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

Fluazuron / Fipronil Formulation

Version 4.1  Revision Date: 27.08.2021  SDS Number: 564222-00012  Date of last issue: 09.04.2021
Date of first issue: 15.03.2016

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

1.1 Product identifier
Trade name: Fluazuron / Fipronil 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)
Flammable liquids, Category 3
Skin irritation, Category 2
Eye irritation, Category 2
Reproductive toxicity, Category 1B
Specific target organ toxicity - single exposure, Category 3
Specific target organ toxicity - repeated exposure, Category 2
Short-term (acute) aquatic hazard, Category 1
Long-term (chronic) aquatic hazard, Category 1

Hazard statements:
H226: Flammable liquid and vapour.
H315: Causes skin irritation.
H319: Causes serious eye irritation.
H360D: May damage the unborn child.
H335: May cause respiratory irritation.
H373: May cause damage to organs through prolonged or repeated exposure.
H400: Very toxic to aquatic life.
H410: Very toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms:

Signal word: Danger
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Hazard statements:
- H226 Flammable liquid and vapour.
- H315 Causes skin irritation.
- H319 Causes serious eye irritation.
- H335 May cause respiratory irritation.
- 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.
  - P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
  - P273 Avoid release to the environment.
  - P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
- Response:
  - P308 + P313 IF exposed or concerned: Get medical advice/attention.
  - P391 Collect spillage.

Hazardous components which must be listed on the label:
- N-Methyl-2-pyrrolidone
- Fipronil (ISO)

Additional Labelling:
- Restricted to professional users.

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.

Vapours may form explosive mixture with air.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Components

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>EC-No. Index-No.</th>
<th>Classification</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
</table>

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<table>
<thead>
<tr>
<th>Registration number</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2-(2-Butoxyethoxy)ethanol</strong></td>
<td>112-34-5</td>
<td>Eye Irrit. 2; H319</td>
</tr>
<tr>
<td></td>
<td>203-961-6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>603-096-00-8</td>
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<tr>
<td>Ethanol#</td>
<td>64-17-5</td>
<td>Flam. Liq. 2; H225</td>
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<tr>
<td></td>
<td>200-578-6</td>
<td>Eye Irrit. 2; H319</td>
</tr>
<tr>
<td></td>
<td>603-002-00-5</td>
<td>&gt;= 50 %</td>
</tr>
<tr>
<td><strong>N-Methyl-2-pyrrolidone</strong></td>
<td>872-50-4</td>
<td>Skin Irrit. 2; H315</td>
</tr>
<tr>
<td></td>
<td>212-828-1</td>
<td>Eye Irrit. 2; H319</td>
</tr>
<tr>
<td></td>
<td>606-021-00-7</td>
<td>Repr. 1B; H360D</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STOT SE 3; H335</td>
</tr>
<tr>
<td><strong>Fluazuron</strong></td>
<td>86811-58-7</td>
<td>Aquatic Acute 1; H400</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aquatic Chronic 1; H410</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-Factor (Acute aquatic toxicity): 1.000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-Factor (Chronic aquatic toxicity): 1.000</td>
</tr>
<tr>
<td><strong>Fipronil (ISO)</strong></td>
<td>120068-37-3</td>
<td>Acute Tox. 3; H301</td>
</tr>
<tr>
<td></td>
<td>424-610-5</td>
<td>Acute Tox. 2; H330</td>
</tr>
<tr>
<td></td>
<td>608-055-00-8</td>
<td>Acute Tox. 3; H311</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STOT RE 1; H372</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Central nervous system, Kidney)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aquatic Acute 1; H400</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aquatic Chronic 1; H410</td>
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</tbody>
</table>
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Version 4.1 Revision Date: 27.08.2021 SDS Number: 564222-00012 Date of last issue: 09.04.2021 Date of first issue: 15.03.2016

