Milbemycin Oxime / Lufenuron / Praziquantel Formulation

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Milbemycin Oxime / Lufenuron / Praziquantel Formulation

Manufacturer or supplier's details

Company: MSD
Address: No. 485 Jing Tai Road
Pu Tuo District - Shanghai - China 200331
Telephone: +1-908-740-4000
Emergency telephone number: 86-571-87268110
E-mail address: EHSDATASTEWARD@msd.com

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

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance: solid
Colour: brown
Odour: characteristic

May cause an allergic skin reaction. May damage the unborn child. May cause damage to organs through prolonged or repeated exposure. Very toxic to aquatic life with long lasting effects.

GHS Classification
Skin sensitisation: Category 1
Reproductive toxicity: Category 1B
Specific target organ toxicity - repeated exposure: Category 2
Short-term (acute) aquatic hazard: Category 1
Long-term (chronic) aquatic hazard: Category 1

GHS label elements
Hazard pictograms:
SAFETY DATA SHEET
according to GB/T 16483 and GB/T 17519

Milbemycin Oxime / Lufenuron / Praziquantel
Formulation

Version: 2.1
Revision Date: 2021/08/27
SDS Number: 7567908-00004
Date of last issue: 2021/03/11
Date of first issue: 2020/11/20

Signal word: Danger

Hazard statements:
H317 May cause an allergic skin reaction.
H360D May damage 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.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P272 Contaminated work clothing should not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:
P302 + P352 IF ON SKIN: Wash with plenty of water.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P362 + P364 Take off contaminated clothing and wash it before reuse.
P391 Collect spillage.

Storage:
P405 Store locked up.

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

Physical and chemical hazards
Not classified based on available information.

Health hazards
May cause an allergic skin reaction. May damage the unborn child. May cause damage to organs through prolonged or repeated exposure.

Environmental hazards
Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects.

Other hazards which do not result in classification
Dust contact with the eyes can lead to mechanical irritation.
Contact with dust can cause mechanical irritation or drying of the skin.
May form explosive dust-air mixture during processing, handling or other means.

3. COMPOSITION/INFORMATION ON INGREDIENTS
Milbemycin Oxime / Lufenuron / Praziquantel
Formulation

Substance / Mixture : Mixture

Components

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starch</td>
<td>9005-25-8</td>
<td>&gt;= 30 -&lt; 50</td>
</tr>
<tr>
<td>lufenuron (ISO)</td>
<td>103055-07-8</td>
<td>&gt;= 2.5 -&lt; 10</td>
</tr>
<tr>
<td>Sucrose</td>
<td>57-50-1</td>
<td>&gt;= 1 -&lt; 10</td>
</tr>
<tr>
<td>Savorysel Bacon Flavor</td>
<td>Not Assigned</td>
<td>&gt;= 1 -&lt; 10</td>
</tr>
<tr>
<td>praziquantel</td>
<td>55268-74-1</td>
<td>&gt;= 2.5 -&lt; 10</td>
</tr>
<tr>
<td>Sodium chloride</td>
<td>7647-14-5</td>
<td>&gt;= 1 -&lt; 10</td>
</tr>
<tr>
<td>Milbemycin Oxime</td>
<td>129496-10-2</td>
<td>&gt;= 0.25 -&lt; 1</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 : If in eyes, rinse well with water. 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. May damage the unborn child. May cause damage to organs through prolonged or repeated exposure. Contact with dust can cause mechanical irritation or drying of the skin. Dust contact with the eyes can lead to mechanical irritation.

Protection of first-aiders : First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists (see section 8).

Notes to physician : Treat symptomatically and supportively.

