SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Lambda-Cyhalothrin / Piperonyl Butoxide
Formulation

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

1.1 Product identifier
Trade name : Lambda-Cyhalothrin / Piperonyl Butoxide 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
Kilsheelan
Clonmel Tipperary, IE
Telephone : 353-51-601000
E-mail address of person responsible for the SDS : EHSDATASTEWARD@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 : H302: Harmful if swallowed.
Skin irritation, Category 2 : H315: Causes skin irritation.
Eye irritation, Category 2 : H319: Causes serious eye irritation.
Specific target organ toxicity - single exposure, Category 2 : H371: May cause damage to organs.
Short-term (acute) aquatic hazard, Category 1 : H400: Very toxic to aquatic life.
Long-term (chronic) aquatic hazard, Category 1 : H410: Very toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)
Hazard pictograms :

Signal word : Warning
Hazard statements : H302 Harmful if swallowed.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H371 May cause damage to organs.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements:

**Prevention:**
- P270 Do not eat, drink or smoke when using this product.
- P273 Avoid release to the environment.
- P280 Wear protective gloves/ eye protection/ face protection.

**Response:**
- P308 + P311 IF exposed or concerned: Call a POISON CENTER/ doctor.
- P337 + P313 If eye irritation persists: Get medical advice/ attention.
- P391 Collect spillage.

Hazardous components which must be listed on the label:
Lambda-cyhalothrin (ISO)

### 2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

### SECTION 3: Composition/information on ingredients

#### 3.2 Mixtures

**Components**

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Index-No.</th>
<th>Registration number</th>
<th>Classification</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether</td>
<td>51-03-6</td>
<td>200-076-7</td>
<td></td>
<td></td>
<td>Aquatic Acute 1; H400; Aquatic Chronic 1; H410</td>
<td>&gt;= 2.5 - &lt; 10</td>
</tr>
</tbody>
</table>

M-Factor (Acute aquatic toxicity): 1
M-Factor (Chronic aquatic toxicity): 1
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 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 explanation of abbreviations see section 16.
For at least 15 minutes. If easy to do, remove contact lens, if worn. Get medical attention.

If swallowed: If swallowed, DO NOT induce vomiting unless directed to do so by medical personnel. 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. Causes skin irritation. Causes serious eye irritation. May cause damage to organs.

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)
 Chlorine compounds
 Fluorine 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 (see section 7) and personal protective equipment recommendations (see section 8).

6.2 Environmental precautions

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.

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/PERSONAL PROTECTION section.

Local/Total ventilation:
- Use only with adequate ventilation.

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.
Do not eat, drink or smoke when using this product. Take care to prevent spills, waste and minimize release to the environment.

Hygiene measures:
- If exposure to chemical is likely during typical use, provide eye flushing systems and safety showers close to the working place. When using do not eat, drink or smoke. 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. 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

7.3 Specific end use(s)

Specific use(s):
- No data available

SECTION 8: Exposure controls/personal protection

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>2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether</td>
<td>51-03-6</td>
<td>TWA</td>
<td>4 mg/m3 (OEB 1)</td>
<td>Internal</td>
</tr>
<tr>
<td>lambda-cyhalothrin (ISO)</td>
<td>91465-08-6</td>
<td>TWA</td>
<td>5 µg/m3 (OEB 4)</td>
<td>Internal</td>
</tr>
</tbody>
</table>

Further information: Skin
- Wipe limit 50 µg/100 cm² Internal

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

<table>
<thead>
<tr>
<th>Substance name</th>
<th>End Use</th>
<th>Exposure routes</th>
<th>Potential health effects</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether</td>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
<td>3,875 mg/m3</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Inhalation</td>
<td>Acute systemic effects</td>
<td>7,75 mg/m3</td>
</tr>
</tbody>
</table>
## Lambda-Cyhalothrin / Piperonyl Butoxide Formulation