<table>
<thead>
<tr>
<th>Chemical</th>
<th>CAS Number</th>
<th>Acute oral toxicity:</th>
<th>Acute inhalation toxicity (dust/mist):</th>
<th>Acute dermal toxicity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,6-Di-tert-butyl-p-cresol</td>
<td>128-37-0 204-881-4</td>
<td>92 mg/kg</td>
<td>0,36 mg/l</td>
<td>354 mg/kg</td>
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<tr>
<td>tert-Butyl-4-methoxyphenol</td>
<td>25013-16-5 246-563-8</td>
<td>&gt;= 0,1 - &lt; 0,25</td>
<td>Acute Tox. 4; H302 Skin Irrit. 2; H315 Eye Irrit. 2; H319 Carc. 2; H351 Repr. 2; H361d Aquatic Chronic 2; H411</td>
<td></td>
</tr>
<tr>
<td>Acute toxicity estimate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute oral toxicity:</td>
<td>1.100 mg/kg</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For explanation of abbreviations see section 16.
#: Voluntarily-disclosed non-hazardous substance

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 at least 15 minutes. If easy to do, remove contact lens, if worn. Get medical attention.

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

4.2 Most important symptoms and effects, both acute and delayed

Risks:
- Causes skin irritation.
- Causes serious eye irritation.
- May cause respiratory irritation.
- May damage the unborn child.
- May cause damage to organs through prolonged or repeated exposure.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment: Treat symptomatically and supportively.

SECTION 5: Firefighting measures

5.1 Extinguishing media

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

Unsuitable extinguishing media: High volume water jet

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting:
- Do not use a solid water stream as it may scatter and spread fire.
- Flash back possible over considerable distance.
- Vapours may form explosive mixtures with air.
- Exposure to combustion products may be a hazard to health.

Hazardous combustion products:
- Carbon oxides
- Nitrogen oxides (NOx)
- Chlorine compounds
- Fluorine compounds
- Sulphur oxides
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: Remove all sources of ignition. 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: Non-sparking tools should be used. Soak up with inert absorbent material. Suppress (knock down) gases/vapours/mists with a water spray jet. For large spills, provide dyeing 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: If sufficient ventilation is unavailable, use with local exhaust ventilation. Use explosion-proof electrical, ventilating and lighting equipment.

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. Non-sparking tools should be used. Keep container tightly closed. Already sensitised individuals should consult their physician regarding working with respiratory irritants or sensitisers. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. 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.

Hygiene measures: If exposure to chemical is likely during typical use, provide eye flushing systems and safety showers close to the working place. When using do not eat, drink or smoke. Wash contaminated clothing before re-use. The effective operation of a facility should include review of engineering controls, proper personal protective equipment, appropriate degowning and decontamination procedures, industrial hygiene monitoring, medical surveillance and the use of administrative controls.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers: Keep in properly labelled containers. Store locked up. Keep tightly closed. Keep in a cool, well-ventilated place. Store in accordance with the particular national regulations. Keep away from heat and sources of ignition.

Advice on common storage: Do not store with the following product types:
- Strong oxidizing agents
- Organic peroxides
- Flammable solids
- Pyrophoric liquids
- Pyrophoric solids
- Self-heating substances and mixtures
- Substances and mixtures, which in contact with water, emit flammable gases
- 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)ethanol</td>
<td>112-34-5</td>
<td>TWA</td>
<td>10 ppm 68 mg/m3</td>
<td>FOR-2011-12-06-1358</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>10 ppm 67,5 mg/m3</td>
<td>2006/15/EC</td>
</tr>
<tr>
<td>Further information: Indicative</td>
<td></td>
<td>STEL</td>
<td>15 ppm 101,2 mg/m3</td>
<td>2006/15/EC</td>
</tr>
</tbody>
</table>

Further information: Substances considered to be reprotoxic, Chemicals that can be absorbed through the skin.

