic peroxides
  - Explosives
  - Gases
Deltamethrin Liquid Formulation

8.1 Control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters</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>
<tr>
<td>Further information</td>
<td>DSEN, Skin</td>
<td>Wipe limit</td>
<td>150 µg/100 cm²</td>
<td>Internal</td>
</tr>
</tbody>
</table>

8.2 Exposure controls

**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.

**Personal protective equipment**

- **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.

- **Hand protection**: Chemical-resistant gloves
  - Consider double gloving.

- **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.

- **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 (P)
9.1 Information on basic physical and chemical properties

- **Appearance**: liquid
- **Colour**: colourless
- **Odour**: odourless
- **Odour Threshold**: No data available
- **pH**: 3.4 - 4 (20 °C)
- **Melting point/freezing point**: No data available
- **Initial boiling point and boiling range**: No data available
- **Flash point**: No data available
- **Evaporation rate**: No data available
- **Flammability (solid, gas)**: Not applicable
- **Upper explosion limit / Upper flammability limit**: No data available
- **Lower explosion limit / Lower flammability limit**: No data available
- **Vapour pressure**: No data available
- **Relative vapour density**: No data available
- **Relative density**: No data available
- **Density**: No data available
- **Solubility(ies)**
  - **Water solubility**: No data available
  - **Partition coefficient: n-octanol/water**: No data available
  - **Auto-ignition 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.

9.2 Other information

- **Flammability (liquids)**: No data available
- **Molecular weight**: Not applicable
Particle size : Not applicable

SECTION 10: Stability and reactivity

10.1 Reactivity
Not classified as a reactivity hazard.

10.2 Chemical stability
Stable under normal conditions.

10.3 Possibility of hazardous reactions
Hazardous reactions : Can react with strong oxidizing agents.

10.4 Conditions to avoid
Conditions to avoid : None known.

10.5 Incompatible materials
Materials to avoid : Oxidizing agents

10.6 Hazardous decomposition products
No hazardous decomposition products are known.

SECTION 11: Toxicological information

11.1 Information on toxicological effects
Information on likely routes of exposure : Inhalation
Skin contact
Ingestion
Eye contact

Acute toxicity
Harmful if swallowed.

Product:
Acute oral toxicity : Acute toxicity estimate: 956.51 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:

Alpha-(4-(1,1,3,3-Tetramethylbutyl)phenyl)-omega-hydroxypoly(oxy-1,2-ethanediyl):

Acute oral toxicity : LD50 (Rat): 1.900 - 5.000 mg/kg
Remarks: Based on data from similar materials

Acute dermal toxicity : LD50 (Rabbit): > 3.000 mg/kg
Remarks: Based on data from similar materials
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
Not classified based on available information.

Components:

Alpha-(4-(1,1,3,3-Tetramethylbutyl)phenyl)-omega-hydroxypoly(oxy-1,2-ethanediyl):
Result : No skin irritation

Deltamethrin (ISO):
Species : Rabbit
Result : No skin irritation

Serious eye damage/eye irritation
Causes serious eye damage.

Components:

Alpha-(4-(1,1,3,3-Tetramethylbutyl)phenyl)-omega-hydroxypoly(oxy-1,2-ethanediyl):
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:
Deltamethrin (ISO):
Test Type: Maximisation Test
Exposure routes: Dermal
Species: Guinea pig
Result: negative

Test Type: Human repeat insult patch test (HRIP T)
Exposure routes: Dermal
Species: Humans
Result: positive

Germ cell mutagenicity
Not classified based on available information.