<table>
<thead>
<tr>
<th>Substance name</th>
<th>Environmental Compartment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether</td>
<td>Fresh water</td>
<td>0,001 mg/l</td>
</tr>
<tr>
<td></td>
<td>Marine water</td>
<td>0,0001 - 0,000148 mg/l</td>
</tr>
<tr>
<td></td>
<td>Sewage treatment plant</td>
<td>10 mg/l</td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>0,019 mg/kg</td>
</tr>
<tr>
<td></td>
<td>Marine sediment</td>
<td>0,0002 mg/kg</td>
</tr>
<tr>
<td></td>
<td>Soil</td>
<td>0,016 mg/kg</td>
</tr>
<tr>
<td></td>
<td>Oral (Secondary Poisoning)</td>
<td>12,53 mg/kg food</td>
</tr>
</tbody>
</table>

### Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

<table>
<thead>
<tr>
<th>Substance name</th>
<th>Environmental Compartment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers Inhalation</td>
<td>Long-term systemic effects</td>
<td>3,875 mg/m3</td>
</tr>
<tr>
<td>Workers Inhalation</td>
<td>Acute local effects</td>
<td>3,875 mg/m3</td>
</tr>
<tr>
<td>Workers Skin contact</td>
<td>Long-term systemic effects</td>
<td>27,7 mg/kg bw/day</td>
</tr>
<tr>
<td>Workers Skin contact</td>
<td>Acute systemic effects</td>
<td>55,5 mg/kg bw/day</td>
</tr>
<tr>
<td>Workers Skin contact</td>
<td>Long-term local effects</td>
<td>0,44 mg/cm2</td>
</tr>
<tr>
<td>Workers Skin contact</td>
<td>Acute local effects</td>
<td>0,888 mg/cm2</td>
</tr>
<tr>
<td>Consumers Inhalation</td>
<td>Long-term systemic effects</td>
<td>1,94 mg/m3</td>
</tr>
<tr>
<td>Consumers Inhalation</td>
<td>Acute systemic effects</td>
<td>3,875 mg/m3</td>
</tr>
<tr>
<td>Consumers Inhalation</td>
<td>Long-term local effects</td>
<td>1,94 mg/m3</td>
</tr>
<tr>
<td>Consumers Inhalation</td>
<td>Acute local effects</td>
<td>1,94 mg/m3</td>
</tr>
<tr>
<td>Consumers Skin contact</td>
<td>Long-term systemic effects</td>
<td>13,9 mg/kg bw/day</td>
</tr>
<tr>
<td>Consumers Skin contact</td>
<td>Acute systemic effects</td>
<td>27,8 mg/kg bw/day</td>
</tr>
<tr>
<td>Consumers Skin contact</td>
<td>Long-term local effects</td>
<td>0,22 mg/cm2</td>
</tr>
<tr>
<td>Consumers Skin contact</td>
<td>Acute local effects</td>
<td>0,22 mg/cm2</td>
</tr>
<tr>
<td>Consumers Ingestion</td>
<td>Long-term systemic effects</td>
<td>1,14 mg/kg bw/day</td>
</tr>
<tr>
<td>Consumers Ingestion</td>
<td>Acute systemic effects</td>
<td>2,3 mg/kg bw/day</td>
</tr>
</tbody>
</table>

### 8.2 Exposure controls

#### Engineering measures

All engineering controls should be implemented by facility design and operated in accordance with GMP principles to protect products, workers, and the environment. Essentially no open handling permitted. Use closed processing systems or containment technologies. If handled in a laboratory, use a properly designed biosafety cabinet, fume hood, or other containment device if the potential exists for aerosolization. If this potential does not exist, handle over lined trays or benchtops.
Lambda-Cyhalothrin / Piperonyl Butoxide
Formulation

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

Material: Chemical-resistant gloves
Remarks: 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. Equipment should conform to NS EN 14387
Filter type: Combined particulates and organic vapour type (A-P)

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state: liquid
Colour: clear, light yellow
Odour: mild, oily
Odour Threshold: No data available
Melting point/freezing point: No data available
Initial boiling point and boiling range: No data available
Flammability (solid, gas): Not applicable
Flammability (liquids): Not applicable
Upper explosion limit / Upper flammability limit: No data available
Lower explosion limit / Lower flammability limit: No data available
Flash point: 105.5 °C
Auto-ignition temperature: No data available
Decomposition temperature: No data available
Lambda-Cyhalothrin / Piperonyl Butoxide
Formulation