<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>N-Methyl-2-pyrrolidone</td>
<td>872-50-4</td>
<td>TWA</td>
<td>5 ppm 20 mg/m3</td>
<td>FOR-2011-12-06-1358</td>
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<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>20 ppm 80 mg/m3</td>
<td>FOR-2011-12-06-1358</td>
</tr>
<tr>
<td>Further information: Substances considered to be reprotoxic, Chemicals that can be absorbed through the skin.</td>
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<tr>
<td>TWA</td>
<td></td>
<td>STEL</td>
<td>10 ppm 40 mg/m3</td>
<td>2009/161/EU</td>
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<td>Further information: Identifies the possibility of significant uptake through the skin, Indicative</td>
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<tr>
<td>STEL</td>
<td></td>
<td>STEL</td>
<td>20 ppm 80 mg/m3</td>
<td>2009/161/EU</td>
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<tr>
<td>Further information: Identifies the possibility of significant uptake through the skin, Indicative</td>
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<tr>
<td>Ethanol</td>
<td>64-17-5</td>
<td>TWA</td>
<td>500 ppm 950 mg/m3</td>
<td>FOR-2011-12-06-1358</td>
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<tr>
<td>Fluazuron</td>
<td>86811-58-7</td>
<td>TWA</td>
<td>60 µg/m3 (OEB 3)</td>
<td>Internal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wipe limit</td>
<td>600 µg/ 100cm2</td>
<td>Internal</td>
</tr>
<tr>
<td>Fipronil (ISO)</td>
<td>120068-37-3</td>
<td>TWA</td>
<td>2 µg/m3 (OEB 4)</td>
<td>Internal</td>
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<td></td>
<td></td>
<td>Wipe limit</td>
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<td>Internal</td>
</tr>
<tr>
<td>Further information: Skin</td>
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</table>

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>N-Methyl-2-</td>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term systemic</td>
<td>14,4 mg/m3</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Substance</th>
<th>Category</th>
<th>Effect</th>
<th>Concentration</th>
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<tbody>
<tr>
<td>Pyrrolidone</td>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term local effects</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Inhalation</td>
<td>Long-term local effects</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Ingestion</td>
<td>Long-term systemic effects</td>
</tr>
<tr>
<td>Ethanol</td>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Ingestion</td>
<td>Long-term systemic effects</td>
</tr>
<tr>
<td>2-(2-Butoxyethoxy)ethanol</td>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term local effects</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Skin contact</td>
<td>Acute local effects</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Inhalation</td>
<td>Long-term local effects</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Ingestion</td>
<td>Long-term systemic effects</td>
</tr>
<tr>
<td>2,6-Di-tert-butyl-p-cresol</td>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Dermal</td>
<td>Long-term systemic effects</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Dermal</td>
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<tr>
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<td>Consumers</td>
<td>Ingestion</td>
<td>Long-term systemic effects</td>
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<tr>
<td>tert-Butyl-4-methoxyphenol</td>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
</tr>
</tbody>
</table>
### Fluazuron / Fipronil Formulation