5. FIREFIGHTING MEASURES

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

Unsuitable extinguishing media : None known.
**SAFETY DATA SHEET**
according to GB/T 16483 and GB/T 17519

**Milbemycin Oxime / Lufenuron / Praziquantel**
**Formulation**

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</tr>
</tbody>
</table>

### Specific hazards during firefighting
- **Hazardous combustion products**: Exposure to combustion products may be a hazard to health.
  - Carbon oxides
  - Nitrogen oxides (NOx)
  - Metal oxides
  - Chlorine compounds

### 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.
- 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
- Sweep up or vacuum up spillage and collect in suitable container for disposal.
- Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air).
- Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration.
- 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
- Static electricity may accumulate and ignite suspended dust causing an explosion.
- Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres.

##### 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 dust, fume, gas, mist, vapours or spray. Do not swallow. Avoid contact with 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. Keep container tightly closed. Minimize dust generation and accumulation. Keep container closed when not in use. Keep away from heat and sources of ignition. Take precautionary measures against static discharges. Do not eat, drink or smoke when using this product. Take care to prevent spills, waste and minimize release to the environment.

Avoidance of contact: Oxidizing agents

Storage

Conditions for safe storage: Keep in properly labelled containers. Store locked up. Keep tightly closed. 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

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starch</td>
<td>9005-25-8</td>
<td>TWA</td>
<td>10 mg/m^3</td>
<td>ACGIH</td>
</tr>
<tr>
<td>lufenuron (ISO)</td>
<td>103055-07-8</td>
<td>TWA</td>
<td>OEB 3 (&gt;= 10 &lt; 100 µg/m^3)</td>
<td>Internal</td>
</tr>
<tr>
<td>Sucrose</td>
<td>57-50-1</td>
<td>TWA</td>
<td>10 mg/m^3</td>
<td>ACGIH</td>
</tr>
<tr>
<td>Savorysel Bacon Flavor</td>
<td>Not Assigned</td>
<td>Wipe limit</td>
<td>OEB 2 (&gt;= 100 &lt; 1000 µg/m^3)</td>
<td>Internal</td>
</tr>
<tr>
<td>praziquantel</td>
<td>55268-74-1</td>
<td>TWA</td>
<td>0.5 mg/m^3 (OEB 2)</td>
<td>Internal</td>
</tr>
<tr>
<td>Milbemycin Oxime</td>
<td>129496-10-2</td>
<td>TWA</td>
<td>0.1 mg/m^3 (OEB2)</td>
<td>Internal</td>
</tr>
</tbody>
</table>

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. 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 con-
Minimize open handling.

**Personal protective equipment**

**Respiratory protection**: If adequate local exhaust ventilation is not available or exposure assessment demonstrates exposures outside the recommened guidelines, use respiratory protection.

**Filter type**: Combined particulates and organic vapour type

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

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

**Hand protection**

**Material**: Chemical-resistant gloves

**Remarks**: Consider double gloving.

**Hygiene measures**: If exposure to chemical is likely during typical use, provide eye flushing systems and safety showers close to the working place.

When using do not eat, drink or smoke.

Contaminated work clothing should not be allowed out of the workplace.

Wash contaminated clothing before re-use.

The effective operation of a facility should include review of engineering controls, proper personal protective equipment, appropriate degowning and decontamination procedures, industrial hygiene monitoring, medical surveillance and the use of administrative controls.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance**: solid

**Colour**: brown

**Odour**: characteristic

**Odour Threshold**: No data available

**pH**: No data available

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

**Initial boiling point and boiling**: No data available
### 10. STABILITY AND REACTIVITY

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reactivity</td>
<td>Not classified as a reactivity hazard.</td>
</tr>
<tr>
<td>Chemical stability</td>
<td>Stable under normal conditions.</td>
</tr>
<tr>
<td>Possibility of hazardous reac-</td>
<td>May form explosive dust-air mixture during processing, handling or ot-</td>
</tr>
<tr>
<td>tions</td>
<td>her means.</td>
</tr>
</tbody>
</table>