<table>
<thead>
<tr>
<th>Version</th>
<th>Revision Date:</th>
<th>SDS Number:</th>
<th>Date of last issue:</th>
<th>Date of first issue:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.7</td>
<td>27.08.2021</td>
<td>1366777-00015</td>
<td>30.04.2021</td>
<td>01.03.2017</td>
</tr>
</tbody>
</table>

pH : 6.16

Viscosity
Viscosity, kinematic : No data available

Solubility(ies)
Water solubility : No data available

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

Relative density : 0.9326

Density : No data available

Relative vapour density : No data available

Particle characteristics
Particle size : Not applicable

9.2 Other information
Explosives : Not explosive

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

Evaporation rate : No data available

Molecular weight : 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 hazard classes as defined in Regulation (EC) No 1272/2008

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

Acute toxicity
Harmful if swallowed.

Product:

Acute oral toxicity: LD50 (Rat): 2,000 mg/kg
TDLo (Rat): 300 mg/kg
Remarks: No mortality observed at this dose.

Acute inhalation toxicity:
Acute toxicity estimate: > 5 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Calculation method

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

Components:

2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether:

Acute oral toxicity: LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 423

Acute inhalation toxicity: LC50 (Rat): > 5,2 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403

Acute dermal toxicity: LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 402

Lambda-cyhalothrin (ISO):

Acute oral toxicity:
LD50 (Rat): 56 - 79 mg/kg
LD50 (Mouse): 20 mg/kg

Acute inhalation toxicity:
LC50 (Rat): 0,06 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Acute toxicity estimate: 0,06 mg/l
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Lambda-Cyhalothrin / Piperonyl Butoxide
Formulation

Test atmosphere: dust/mist
Method: Calculation method

Acute dermal toxicity: LD50 (Rat): 632 - 696 mg/kg
Acute toxicity (other routes of administration): LD50 (Rat): 250 - 750 mg/kg
Application Route: Intraperitoneal

Skin corrosion/irritation
Causes skin irritation.

Product:
Species: Rabbit
Result: irritating

Components:
2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether:
Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation

lambda-cyhalothrin (ISO):
Species: Rabbit
Result: No skin irritation

Serious eye damage/eye irritation
Causes serious eye irritation.

Product:
Species: Rabbit
Result: Mild eye irritation

Components:
2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether:
Species: Rabbit
Method: OECD Test Guideline 405
Result: No eye irritation

lambda-cyhalothrin (ISO):
Species: Rabbit
Result: Mild eye irritation

Respiratory or skin sensitisation
Skin sensitisation
Not classified based on available information.
**Respiratory sensitisation**
Not classified based on available information.

**Product:**

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Local lymph node assay (LLNA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure routes</td>
<td>Dermal</td>
</tr>
<tr>
<td>Assessment</td>
<td>Does not cause skin sensitisation.</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Magnusson-Kligman-Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure routes</td>
<td>Dermal</td>
</tr>
<tr>
<td>Result</td>
<td>Not a skin sensitizer.</td>
</tr>
</tbody>
</table>

**Components:**

**2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether:**

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Maximisation Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure routes</td>
<td>Skin contact</td>
</tr>
<tr>
<td>Species</td>
<td>Guinea pig</td>
</tr>
<tr>
<td>Method</td>
<td>OECD Test Guideline 406</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
</tbody>
</table>

**lambda-cyhalothrin (ISO):**

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Magnusson-Kligman-Test</th>
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<tbody>
<tr>
<td>Exposure routes</td>
<td>Dermal</td>
</tr>
<tr>
<td>Species</td>
<td>Guinea pig</td>
</tr>
<tr>
<td>Result</td>
<td>Not a skin sensitizer.</td>
</tr>
</tbody>
</table>

**Germ cell mutagenicity**
Not classified based on available information.

**Components:**

**2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether:**

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

**lambda-cyhalothrin (ISO):**

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

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Chromosomal aberration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test system</td>
<td>Human lymphocytes</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Type</th>
<th>unscheduled DNA synthesis assay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test system</td>
<td>rat hepatocytes</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
</tbody>
</table>

| Test Type                  | In vitro mammalian cell gene mutation test     |
Test system: mouse lymphoma cells
Result: negative