**Consumers**

**Inhalation**

**Long-term systemic effects**

0.87 mg/m³

**Consumers**

**Skin contact**

**Long-term systemic effects**

0.5 mg/kg bw/day

**Consumers**

**Ingestion**

**Long-term systemic effects**

0.5 mg/kg bw/day

---

**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>N-Methyl-2-pyrrolidone</td>
<td>Fresh water</td>
<td>0.25 mg/l</td>
</tr>
<tr>
<td>Freshwater - intermittent</td>
<td>5 mg/l</td>
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</tr>
<tr>
<td>Marine water</td>
<td>0.025 mg/l</td>
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</tr>
<tr>
<td>Sewage treatment plant</td>
<td>10 mg/l</td>
<td></td>
</tr>
<tr>
<td>Fresh water sediment</td>
<td>1.09 mg/kg dry weight (d.w.)</td>
<td></td>
</tr>
<tr>
<td>Marine sediment</td>
<td>1.09 mg/kg dry weight (d.w.)</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0.07 mg/kg dry weight (d.w.)</td>
<td></td>
</tr>
<tr>
<td>Ethanol</td>
<td>Fresh water</td>
<td>0.96 mg/l</td>
</tr>
<tr>
<td>Freshwater - intermittent</td>
<td>2.75 mg/l</td>
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</tr>
<tr>
<td>Marine water</td>
<td>0.79 mg/l</td>
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</tr>
<tr>
<td>Sewage treatment plant</td>
<td>580 mg/l</td>
<td></td>
</tr>
<tr>
<td>Fresh water sediment</td>
<td>3.6 mg/kg dry weight (d.w.)</td>
<td></td>
</tr>
<tr>
<td>Marine sediment</td>
<td>2.9 mg/kg dry weight (d.w.)</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0.63 mg/kg dry weight (d.w.)</td>
<td></td>
</tr>
<tr>
<td>Oral (Secondary Poisoning)</td>
<td>380 mg/kg food</td>
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</tr>
<tr>
<td>2-(2-Butoxyethoxy)ethanol</td>
<td>Fresh water</td>
<td>1.1 mg/l</td>
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<tr>
<td>Freshwater - intermittent</td>
<td>11 mg/l</td>
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<td>Marine water</td>
<td>0.11 mg/l</td>
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<tr>
<td>Sewage treatment plant</td>
<td>200 mg/l</td>
<td></td>
</tr>
<tr>
<td>Fresh water sediment</td>
<td>4.4 mg/kg dry weight (d.w.)</td>
<td></td>
</tr>
<tr>
<td>Marine sediment</td>
<td>0.44 mg/kg dry weight (d.w.)</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0.32 mg/kg dry weight (d.w.)</td>
<td></td>
</tr>
<tr>
<td>Secondary Poisoning</td>
<td>56 mg/kg food</td>
<td></td>
</tr>
<tr>
<td>2,6-Di-tert-butyl-p-cresol</td>
<td>Fresh water</td>
<td>0.199 µg/l</td>
</tr>
<tr>
<td>Intermittent use/release</td>
<td>0.02 µg/l</td>
<td></td>
</tr>
<tr>
<td>Marine water</td>
<td>0.02 µg/l</td>
<td></td>
</tr>
<tr>
<td>Sewage treatment plant</td>
<td>0.17 mg/l</td>
<td></td>
</tr>
<tr>
<td>Fresh water sediment</td>
<td>0.0996 mg/kg dry weight (d.w.)</td>
<td></td>
</tr>
<tr>
<td>Marine sediment</td>
<td>0.00996 mg/kg dry weight (d.w.)</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0.04769 mg/kg dry weight (d.w.)</td>
<td></td>
</tr>
<tr>
<td>Oral (Secondary Poisoning)</td>
<td>8.33 mg/kg food</td>
<td></td>
</tr>
<tr>
<td>tert-Butyl-4-methoxyphenol</td>
<td>Fresh water</td>
<td>0.0124 mg/l</td>
</tr>
</tbody>
</table>
8.2 Exposure controls

**Engineering measures**
Use appropriate engineering controls and manufacturing technologies to control airborne concentrations (e.g., drip-less quick connections).
All engineering controls should be implemented by facility design and operated in accordance with GMP principles to protect products, workers, and the environment.
Containment technologies suitable for controlling compounds are required to control at source and to prevent migration of the compound to uncontrolled areas (e.g., open-face containment devices).
Minimize open handling.
Use explosion-proof electrical, ventilating and lighting equipment.

**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. Take note that the product is flammable, which may impact the selection of hand protection.

- **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**
  - **Filter type**: Combined particulates and organic vapour type (A-P)
  - **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**

### SECTION 9: Physical and chemical properties

**9.1 Information on basic physical and chemical properties**

- **Physical state**: liquid
- **Colour**: light yellow
- **Odour**: solvent-like
### Fluazuron / Fipronil Formulation

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odour Threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability (liquids)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Upper explosion limit / Upper flammability limit</td>
<td>No data available</td>
</tr>
<tr>
<td>Lower explosion limit / Lower flammability limit</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point</td>
<td>32 °C</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No data available</td>
</tr>
<tr>
<td>Solubility(ies)</td>
<td>No data available</td>
</tr>
<tr>
<td>Water solubility</td>
<td>No data available</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative density</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative vapour density</td>
<td>No data available</td>
</tr>
<tr>
<td>Particle characteristics</td>
<td>No data available</td>
</tr>
<tr>
<td>Particle size</td>
<td>No data available</td>
</tr>
</tbody>
</table>

#### 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**: No data available
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:
- Flammable liquid and vapour.
- Vapours may form explosive mixture with air.
- Can react with strong oxidizing agents.