Components:
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:**

**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:**

**Deltamethrin (ISO):**

**Effects on fertility**

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Three-generation reproduction toxicity study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Species: Rat</td>
<td></td>
</tr>
<tr>
<td>Application Route: oral (feed)</td>
<td></td>
</tr>
<tr>
<td>Early Embryonic Development:</td>
<td></td>
</tr>
<tr>
<td>NOAEL: 50 mg/kg body weight</td>
<td></td>
</tr>
<tr>
<td>Symptoms: No effects on fertility, Embryo-foetal toxicity</td>
<td></td>
</tr>
<tr>
<td>Remarks: Significant toxicity observed in testing</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Two-generation reproduction toxicity study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Species: Rat</td>
<td></td>
</tr>
<tr>
<td>Application Route: Oral</td>
<td></td>
</tr>
<tr>
<td>Early Embryonic Development:</td>
<td></td>
</tr>
<tr>
<td>LOAEL: 84 - 149 mg/kg body weight</td>
<td></td>
</tr>
<tr>
<td>Symptoms: No effects on fertility, Embryo-foetal toxicity</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Fertility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Species: Rat, male</td>
<td></td>
</tr>
<tr>
<td>Application Route: Oral</td>
<td></td>
</tr>
<tr>
<td>Fertility: LOAEL: 1 mg/kg body weight</td>
<td></td>
</tr>
<tr>
<td>Symptoms: Effects on fertility</td>
<td></td>
</tr>
<tr>
<td>Target Organs: Testes</td>
<td></td>
</tr>
</tbody>
</table>

**Effects on foetal development**

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Species: Mouse</td>
<td></td>
</tr>
</tbody>
</table>
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.

STOT - single exposure
Not classified based on available information.

Components:

Deltamethrin (ISO):
Assessment: May cause respiratory irritation.

STOT - repeated exposure
May cause damage to organs through prolonged or repeated exposure.

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:

Deltamethrin (ISO):
Species: Rat, male and female
NOAEL: 1 mg/kg
LOAEL: 2.5 mg/kg
Application Route: Oral
Exposure time: 13 Weeks
Target Organs: Nervous system
Symptoms : hyperexcitability
Species : Rat
LOAEL : 3 mg/m3
Application Route : inhalation (dust/mist/fume)
Test atmosphere : dust/mist
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
Symptoms : immune system effects

Aspiration toxicity
Not classified based on available information.

Experience with human exposure

Components:
Deltamethrin (ISO):
Inhalation : Symptoms: respiratory tract irritation, Dizziness, Sweating, Headache, Nausea, Vomiting, anorexia, Fatigue, tingling, Palpitation, Blurred vision, muscle twitching
Skin contact : Symptoms: Skin irritation, Erythema, pruritus, Headache, Nausea, Vomiting, Dizziness, tingling, Sweating, muscle twitching, Blurred vision, Fatigue, anorexia, Allergic reactions
Ingestion : Symptoms: muscle pain, Small pupils

SECTION 12: Ecological information

12.1 Toxicity

Components:
Alpha-(4-(1,1,3,3-Tetramethylbutyl)phenyl)-omega-hydroxypoly(oxy-1,2-ethanediyl):
### Toxicity to Fish

**LC₅₀ (Pimephales promelas (fathead minnow))**: 4 - 8.9 mg/l  
Exposure time: 96 h  
Remarks: Based on data from similar materials

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

### Toxicity to Daphnia and Other Aquatic Invertebrates

**EC₅₀ (Daphnia magna (Water flea))**: 18 - 26 mg/l  
Exposure time: 48 h  
Remarks: Based on data from similar materials

**EC₅₀ (Mysidopsis bahia (opossum shrimp))**: 0,0037 µg/l  
Exposure time: 48 h

**EC₅₀ (Gammarus fasciatus (freshwater shrimp))**: 0,0003 µg/l  
Exposure time: 96 h

### Toxicity to Microorganisms

**IC₅₀**: 5,000 mg/l  
Exposure time: 16 h

### Deltamethrin (ISO):

#### Toxicity to Fish

**LC₅₀ (Cyprinodon variegatus (sheepshead minnow))**: 0,00048 mg/l  
Exposure time: 96 h

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

#### Toxicity to Daphnia and Other Aquatic Invertebrates

**EC₅₀ (Mysidopsis bahia (opossum shrimp))**: 0,0037 µg/l  
Exposure time: 48 h

**EC₅₀ (Daphnia magna (Water flea))**: 0,0035 mg/l  
Exposure time: 48 h

**LC₅₀ (Gammarus fasciatus (freshwater shrimp))**: 0,0003 µg/l  
Exposure time: 96 h

#### Toxicity to Algae/Aquatic Plants

**EC₅₀ (Pseudokirchneriella subcapitata (green algae))**: > 9.1 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201  
Remarks: No toxicity at the limit of solubility