Genotoxicity in vivo:
- Test Type: Micronucleus test
- Species: Mouse
- Cell type: Bone marrow
- Application Route: Intraperitoneal
- Result: negative

**Carcinogenicity**
Not classified based on available information.

**Components:**

2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether:
- **Species:** Rat
- **Application Route:** Ingestion
- **Exposure time:** 107 weeks
- **Method:** OECD Test Guideline 451
- **Result:** negative

**lambda-cyhalothrin (ISO):**
- **Species:** Mouse
- **Application Route:** oral (feed)
- **Exposure time:** 2 Years
- **Result:** negative
- **Remarks:** Based on data from similar materials

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

**Components:**

2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether:
- **Effects on fertility:**
  - **Test Type:** Two-generation reproduction toxicity study
  - **Species:** Rat
  - **Application Route:** Ingestion
  - **Result:** negative

- **Effects on foetal development:**
  - **Test Type:** Embryo-foetal development
  - **Species:** Rat
  - **Application Route:** Ingestion
  - **Result:** negative

**lambda-cyhalothrin (ISO):**
Lambda-Cyhalothrin / Piperonyl Butoxide
Formulation

Version: 3.7  Revision Date: 27.08.2021  SDS Number: 1366777-00015  Date of last issue: 30.04.2021
Date of first issue: 01.03.2017

Effects on fertility:
- Test Type: Three-generation study
  - Species: Rat
  - Application Route: oral (feed)
  - General Toxicity - Parent: NOAEL: 2 mg/kg body weight
  - General Toxicity F1: LOAEL: 6.7 mg/kg body weight
  - Symptoms: Reduced offspring weight gain
  - Result: No effects on fertility
  - Remarks: Based on data from similar materials

Effects on foetal development:
- Test Type: Development
  - Species: Rat
  - Application Route: Oral
  - General Toxicity Maternal: NOAEL: 10 mg/kg body weight
  - Developmental Toxicity: LOAEL: 15 mg/kg body weight
  - Result: No effects on foetal development, Reduced maternal body weight gain, Reduced foetal weight
  - Remarks: Based on data from similar materials

  Test Type: Development
  - Species: Rabbit
  - Application Route: Oral
  - General Toxicity Maternal: NOAEL: 10 mg/kg body weight
  - Developmental Toxicity: NOAEL: 30 mg/kg body weight
  - Result: No effects on foetal development, Reduced maternal body weight gain, Reduced foetal weight
  - Remarks: Based on data from similar materials

STOT - single exposure
May cause damage to organs.

Components:

lambda-cyhalothrin (ISO):
- Target Organs: Nervous system
- Assessment: Causes damage to organs.

STOT - repeated exposure
Not classified based on available information.

Repeated dose toxicity

Components:

2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether:
- Species: Rat
  - NOAEL: 1.323 mg/kg
- Application Route: Ingestion
- Exposure time: 7 Weeks

lambda-cyhalothrin (ISO):
- Species: Dog
  - NOAEL: 2.5 mg/kg
Lambda-Cyhalothrin / Piperonyl Butoxide
Formulation

LOAEL: 12.5 mg/kg
Application Route: oral (feed)
Exposure time: 90 d
Symptoms: reduced body weight gain, reduced food consumption

Species: Rat
NOAEL: 10 mg/kg
LOAEL: 50 mg/kg
Application Route: Dermal
Exposure time: 21 d
Target Organs: Nervous system

Species: Rat
NOAEL: 0.08 mg/kg
LOAEL: 0.9 mg/kg
Application Route: Inhalation
Exposure time: 21 d
Target Organs: Nervous system

Species: Dog
NOAEL: 0.1 mg/kg
LOAEL: 0.5 mg/kg
Application Route: Oral
Exposure time: 1 yr
Target Organs: Nervous system
Symptoms: Gastrointestinal disturbance, Vomiting, Convulsions, ataxia, Liver effects

Aspiration toxicity
Not classified based on available information.

11.2 Information on other hazards

Endocrine disrupting properties

Product:
Assessment: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Experience with human exposure

Components:

Lambda-cyhalothrin (ISO):

Inhalation: Symptoms: Cough, Local irritation, sneezing
Skin contact: Symptoms: Skin irritation, tingling, superficial burning sensation, Local irritation
Remarks: Can be absorbed through skin.

