

**Milbemycin Oxime / Lufenuron Formulation**

Version 2.6      Revision Date: 30.09.2023      SDS Number: 6365225-00008      Date of last issue: 04.04.2023  
Date of first issue: 21.09.2020

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**1. PRODUCT AND COMPANY IDENTIFICATION**

Product name : Milbemycin Oxime / Lufenuron Formulation

**Manufacturer or supplier's details**

Company : MSD  
Address : 50 Tuas West Drive  
Singapore - Singapore 638408  
Telephone : +1-908-740-4000  
Emergency telephone number : 65 6697 2111 (24/7/365)  
E-mail address : EHSDATASTEWARD@msd.com

**Recommended use of the chemical and restrictions on use**

Recommended use : Veterinary product  
Restrictions on use : Not applicable

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**2. HAZARDS IDENTIFICATION****GHS Classification**

Skin sensitisation : Category 1  
Reproductive toxicity : Category 1B  
Specific target organ toxicity - repeated exposure (Oral) : Category 1 (Central nervous system, Lungs, Liver, Stomach)  
Specific target organ toxicity - repeated exposure : Category 2 (Central nervous system)  
Short-term (acute) aquatic hazard : Category 1  
Long-term (chronic) aquatic hazard : Category 1

**GHS label elements**

Hazard pictograms :   

Signal word : Danger

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**Hazard statements** :

- H317 May cause an allergic skin reaction.
- H360D May damage the unborn child.
- H372 Causes damage to organs (Central nervous system, Lungs, Liver, Stomach) through prolonged or repeated exposure if swallowed.
- H373 May cause damage to organs (Central nervous system) 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.
- P264 Wash skin thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- 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.

**Other hazards which do not result in classification**

None known.

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Substance / Mixture : Mixture

**Components**

Chemical name	CAS-No.	Concentration (% w/w)
Lufenuron (ISO)	103055-07-8	>= 30 -< 50
Cellulose	9004-34-6	>= 10 -< 20
Starch	9005-25-8	>= 1 -< 10
Milbemycin Oxime	129496-10-2	>= 1 -< 2.5

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### 4. FIRST AID MEASURES

- |   |   |  |
|---|---|--|
| General advice  | : | In the case of accident or if you feel unwell, seek medical advice immediately.<br>When symptoms persist or in all cases of doubt seek medical advice.   |
| If inhaled  | : | If inhaled, remove to fresh air.<br>Get medical attention.   |
| In case of skin contact                                     | : | In case of contact, immediately flush skin with soap and plenty of water.<br>Remove contaminated clothing and shoes.<br>Get medical attention.<br>Wash clothing before reuse.<br>Thoroughly clean shoes before reuse.      |
| In case of eye contact                                      | : | Flush eyes with water as a precaution.<br>Get medical attention if irritation develops and persists.   |
| If swallowed  | : | If swallowed, DO NOT induce vomiting.<br>Get medical attention.<br>Rinse mouth thoroughly with water.  |
| Most important symptoms and effects, both acute and delayed | : | May cause an allergic skin reaction.<br>May damage the unborn child.<br>Causes damage to organs through prolonged or repeated exposure if swallowed.<br>May cause damage to organs through prolonged or repeated exposure. |
| Protection of first-aiders                                  | : | First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists (see section 8).  |
| Notes to physician  | : | Treat symptomatically and supportively.  |
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### 5. FIREFIGHTING MEASURES

- |                                       |   |   |
|---------------------------------------|---|---|
| Suitable extinguishing media          | : | Water spray<br>Alcohol-resistant foam<br>Carbon dioxide (CO <sub>2</sub> )<br>Dry chemical  |
| Unsuitable extinguishing media        | : | None known.   |
| Specific hazards during fire-fighting | : | Exposure to combustion products may be a hazard to health.  |
| Hazardous combustion products         | : | Carbon oxides<br>Nitrogen oxides (NO <sub>x</sub> )<br>Metal oxides   |
| Specific extinguishing methods        | : | Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.<br>Use water spray to cool unopened containers.<br>Remove undamaged containers from fire area if it is safe to do so.<br>Evacuate area. |

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

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### 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. 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.