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Flash point: Not applicable
Evaporation rate: Not applicable
Flammability (solid, gas): May form explosive dust-air mixture during processing, handling or other means.
Flammability (liquids): Not applicable
Upper explosion limit / Upper flammability limit: No data available
Lower explosion limit / Lower flammability limit: No data available
Vapour pressure: Not applicable
Relative vapour density: Not applicable
Relative density: No data available
Density: No data available
Solubility(ies)
Water solubility: soluble
Partition coefficient: n-octanol/water: Not applicable
Auto-ignition temperature: No data available
Decomposition temperature: No data available
Viscosity
Viscosity, kinematic: Not applicable
Explosive properties: Not explosive
Oxidizing properties: The substance or mixture is not classified as oxidizing.
Molecular weight: No data available
Particle size: No data available
Can react with strong oxidizing agents.

Conditions to avoid: Heat, flames and sparks.
Avoid dust formation.

Incompatible materials: Oxidizing agents

Hazardous decomposition products: No hazardous decomposition products are known.

11. TOXICOLOGICAL INFORMATION

Exposure routes: Inhalation
Skin contact
Ingestion
Eye contact

Acute toxicity
Not classified based on available information.

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

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

Components:

Starch:
Acute oral toxicity: LD50 (Rat): > 5,000 mg/kg
Acute dermal toxicity: LD50 (Rabbit): > 2,000 mg/kg

Lufenuron (ISO):
Acute oral toxicity: LD50 (Rat): > 2,000 mg/kg
LD50 (Mouse): > 2,000 mg/kg
Acute inhalation toxicity: LC50 (Rat): 2,350 mg/m3
Test atmosphere: dust/mist
Acute dermal toxicity: LD50 (Rabbit): > 2,000 mg/kg

Sucrose:
Acute oral toxicity: LD50 (Rat): 29,700 mg/kg

Savorysel Bacon Flavor:
Acute oral toxicity: Remarks: Based on available data, the classification criteria are not met.
Acute inhalation toxicity: Remarks: Not classified due to lack of data.
Acute dermal toxicity: Remarks: Based on available data, the classification criteria are not met.

**praziquantel:**
Acute oral toxicity: LD50 (Rat): 2,480 mg/kg  
LD50 (Mouse): 2,454 mg/kg  
LD50 (Dog): > 200 mg/kg  
LD50 (Rabbit): 1,050 mg/kg

**Sodium chloride:**
Acute oral toxicity: LD50 (Rat): 3,550 mg/kg

Acute inhalation toxicity: LC50 (Rat): > 42 mg/l  
Exposure time: 1 h  
Test atmosphere: dust/mist

Acute dermal toxicity: LD50 (Rabbit): > 5,000 mg/kg

**Milbemycin Oxime:**
Acute oral toxicity: LD50 (Rat): 532 - 863 mg/kg  
LD50 (Mouse): 722 - 946 mg/kg

Acute inhalation toxicity: LC50 (Rat): 1,200 mg/m3  
Exposure time: 4 h  
Test atmosphere: dust/mist

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

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

**Components:**

**Iufenuron (ISO):**
Species: Rabbit  
Method: Draize Test  
Result: No skin irritation

**Savorysel Bacon Flavor:**
Remarks: Based on data from similar materials  
May irritate skin.

**praziquantel:**
Species: Rabbit
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Method: Draize Test
Remarks: slight irritation

Sodium chloride:
Species: Rabbit
Result: No skin irritation

Milbemycin Oxime:
Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation

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

Components:
Starch:
Species: Rabbit
Result: No eye irritation

lufenuron (ISO):
Species: Rabbit
Result: No eye irritation
Method: Draize Test

Savorysel Bacon Flavor:
Remarks: Based on data from similar materials
May irritate eyes.

praziquantel:
Species: Rabbit
Result: Mild eye irritation
Method: Draize Test

Sodium chloride:
Species: Rabbit
Result: No eye irritation

Milbemycin Oxime:
Species: Rabbit
Result: No eye irritation
Respiratory or skin sensitisation