Eye contact: Symptoms: Eye irritation
Ingestion:
Symptoms: Gastrointestinal disturbance

SECTION 12: Ecological information

12.1 Toxicity

**Components:**

**2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether:**
- **Toxicity to fish:** LC50 (Cyprinodon variegatus (sheepshead minnow)): 3.94 mg/l
  - Exposure time: 96 h
  - Method: OECD Test Guideline 203

**Toxicity to daphnia and other aquatic invertebrates:**
- EC50 (Daphnia magna (Water flea)): 0.51 mg/l
  - Exposure time: 48 h
  - Method: OECD Test Guideline 202

**Toxicity to algae/aquatic plants:**
- ErC50 (Pseudokirchneriella subcapitata (green algae)): 3.89 mg/l
  - Exposure time: 72 h
  - Method: OECD Test Guideline 201
  - NOEC (Pseudokirchneriella subcapitata (green algae)): 0.824 mg/l
  - Exposure time: 72 h
  - Method: OECD Test Guideline 201

**M-Factor (Acute aquatic toxicity):**
- 1

**Toxicity to microorganisms:**
- EC50: > 1.000 mg/l
  - Exposure time: 3 h
  - Method: OECD Test Guideline 209

**Toxicity to fish (Chronic toxicity):**
- NOEC: 0.18 mg/l
  - Exposure time: 35 d
  - Species: Pimephales promelas (fathead minnow)

**Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity):**
- NOEC: 0.03 mg/l
  - Exposure time: 21 d
  - Species: Daphnia magna (Water flea)

**M-Factor (Chronic aquatic toxicity):**
- 1

**lambda-cyhalothrin (ISO):**
- **Toxicity to fish:**
  - LC50 (Oncorhynchus mykiss (rainbow trout)): 0.00019 mg/l
  - Exposure time: 96 h
  - Method: OECD Test Guideline 203
  - Remarks: Based on data from similar materials
  - LC50 (Lepomis macrochirus (Bluegill sunfish)): 0.00021 mg/l
### Lambda-Cyhalothrin / Piperonyl Butoxide Formulation

**SAFETY DATA SHEET**

**according to Regulation (EC) No. 1907/2006**

<table>
<thead>
<tr>
<th>Version</th>
<th>Revision Date:</th>
<th>SDS Number:</th>
<th>Date of last issue:</th>
<th>Date of first issue:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.7</td>
<td>27.08.2021</td>
<td>1366777-00015</td>
<td>30.04.2021</td>
<td>01.03.2017</td>
</tr>
</tbody>
</table>

Exposure time: 96 h  
Method: OECD Test Guideline 203  
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates  
EC50 (Daphnia magna (Water flea)): 0,00004 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202  
Remarks: Based on data from similar materials

**M-Factor (Acute aquatic toxicity):** 10.000

Toxicity to fish (Chronic toxicity)  
NOEC: 0,000062 mg/l  
Exposure time: 32 d  
Species: Pimephales promelas (fathead minnow)  
Method: OECD Test Guideline 210  
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)  
NOEC: 0,0035 µg/l  
Exposure time: 21 d  
Species: Daphnia magna (Water flea)  
Method: OECD Test Guideline 211  
Remarks: Based on data from similar materials

**M-Factor (Chronic aquatic toxicity):** 10.000

### 12.2 Persistence and degradability

**Components:**

**2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether:**

Biodegradability  
Result: Not readily biodegradable.  
Biodegradation: 0 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301D

### 12.3 Bioaccumulative potential

**Components:**

**2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether:**

Partition coefficient: n-octanol/water  
log Pow: 5

**lambda-cyhalothrin (ISO):**

Bioaccumulation  
Bioconcentration factor (BCF): 2.240  
Method: OECD Test Guideline 305

Partition coefficient: n-octanol/water  
log Pow: 7,0 (20 °C)
12.4 Mobility in soil

Components:

**lambda-cyhalothrin (ISO):**

Distribution among environmental compartments

log Koc: 5.5

12.5 Results of PBT and vPvB assessment

**Product:**

Assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Endocrine disrupting properties