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### 7. HANDLING AND STORAGE

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

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

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

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

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## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

## Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Lufenuron (ISO)	103055-07-8	TWA	OEB 3 ( $\geq 10 < 100 \mu\text{g}/\text{m}^3$ )	Internal
Cellulose	9004-34-6	PEL (long term)	10 mg/m <sup>3</sup>	SG OEL
		TWA	10 mg/m <sup>3</sup>	ACGIH
Starch	9005-25-8	PEL (long term)	10 mg/m <sup>3</sup>	SG OEL
		TWA	10 mg/m <sup>3</sup>	ACGIH
Milbemycin Oxime	129496-10-2	TWA	0.1 mg/m <sup>3</sup> (OEB2)	Internal

**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 containment devices). Minimize open handling.

**Personal protective equipment**

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

Filter type : Particulates type

Hand protection

Material : Chemical-resistant gloves

Remarks : Consider double gloving.

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

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

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

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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.

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**9. PHYSICAL AND CHEMICAL PROPERTIES**

Appearance	:	solid
Colour	:	brown
Odour	:	odourless
Odour Threshold	:	No data available
pH	:	No data available
Melting point/freezing point	:	No data available
Initial boiling point and boiling range	:	No data available
Flash point	:	Not applicable
Evaporation rate	:	Not applicable
Flammability (solid, gas)	:	No data available
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-	:	Not applicable

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octanol/water  
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

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**10. STABILITY AND REACTIVITY**

Reactivity : Not classified as a reactivity hazard.  
Chemical stability : Stable under normal conditions.  
Possibility of hazardous reactions : Can react with strong oxidizing agents.  
Conditions to avoid : None known.  
Incompatible materials : Oxidizing agents  
Hazardous decomposition products : No hazardous decomposition products are known.

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**11. TOXICOLOGICAL INFORMATION**

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

**Acute toxicity**

Not classified based on available information.

**Product:**

Acute oral toxicity : Acute toxicity estimate: > 2,000 mg/kg  
Method: Calculation method

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

**Components:****Lufenuron (ISO):**

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

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LD50 (Mouse): &gt; 2,000 mg/kg

Acute inhalation toxicity : LC50 (Rat): 2,350 mg/m<sup>3</sup>  
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): &gt; 2,000 mg/kg

**Cellulose:**

Acute oral toxicity : LD50 (Rat): &gt; 5,000 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 5.8 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): &gt; 2,000 mg/kg

**Starch:**

Acute oral toxicity : LD50 (Rat): &gt; 5,000 mg/kg

Acute dermal toxicity : LD50 (Rabbit): &gt; 2,000 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/m<sup>3</sup>  
Exposure time: 4 h  
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rat): &gt; 2,000 mg/kg

**Skin corrosion/irritation**

Not classified based on available information.

**Components:****Lufenuron (ISO):**Species : Rabbit  
Method : Draize Test  
Result : No skin irritation**Milbemycin Oxime:**Species : Rabbit  
Method : OECD Test Guideline 404  
Result : No skin irritation



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**Serious eye damage/eye irritation**

Not classified based on available information.

**Components:****Lufenuron (ISO):**

Species : Rabbit  
Result : No eye irritation  
Method : Draize Test

**Starch:**

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:****Lufenuron (ISO):**

Test Type : Maximisation Test  
Species : Guinea pig  
Assessment : May cause sensitisation by skin contact.  
Result : Sensitiser

**Starch:**

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

**Milbemycin Oxime:**

Exposure routes : Skin contact  
Species : Guinea pig  
Result : negative

**Germ cell mutagenicity**

Not classified based on available information.