**Skin sensitisation**
May cause an allergic skin reaction.

**Respiratory sensitisation**
Not classified based on available information.

**Components:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Test Type</th>
<th>Exposure routes</th>
<th>Species</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Starch:</strong></td>
<td>Maximisation Test</td>
<td>Skin contact</td>
<td>Guinea pig</td>
<td>negative</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Iufenuron (ISO):</strong></td>
<td>Maximisation Test</td>
<td>Guinea pig</td>
<td>May cause sensitisation by skin contact.</td>
<td>Sensitiser</td>
</tr>
<tr>
<td><strong>Savorysel Bacon Flavor:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>praziquantel:</strong></td>
<td>Maximisation Test</td>
<td>Dermal</td>
<td>Guinea pig</td>
<td>Not a skin sensitizer.</td>
</tr>
<tr>
<td></td>
<td>Local lymph node assay (LLNA)</td>
<td>Skin contact</td>
<td>Mouse</td>
<td>negative</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sodium chloride:</strong></td>
<td>Maximisation Test</td>
<td>Skin contact</td>
<td>Guinea pig</td>
<td></td>
</tr>
<tr>
<td><strong>Milbemycin Oxime:</strong></td>
<td>Maximisation Test</td>
<td>Skin contact</td>
<td>Guinea pig</td>
<td></td>
</tr>
</tbody>
</table>

Genotoxicity in vitro
Test Type: Bacterial reverse mutation assay (AMES)
lufenuron (ISO):
Genotoxicity in vitro: Test Type: Ames test
Result: negative
Test Type: Mouse Lymphoma
Test system: Chinese hamster cells
Result: negative
Test Type: Cytogenetic assay
Test system: Chinese hamster ovary cells
Result: negative
Test Type: DNA damage and repair, unscheduled DNA synthesis in mammalian cells (in vitro)
Test system: rat hepatocytes
Result: negative
Test system: Human lymphocytes
Result: negative
Genotoxicity in vivo: Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Mouse
Result: negative
Test Type: Unscheduled DNA synthesis test (UDS) in testicular cells
Species: Rat
Result: negative
Germ cell mutagenicity - Assessment: Weight of evidence does not support classification as a germ cell mutagen.

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

Savorysel Bacon Flavor:
Genotoxicity in vitro: Remarks: Not classified due to lack of data.
Genotoxicity in vivo: Remarks: Not classified due to lack of data.

praziquantel:
Genotoxicity in vitro: Test Type: Bacterial reverse mutation assay (AMES)
Result: negative
Test Type: Chromosomal aberration
Test system: Chinese hamster cells
Genotoxicity in vivo:

**Sodium chloride:**
- Genotoxicity in vitro: Test Type: In vitro mammalian cell gene mutation test
  - Result: positive
  - Test Type: Bacterial reverse mutation assay (AMES)
    - Result: negative
  - Test Type: Saccharomyces cerevisiae, gene mutation assay (in vitro)
    - Result: positive
  - Test Type: DNA damage and repair, unscheduled DNA synthesis in mammalian cells (in vitro)
    - Result: positive
  - Test Type: Chromosome aberration test in vitro
    - Result: positive
  - Test Type: Chromosome aberration test in vitro
    - Result: negative

Genotoxicity in vivo:
- Test Type: In vivo micronucleus test
  - Species: Mouse
  - Application Route: Intraperitoneal injection
  - Result: negative
  - Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)
    - Species: Rat
    - Application Route: Intraperitoneal injection
    - Result: positive

Germ cell mutagenicity - Assessment:
- Weight of evidence does not support classification as a germ cell mutagen.

**Milbemycin Oxime:**
- Genotoxicity in vitro: Test Type: Bacterial reverse mutation assay (AMES)
  - Result: negative
  - Test Type: Chromosome aberration test in vitro
    - Result: negative
- Genotoxicity in vivo: Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
  - Species: Mouse
Carcinogenicity
Not classified based on available information.