**Product:**

Assessment

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

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

SECTION 14: Transport information

14.1 UN number or ID 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. (2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether, lambda-cyhalothrin (ISO))

ADR: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether, lambda-cyhalothrin (ISO))

RID: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether, lambda-cyhalothrin (ISO))

IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether, lambda-cyhalothrin (ISO))

IATA: Environmentally hazardous substance, liquid, n.o.s. (2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether, lambda-cyhalothrin (ISO))

14.3 Transport hazard class(es)

ADN: 9
ADR: 9
RID: 9
IMDG: 9
IATA: 9

14.4 Packing group

ADN
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
Lambda-Cyhalothrin / Piperonyl Butoxide
Formulation

Version: 3.7  Revision Date: 27.08.2021  SDS Number: 1366777-00015  Date of last issue: 30.04.2021
Date of first issue: 01.03.2017

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

14.7 Maritime transport in bulk according to IMO instruments

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

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII): Conditions of restriction for the following entries should be considered: Number on list 3
Lambda-Cyhalothrin / Piperonyl Butoxide
Formulation

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59).
REACH - List of substances subject to authorisation (Annex XIV)
Regulation (EC) No 1005/2009 on substances that deplete the ozone layer
Regulation (EU) 2019/1021 on persistent organic pollutants (recast)
Regulation (EC) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals

Other regulations:
Take note of Directive 92/85/EEC regarding maternity protection or stricter national regulations, where applicable.
Young people under the age of 18 are not allowed to use or be exposed to the product professionally. Young people above the age of 15 are, however, except from this rule if the product is a necessary part of their education.

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.
H311: Toxic in contact with skin.
H319: Causes serious eye irritation.
H330: Fatal if inhaled.
H370: Causes damage to organs.
H400: Very toxic to aquatic life.
H410: Very toxic to aquatic life with long lasting effects.

Full text of other abbreviations
Acute Tox.: Acute toxicity
Aquatic Acute: Short-term (acute) aquatic hazard
# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

## Lambda-Cyhalothrin / Piperonyl Butoxide

**Formulation**

<table>
<thead>
<tr>
<th>Version</th>
<th>Revision Date:</th>
<th>SDS Number:</th>
<th>Date of last issue:</th>
<th>Date of first issue:</th>
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<tbody>
<tr>
<td>3.7</td>
<td>27.08.2021</td>
<td>1366777-00015</td>
<td>30.04.2021</td>
<td>01.03.2017</td>
</tr>
</tbody>
</table>

- **Aquatic Chronic**: Long-term (chronic) aquatic hazard
- **Eye Irrit.**: Eye irritation
- **STOT SE**: Specific target organ toxicity - single exposure

<table>
<thead>
<tr>
<th>Property</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ADN</strong></td>
<td>Classification procedure:</td>
</tr>
<tr>
<td><strong>Eye Irrit.</strong></td>
<td>Acute Tox. 4 H302</td>
</tr>
<tr>
<td><strong>STOT SE</strong></td>
<td>Skin Irrit. 2 H315</td>
</tr>
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<td><strong>Eye Irrit.</strong></td>
<td>Eye Irrit. 2 H319</td>
</tr>
<tr>
<td><strong>STOT SE 2</strong></td>
<td>STOT SE 2 H371</td>
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<tr>
<td><strong>Aquatic Acute 1</strong></td>
<td>Aquatic Acute 1 H400</td>
</tr>
<tr>
<td><strong>Aquatic Chronic 1</strong></td>
<td>Aquatic Chronic 1 H410</td>
</tr>
</tbody>
</table>

**Further information**

Sources of key data used to compile the Safety Data Sheet:

**Classification of the mixture:**

Classification procedure:
- Acute Tox. 4 Based on product data or assessment
- Skin Irrit. 2 Based on product data or assessment
- Eye Irrit. 2 Based on product data or assessment
- STOT SE 2 Calculation method
- Aquatic Acute 1 Calculation method
- Aquatic Chronic 1 Calculation method
Lambda-Cyhalothrin / Piperonyl Butoxide Formulation

Version 3.7  Revision Date: 27.08.2021  SDS Number: 1366777-00015  Date of last issue: 30.04.2021  Date of first issue: 01.03.2017

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NO / EN