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### Components:

#### **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.

#### **Cellulose:**

- Genotoxicity in vitro :
- Test Type: Bacterial reverse mutation assay (AMES)  
Result: negative
  - Test Type: In vitro mammalian cell gene mutation test  
Result: negative
- Genotoxicity in vivo :
- Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)  
Species: Mouse  
Application Route: Ingestion  
Result: negative

#### **Starch:**

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

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### 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  
Result: negative

### 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

#### Cellulose:

Species : Rat  
Application Route : Ingestion  
Exposure time : 72 weeks  
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 : Test Type: Development  
Species: Rat  
Application Route: Oral

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General Toxicity Maternal: NOAEL: 500 mg/kg body weight  
 Developmental Toxicity: NOAEL: 1,000 mg/kg body weight  
 Symptoms: No adverse effects  
 Remarks: No significant adverse effects were reported

Test Type: Fertility/early embryonic development  
 Species: Rat  
 Application Route: Ingestion  
 General Toxicity Maternal: NOAEL: 20.9 mg/kg body weight  
 Embryo-foetal toxicity: 8.3 mg/kg body weight  
 Result: foetal abnormalities

Reproductive toxicity - Assessment : Clear evidence of adverse effects on development, based on animal experiments.

### Cellulose:

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

Effects on foetal development : Test Type: Fertility/early embryonic development  
 Species: Rat  
 Application Route: Ingestion  
 Result: negative

### 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

Test Type: Embryo-foetal development  
 Species: Rabbit  
 Application Route: Ingestion  
 Result: negative

Test Type: Embryo-foetal development  
 Species: Dog  
 Application Route: Ingestion  
 Result: negative

### STOT - single exposure

Not classified based on available information.

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### Components:

#### Lufenuron (ISO):

Assessment : The substance or mixture is not classified as specific target organ toxicant, single exposure.

#### STOT - repeated exposure

Causes damage to organs (Central nervous system, Lungs, Liver, Stomach) through prolonged or repeated exposure if swallowed.

May cause damage to organs (Central nervous system) 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:

#### Lufenuron (ISO):

Species : Rat  
 NOAEL : 5.34 mg/kg  
 Application Route : oral (feed)  
 Exposure time : 4 Months  
 Target Organs : Central nervous system, digestive system  
 Symptoms : central nervous system effects

Species : Rat  
 NOAEL : 1.93 mg/kg  
 Application Route : oral (feed)  
 Exposure time : 2 yr  
 Symptoms : central nervous system effects, Convulsions

Species : Mouse  
 NOAEL : 2.12 mg/kg  
 Application Route : oral (feed)  
 Exposure time : 18 Months  
 Target Organs : Central nervous system, Liver, Prostate  
 Symptoms : central nervous system effects, Convulsions

Species : Dog

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NOAEL : 7.02 mg/kg  
Application Route : oral (feed)  
Exposure time : 1 yr  
Target Organs : Central nervous system, Liver, Lungs  
Symptoms : Convulsions, Fatality, Irregularities

**Cellulose:**

Species : Rat  
NOAEL :  $\geq 9,000$  mg/kg  
Application Route : Ingestion  
Exposure time : 90 Days

**Starch:**

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

**Milbemycin Oxime:**

Species : Rat  
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.

**Milbemycin Oxime:**

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

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### 12. ECOLOGICAL INFORMATION

#### Ecotoxicity

#### Components:

#### **Lufenuron (ISO):**

- Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 73,100 µg/l  
 Exposure time: 96 h  
 Method: OECD Test Guideline 203
- LC50 (Oncorhynchus mykiss (rainbow trout)): > 29,000 µg/l  
 Exposure time: 96 h  
 Method: OECD Test Guideline 203
- LC50 (Oncorhynchus mykiss (rainbow trout)): 370 µg/l  
 Exposure time: 96 h  
 Method: OECD Test Guideline 203
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Americamysis): 0.042 µg/l  
 Exposure time: 96 h  
 Method: US-EPA OPPTS 850.1035
- Toxicity to algae/aquatic plants : EC50 (Raphidocelis subcapitata (freshwater green alga)): 209 µg/l  
 Exposure time: 72 h  
 Method: OECD Test Guideline 201
- EC50 (Scenedesmus subspicatus): 17 µg/l  
 Exposure time: 72 h  
 Method: OECD Test Guideline 201
- M-Factor (Acute aquatic toxicity) : 10,000
- Toxicity to fish (Chronic toxicity) : NOEC (Oncorhynchus mykiss (rainbow trout)): 80 µg/l  
 Exposure time: 33 d  
 Method: OECD Test Guideline 210
- NOEC (Oncorhynchus mykiss (rainbow trout)): 20 µg/l  
 Exposure time: 359 d  
 Method: OECD Test Guideline 229
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 8.38 µg/l  
 Exposure time: 21 d  
 Method: OECD Test Guideline 211
- NOEC (Daphnia magna (Water flea)): 90 µg/l  
 Exposure time: 21 d  
 Method: OECD Test Guideline 211
- NOEC (Chironomus riparius (harlequin fly)): 2 µg/l  
 Exposure time: 21 d