Components:

Lufenuron (ISO):
Species: Rat
Application Route: Ingestion
Exposure time: 18 month(s)
Result: negative

Carcinogenicity - Assessment: Weight of evidence does not support classification as a carcinogen

Praziquantel:
Species: Hamster
Application Route: Oral
Exposure time: 80 weeks
NOAEL: 100 mg/kg body weight
Result: negative
Remarks: No significant adverse effects were reported

Species: Rat
Application Route: Oral
Exposure time: 104 weeks
NOAEL: 250 mg/kg body weight
Result: negative
Remarks: No significant adverse effects were reported

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

Reproductive toxicity
May damage the unborn child.

Components:

Lufenuron (ISO):
Effects on fertility: Test Type: Two-generation reproduction toxicity study
Species: Rat
Application Route: Oral
General Toxicity - Parent: NOAEL: 8.3 mg/kg wet weight
Early Embryonic Development: NOAEL: 20.9 mg/kg body weight
Result: Animal testing did not show any effects on fertility.
## Effects on foetal development

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Species</th>
<th>Application Route</th>
<th>General Toxicity Maternal</th>
<th>Developmental Toxicity</th>
<th>Symptoms</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development</td>
<td>Rat</td>
<td>Oral</td>
<td>NOAEL: 500 mg/kg body weight</td>
<td>NOAEL: 1,000 mg/kg body weight</td>
<td>No adverse effects</td>
<td>No significant adverse effects were reported</td>
</tr>
<tr>
<td>Fertility/early embryonic development</td>
<td>Rat</td>
<td>Ingestion</td>
<td>NOAEL: 20.9 mg/kg body weight</td>
<td>Embryo-foetal toxicity: 8.3 mg/kg body weight</td>
<td>Result: foetal abnormalities</td>
<td></td>
</tr>
</tbody>
</table>

## Reproductive toxicity - Assessment

- Clear evidence of adverse effects on development, based on animal experiments.

## Savorysel Bacon Flavor:

- Remarks: No data available

## praziquantel:

- Remarks: No data available

### Effects on fertility

- Test Type: Fertility
  - Species: Rat
  - Remarks: No significant adverse effects were reported

- Test Type: Fertility
  - Species: Mouse
  - Remarks: No significant adverse effects were reported

### Effects on foetal development

- Test Type: Development
  - Species: Rat
  - Remarks: No significant adverse effects were reported

- Test Type: Development
  - Species: Mouse
  - Remarks: No significant adverse effects were reported

## Milbemycin Oxime:

### Effects on fertility

- Test Type: One-generation reproduction toxicity study
  - Species: Dog
  - Application Route: Ingestion
  - Result: negative

### Effects on foetal development

- Test Type: Embryo-foetal development
  - Species: Rat
  - Application Route: Ingestion
  - Result: negative
**STOT - single exposure**
Not classified based on available information.

**Components:**

**lufenuron (ISO):**
Assessment: The substance or mixture is not classified as specific target organ toxicant, single exposure.

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

**Components:**

**lufenuron (ISO):**
Exposure routes: Oral
Target Organs: Central nervous system, Lungs, Liver, Stomach
Assessment: Shown to produce significant health effects in animals at concentrations of 10 mg/kg bw or less.

**Milbemycin Oxime:**
Exposure routes: Ingestion
Target Organs: Central nervous system
Assessment: Shown to produce significant health effects in animals at concentrations of 10 mg/kg bw or less.

**Repeated dose toxicity**

**Components:**

**Starch:**
Species: Rat
NOAEL: \( \geq 2,000 \) mg/kg
Application Route: Skin contact
Exposure time: 28 Days
Method: OECD Test Guideline 410