#### M-Factor (Acute aquatic toxicity)

: 1,000,000

#### 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 toxicity)

: 1,000,000
12.2 Persistence and degradability

**Components:**

**Alpha-(4-(1,1,3,3-Tetramethylbutyl)phenyl)-omega-hydroxy-poly(oxy-1,2-ethanediyl):**

Biodegradability:
- Biodegradation: > 60%
- Exposure time: 28 d
- Method: OECD Test Guideline 301B

Result: Not readily biodegradable.
- Biodegradation: 36%
- Exposure time: 28 d
- Method: Closed Bottle test

**Deltamethrin (ISO):**

Stability in water:
- Hydrolysis: 0% (30 d)

12.3 Bioaccumulative potential

**Components:**

**Alpha-(4-(1,1,3,3-Tetramethylbutyl)phenyl)-omega-hydroxy-poly(oxy-1,2-ethanediyl):**

Partition coefficient: n-octanol/water:
- log Pow: 2.7

**Deltamethrin (ISO):**

Bioaccumulation:
- Species: Lepomis macrochirus (Bluegill sunfish)
- Bioconcentration factor (BCF): 1.800

**Partition coefficient: n-octanol/water:**
- log Pow: 4.6

12.4 Mobility in soil

**Components:**

**Deltamethrin (ISO):**

Distribution among environmental compartments:
- log Koc: 7.2

12.5 Results of PBT and vPvB assessment

Not relevant

12.6 Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

**Product**
- Dispose of in accordance with local regulations.
- According to the European Waste Catalogue, Waste Codes are not product specific, but application specific.
- Waste codes should be assigned by the user, preferably in discussion with the waste disposal authorities.

**Contaminated packaging**
- Empty containers should be taken to an approved waste han-
SAFETY DATA SHEET

Deltamethrin Liquid Formulation

Version 2.2  Revision Date: 09/13/2019  SDS Number: 1559923-00008  Date of last issue: 24.04.2019
Date of first issue: 25.04.2017

Disposal site for recycling or disposal.
If not otherwise specified: Dispose of as unused product.

SECTION 14: Transport information

14.1 UN number

| ADN | UN 3082 |
| ADR | UN 3082 |
| RID | UN 3082 |
| IMDG | UN 3082 |
| IATA | UN 3082 |

14.2 UN proper shipping name

| ADN  | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Deltamethrin (ISO), Alpha-(4-(1,1,3,3-Tetramethylbutyl)phenyl)-omega-hydroxy(polyoxy-1,2-ethanediyl)) |
| ADR  | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Deltamethrin (ISO), Alpha-(4-(1,1,3,3-Tetramethylbutyl)phenyl)-omega-hydroxy(polyoxy-1,2-ethanediyl)) |
| RID  | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Deltamethrin (ISO), Alpha-(4-(1,1,3,3-Tetramethylbutyl)phenyl)-omega-hydroxy(polyoxy-1,2-ethanediyl)) |
| IMDG | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Deltamethrin (ISO), Alpha-(4-(1,1,3,3-Tetramethylbutyl)phenyl)-omega-hydroxy(polyoxy-1,2-ethanediyl)) |
| IATA | Environmentally hazardous substance, liquid, n.o.s. (Deltamethrin (ISO), Alpha-(4-(1,1,3,3-Tetramethylbutyl)phenyl)-omega-hydroxy(polyoxy-1,2-ethanediyl)) |