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Method: OECD Test Guideline 211

M-Factor (Chronic aquatic toxicity) : 10

**Cellulose:**

Toxicity to fish : LC50 (Oryzias latipes (Japanese medaka)): > 100 mg/l  
Exposure time: 48 h  
Remarks: Based on data from similar materials

**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****Components:****Cellulose:**

Biodegradability : Result: Readily biodegradable.

**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

**Milbemycin Oxime:**

Bioaccumulation : Bioconcentration factor (BCF): 440

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



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**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

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**13. DISPOSAL CONSIDERATIONS****Disposal methods**

Waste from residues : Do not dispose of waste into sewer.  
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.

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**14. TRANSPORT INFORMATION****International Regulations****UNRTDG**

UN number : UN 3077  
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.  
(Milbemycin Oxime, Lufenuron (ISO))  
Class : 9  
Packing group : III  
Labels : 9  
Environmentally hazardous : yes

**IATA-DGR**

UN/ID No. : UN 3077  
Proper shipping name : Environmentally hazardous substance, solid, n.o.s.  
(Milbemycin Oxime, Lufenuron (ISO))  
Class : 9  
Packing group : III  
Labels : Miscellaneous  
Packing instruction (cargo aircraft) : 956  
Packing instruction (passenger aircraft) : 956  
Environmentally hazardous : yes

**IMDG-Code**

UN number : UN 3077  
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.  
(Milbemycin Oxime, Lufenuron (ISO))

**Milbemycin Oxime / Lufenuron Formulation**

Version	Revision Date:	SDS Number:	Date of last issue: 04.04.2023
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Class	: 9
Packing group	: III
Labels	: 9
EmS Code	: F-A, S-F
Marine pollutant	: yes

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

Not applicable for product as supplied.

**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.

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**15. REGULATORY INFORMATION****Safety, health and environmental regulations/legislation specific for the substance or mixture****Workplace Safety and Health Act and Workplace Safety and Health (General Provisions) Regulations: This product is subjected to the SDS, labelling, PEL and other requirements in the Act/Regulations.**

Environmental Protection and Management Act and Environmental Protection and Management (Hazardous Substances) Regulations	: Not applicable
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Fire Safety (Petroleum and Flammable Materials) Regulations	: Not applicable
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**The components of this product are reported in the following inventories:**

AICS	: not determined
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DSL	: not determined
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IECSC	: not determined
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**16. OTHER INFORMATION**

Revision Date	: 30.09.2023
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**Further information**

Sources of key data used to compile the Safety Data Sheet	: Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agen- cy, <a href="http://echa.europa.eu/">http://echa.europa.eu/</a>
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Date format	: dd.mm.yyyy
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**Full text of other abbreviations**

ACGIH	: USA. ACGIH Threshold Limit Values (TLV)
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## Milbemycin Oxime / Lufenuron Formulation

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SG OEL : Singapore. Workplace Safety and Health (General Provisions) Regulations - First Schedule Permissible Exposure Limits of Toxic Substances.

ACGIH / TWA : 8-hour, time-weighted average  
 SG OEL / PEL (long term) : Permissible Exposure Level (PEL) Long Term

AIIC - 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; KECl - 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; 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; TECl - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.

SG / EN