**lufenuron (ISO):**
Species: Rat
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</tbody>
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<table>
<thead>
<tr>
<th>NOAEL</th>
<th>Application Route</th>
<th>Exposure time</th>
<th>Target Organs</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.34 mg/kg</td>
<td>oral (feed)</td>
<td>4 Months</td>
<td>Central nervous system, digestive system</td>
<td>central nervous system effects</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Species</th>
<th>NOAEL</th>
<th>Application Route</th>
<th>Exposure time</th>
<th>Target Organs</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rat</td>
<td>1.93 mg/kg</td>
<td>oral (feed)</td>
<td>2 yr</td>
<td>Central nervous system effects, Convulsions</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Species</th>
<th>NOAEL</th>
<th>Application Route</th>
<th>Exposure time</th>
<th>Target Organs</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mouse</td>
<td>2.12 mg/kg</td>
<td>oral (feed)</td>
<td>18 Months</td>
<td>Central nervous system, Liver, Prostate</td>
<td>central nervous system effects, Convulsions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Species</th>
<th>NOAEL</th>
<th>Application Route</th>
<th>Exposure time</th>
<th>Target Organs</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dog</td>
<td>7.02 mg/kg</td>
<td>oral (feed)</td>
<td>1 yr</td>
<td>Central nervous system, Liver, Lungs</td>
<td>Convulsions, Fatality, Irregularities</td>
</tr>
</tbody>
</table>

### Remarks
- Savorysel Bacon Flavor: Not classified due to lack of data.
- praziquantel:
  - Species: Rat
  - NOAEL: 1,000 mg/kg
  - Application Route: Oral
  - Remarks: No significant adverse effects were reported
  - Species: Dog
  - NOAEL: 60 mg/kg
  - LOAEL: 180 mg/kg
  - Application Route: Oral
  - Target Organs: Gastrointestinal tract
  - Remarks: No significant adverse effects were reported

### Sodium chloride:
- Species: Rat
- LOAEL: 2,533 mg/kg
- Application Route: Ingestion
- Exposure time: 2 yr

### Milbemycin Oxime:
- Species: Rat
Milbemycin Oxime / Lufenuron / Praziquantel Formulation

Version: 2.1  Revision Date: 2021/08/27  SDS Number: 7567908-00004  Date of last issue: 2021/03/11  Date of first issue: 2020/11/20

- **NOAEL**: 3 mg/kg
- **LOAEL**: 15 mg/kg
- **Application Route**: Ingestion
- **Exposure time**: 90 Days
- **Symptoms**: Liver disorders, Blood disorders
- **Species**: Dog
- **LOAEL**: 8.6 mg/kg
- **Application Route**: Ingestion
- **Exposure time**: 3 Days
- **Symptoms**: Tremors

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

**Experience with human exposure**

**Components:**

**lufenuron (ISO):**
General Information: Remarks: May be harmful if swallowed. May cause neurotoxic effects.

**Savorysel Bacon Flavor:**
General Information: Remarks: Based on data from similar materials May irritate skin. May irritate eyes.

**praziquantel:**
Inhalation: Symptoms: Headache, Tiredness, Dizziness, Gastrointestinal discomfort, decrease body temperature, Allergic reactions

**Milbemycin Oxime:**
Ingestion: Symptoms: Salivation, Convulsions, Diarrhoea, Weakness, Vomiting, Tremors, Coma Remarks: Based on Animal Evidence

**Further information**

**Components:**

**Savorysel Bacon Flavor:**
Remarks: No toxicology information is available.

**12. ECOLOGICAL INFORMATION**

**Ecotoxicity**

**Components:**

**lufenuron (ISO):**
Toxicity to fish: LC50 (Oncorhynchus mykiss (rainbow trout)): > 73,100 µg/l Exposure time: 96 h
### Milbemycin Oxime / Lufenuron / Praziquantel Formulation