14.3 Transport hazard class(es)

| ADN | 9 |
| ADR | 9 |
| RID | 9 |
| IMDG | 9 |
| IATA | 9 |

14.4 Packing group

| ADN | 9 |
**SAFETY DATA SHEET**

**Deltamethrin Liquid Formulation**

**Version**: 2.2  
**Revision Date**: 09/13/2019  
**SDS Number**: 1559923-00008  
**Date of last issue**: 24.04.2019  
**Date of first issue**: 25.04.2017

| Packing group | III |
| Classification Code | M6 |
| Hazard Identification Number | 90 |
| Labels | 9 |

**ADR**

| Packing group | III |
| Classification Code | M6 |
| Hazard Identification Number | 90 |
| Labels | 9 |
| Tunnel restriction code | (-) |

**RID**

| Packing group | III |
| Classification Code | M6 |
| Hazard Identification Number | 90 |
| Labels | 9 |

**IMDG**

| Packing group | III |
| Labels | 9 |
| EmS Code | F-A, S-F |

**IATA (Cargo)**

| Packing instruction (cargo aircraft) | 964 |
| Packing instruction (LQ) | Y964 |
| Packing group | III |
| Labels | Miscellaneous |

**IATA (Passenger)**

| Packing instruction (passenger aircraft) | 964 |
| Packing instruction (LQ) | Y964 |
| Packing group | III |
| Labels | Miscellaneous |

**14.5 Environmental hazards**

**ADN**

Environmentally hazardous: yes

**ADR**

Environmentally hazardous: yes

**RID**

Environmentally hazardous: yes

**IMDG**

Marine pollutant: yes

**IATA (Passenger)**

Environmentally hazardous: yes

**IATA (Cargo)**

Environmentally hazardous: yes

**14.6 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.
Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code
Remarks: Not applicable for product as supplied.

SECTION 15: Regulatory information

15.1 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

15.2 Chemical safety assessment

A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

Other 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 H-statements

H301: Toxic if swallowed.
H302: Harmful if swallowed.
H317: May cause an allergic skin reaction.
H318: Causes serious eye damage.
H319: Causes serious eye irritation.
H331: Toxic if inhaled.
H335: May cause respiratory irritation.
H361fd: Suspected of damaging fertility. Suspected of damaging the unborn child.
H372: Causes damage to organs through prolonged or repeated exposure if inhaled.
H372: Causes damage to organs through prolonged or repeated exposure if swallowed.
H400: Very toxic to aquatic life.
H410: Very toxic to aquatic life with long lasting effects.
H411: Toxic to aquatic life with long lasting effects.

Full text of other abbreviations

- Acute Tox.: Acute toxicity
- Aquatic Acute: Short-term (acute) aquatic hazard
- Aquatic Chronic: Long-term (chronic) aquatic hazard
- Eye Dam.: Serious eye damage
- Eye Irrit.: Eye irritation
- Repr.: Reproductive toxicity
- Skin Sens.: Skin sensitisation
- STOT RE: Specific target organ toxicity - repeated exposure
SAFETY DATA SHEET
Deltamethrin Liquid Formulation

Version: 2.2  Revision Date: 09/13/2019  SDS Number: 1559923-00008  Date of last issue: 24.04.2019
Date of first issue: 25.04.2017

STOT SE: Specific target organ toxicity - single exposure

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road; AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; 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; 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 Concentration 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; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; 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; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of very high concern; TCSI - Taiwan Chemical Substance 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

Further information

Classification of the mixture:

<table>
<thead>
<tr>
<th>Effect Category</th>
<th>Classification procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Tox. 4</td>
<td>H302</td>
</tr>
<tr>
<td>Eye Dam. 1</td>
<td>H318</td>
</tr>
<tr>
<td>Skin Sens. 1</td>
<td>H317</td>
</tr>
<tr>
<td>Repr. 2</td>
<td>H361fd</td>
</tr>
<tr>
<td>STOT RE 2</td>
<td>H373</td>
</tr>
<tr>
<td>Aquatic Acute 1</td>
<td>H400</td>
</tr>
<tr>
<td>Aquatic Chronic 1</td>
<td>H410</td>
</tr>
</tbody>
</table>

Classification procedure:

<table>
<thead>
<tr>
<th>Classification procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculation method</td>
</tr>
</tbody>
</table>

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.

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