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Method:</strong></td>
<td>OECD Test Guideline 203</td>
</tr>
<tr>
<td><strong>LC50 (Oncorhynchus mykiss (rainbow trout)):</strong></td>
<td>$&gt; 29,000 , \mu g/l$</td>
</tr>
<tr>
<td><strong>Method:</strong></td>
<td>OECD Test Guideline 203</td>
</tr>
<tr>
<td><strong>LC50 (Oncorhynchus mykiss (rainbow trout)):</strong></td>
<td>370 $\mu g/l$</td>
</tr>
<tr>
<td><strong>Method:</strong></td>
<td>OECD Test Guideline 203</td>
</tr>
<tr>
<td><strong>Toxicity to daphnia and other aquatic invertebrates:</strong></td>
<td>EC50 (Americamysis): 0.042 $\mu g/l$</td>
</tr>
<tr>
<td><strong>Method:</strong></td>
<td>US-EPA OPPTS 850.1035</td>
</tr>
<tr>
<td><strong>Toxicity to algae/aquatic plants:</strong></td>
<td>EC50 (Raphidocelis subcapitata (freshwater green alga)): 209 $\mu g/l$</td>
</tr>
<tr>
<td><strong>Method:</strong></td>
<td>OECD Test Guideline 201</td>
</tr>
<tr>
<td></td>
<td>EC50 (Scenedesmus subspicatus): 17 $\mu g/l$</td>
</tr>
<tr>
<td></td>
<td>Method: OECD Test Guideline 201</td>
</tr>
<tr>
<td><strong>M-Factor (Acute aquatic toxicity):</strong></td>
<td>10,000</td>
</tr>
<tr>
<td><strong>Toxicity to fish (Chronic toxicity):</strong></td>
<td>NOEC (Oncorhynchus mykiss (rainbow trout)): 80 $\mu g/l$</td>
</tr>
<tr>
<td></td>
<td>Method: OECD Test Guideline 210</td>
</tr>
<tr>
<td></td>
<td>NOEC (Oncorhynchus mykiss (rainbow trout)): 20 $\mu g/l$</td>
</tr>
<tr>
<td></td>
<td>Method: OECD Test Guideline 229</td>
</tr>
<tr>
<td><strong>Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity):</strong></td>
<td>NOEC (Daphnia magna (Water flea)): 8.38 $\mu g/l$</td>
</tr>
<tr>
<td></td>
<td>Method: OECD Test Guideline 211</td>
</tr>
<tr>
<td></td>
<td>NOEC (Daphnia magna (Water flea)): 90 $\mu g/l$</td>
</tr>
<tr>
<td></td>
<td>Method: OECD Test Guideline 211</td>
</tr>
<tr>
<td></td>
<td>NOEC (Chironomus riparius (harlequin fly)): 2 $\mu g/l$</td>
</tr>
<tr>
<td></td>
<td>Method: OECD Test Guideline 211</td>
</tr>
<tr>
<td><strong>M-Factor (Chronic aquatic toxicity):</strong></td>
<td>10</td>
</tr>
<tr>
<td><strong>praziquantel:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Toxicity to fish:</strong></td>
<td>LC50 (Carassius auratus (goldfish)): 29.2 mg/l</td>
</tr>
<tr>
<td></td>
<td>Method: OECD Test Guideline 203</td>
</tr>
</tbody>
</table>
LC50 (Danio rerio (zebra fish)): 31.6 mg/l  
Exposure time: 96 hrs  
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates: EC50 (Daphnia magna (Water flea)): 35 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202

Toxicity to microorganisms: EC50 (activated sludge): > 1,000 mg/l  
Exposure time: 3 h  
Test Type: Respiration inhibition of activated sludge  
Method: OECD Test Guideline 209

Sodium chloride:
Toxicity to fish: LC50 (Lepomis macrochirus (Bluegill sunfish)): 5,840 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates: EC50 (Daphnia magna (Water flea)): 4,136 mg/l  
Exposure time: 48 h

Toxicity to algae/aquatic plants: EC50: > 2,000 mg/l  
Exposure time: 96 h

Toxicity to fish (Chronic toxicity): NOEC (Pimephales promelas (fathead minnow)): 252 mg/l  
Exposure time: 33 d

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia pulex (Water flea)): 314 mg/l  
Exposure time: 21 d

Toxicity to microorganisms: EC10: > 1,000 mg/l

Milbemycin Oxime:
Toxicity to fish: LC50 (Oncorhynchus mykiss (rainbow trout)): 0.16 µg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates: EC50 (Daphnia magna (Water flea)): 0.03 µg/l  
Exposure time: 48 h

Toxicity to algae/aquatic plants: EC50: > 87 µg/l  
Exposure time: 72 h

M-Factor (Acute aquatic toxicity): 10,000

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity): NOEC (Daphnia magna (Water flea)): 0.01 µg/l

M-Factor (Chronic aquatic toxicity): 10,000

Persistence and degradability
No data available
Bioaccumulative potential

Components:

lufenuron (ISO):
Bioaccumulation: Species: Lepomis macrochirus (Bluegill sunfish)
Bioconcentration factor (BCF): 28
Method: OECD Test Guideline 305

Partition coefficient: n-octanol/water: log Pow: 5.12

Sucrose:
Partition coefficient: n-octanol/water: Pow: < 1

praziquantel:
Partition coefficient: n-octanol/water: log Pow: 2.012
pH: 7

Milbemycin Oxime:
Bioaccumulation: Bioconcentration factor (BCF): 440

Partition coefficient: n-octanol/water: log Pow: 7

Mobility in soil

Components:

lufenuron (ISO):
Distribution among environmental compartments: log Koc: 5.38
Method: OECD Test Guideline 106

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 3077
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID,
### SAFETY DATA SHEET
according to GB/T 16483 and GB/T 17519

**Milbemycin Oxime / Lufenuron / Praziquantel 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>
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<tbody>
<tr>
<td>2.1</td>
<td>2021/08/27</td>
<td>7567908-00004</td>
<td>2021/03/11</td>
<td>2020/11/20</td>
</tr>
</tbody>
</table>

**N.O.S.**

(Milbemycin Oxime, lufenuron (ISO))

<table>
<thead>
<tr>
<th>Class</th>
<th>Packing group</th>
<th>Labels</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>III</td>
<td>9</td>
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**IATA-DGR**

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<tr>
<th>UN/ID No.</th>
<th>Proper shipping name</th>
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<tbody>
<tr>
<td></td>
<td>Environmentally hazardous substance, solid, n.o.s. (Milbemycin Oxime, lufenuron (ISO))</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Class</th>
<th>Packing group</th>
<th>Labels</th>
<th>Packing instruction (cargo aircraft)</th>
<th>Packing instruction (passenger aircraft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>III</td>
<td>9</td>
<td>956</td>
<td>956</td>
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**IMDG-Code**

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<tbody>
<tr>
<td></td>
<td>ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Milbemycin Oxime, lufenuron (ISO))</td>
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</table>

<table>
<thead>
<tr>
<th>Class</th>
<th>Packing group</th>
<th>Labels</th>
<th>EmS Code</th>
<th>Marine pollutant</th>
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<tbody>
<tr>
<td>9</td>
<td>III</td>
<td>9</td>
<td>F-A, S-F</td>
<td>yes</td>
</tr>
</tbody>
</table>

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not applicable for product as supplied.

**National Regulations**

**GB 6944/12268**

<table>
<thead>
<tr>
<th>UN number</th>
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<tbody>
<tr>
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<td>ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Milbemycin Oxime, lufenuron (ISO))</td>
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</table>

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<tr>
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<tr>
<td>9</td>
<td>III</td>
<td>9</td>
</tr>
</tbody>
</table>

**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

**National regulatory information**

**Law on the Prevention and Control of Occupational Diseases**

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22 / 24
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:

Date format:
yyyy/mm/dd

Full text of other abbreviations:
ACGIH: USA. ACGIH Threshold Limit Values (TLV)
ACGIH / TWA: 8-hour, time-weighted average

Additional information on abbreviations:
AIIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - 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 Concentration to 50% of a test population; LD50 - Lethal Dose to 50% of a test population; 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 Recomm-
Disclaimer
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.

CN / EN