10.4 Conditions to avoid
Conditions to avoid:
- Heat, flames and sparks.

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
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
- Acute dermal toxicity: Acute toxicity estimate: > 2.000 mg/kg
  Method: Calculation method

Components:
- 2-(2-Butoxyethoxy)ethanol:
  - Acute oral toxicity: LD50 (Mouse): 2.410 mg/kg
  - Acute dermal toxicity: LD50 (Rabbit): 2.764 mg/kg
Ethanol:
Acute oral toxicity: LD50 (Rat): > 5.000 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity: LC50 (Rat): 124,7 mg/l
Exposure time: 4 h
Test atmosphere: vapour

N-Methyl-2-pyrrolidone:
Acute oral toxicity: LD50 (Rat): 4.150 mg/kg

Acute inhalation toxicity: LC50 (Rat): > 5,1 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403

Acute dermal toxicity: LD50 (Rat): > 5.000 mg/kg

Fluazuron:
Acute oral toxicity: LD50 (Rat): > 5.000 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity: LC50 (Rat): > 6,0 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

Fipronil (ISO):
Acute oral toxicity: LD50 (Rat): 92 mg/kg

Acute toxicity estimate: 92 mg/kg
Method: Calculation method

Acute inhalation toxicity: LC50 (Rat): 0.36 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

Acute toxicity estimate: 0,36 mg/l
Test atmosphere: dust/mist
Method: Calculation method

Acute dermal toxicity: LD50 (Rabbit): 354 mg/kg

Acute toxicity estimate: 354 mg/kg
Method: Calculation method

2,6-Di-tert-butyl-p-cresol:
Fluazuron / Fipronil Formulation

Acute oral toxicity: LD50 (Rat): > 6,000 mg/kg
Method: OECD Test Guideline 401

Acute dermal toxicity: LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

tert-Butyl-4-methoxyphenol:
Acute oral toxicity: LD50 (Mouse): 1,100 mg/kg
Acute toxicity estimate: 1,100 mg/kg
Method: Calculation method

Acute dermal toxicity: LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

Skin corrosion/irritation
Causes skin irritation.

Components:

2-(2-Butoxyethoxy)ethanol:
Species: Rabbit
Method: OECD Test Guideline 404
Result: Mild skin irritation

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

N-Methyl-2-pyrrolidone:
Result: Skin irritation

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

Fipronil (ISO):
Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation

2,6-Di-tert-butyl-p-cresol:
Species: Rabbit
Fluazuron / Fipronil Formulation

Method: OECD Test Guideline 404
Result: No skin irritation
Remarks: Based on data from similar materials

**tert-Butyl-4-methoxyphenol:**
Result: Skin irritation

Serious eye damage/eye irritation
Causes serious eye irritation.

**Components:**

**2-(2-Butoxyethoxy)ethanol:**
Species: Rabbit
Result: Irritation to eyes, reversing within 21 days

**Ethanol:**
Species: Rabbit
Method: OECD Test Guideline 405
Result: Irritation to eyes, reversing within 21 days

**N-Methyl-2-pyrrolidone:**
Species: Rabbit
Result: Irritation to eyes, reversing within 21 days

**Fluazuron:**
Species: Rabbit
Method: OECD Test Guideline 405
Result: Mild eye irritation

**Fipronil (ISO):**
Species: Rabbit
Method: OECD Test Guideline 405
Result: No eye irritation

**2,6-Di-tert-butyl-p-cresol:**
Species: Rabbit
Method: OECD Test Guideline 405
Result: No eye irritation
Remarks: Based on data from similar materials

**tert-Butyl-4-methoxyphenol:**
Species: Rabbit
Result: Irritation to eyes, reversing within 21 days
Remarks: Based on data from similar materials
Respiratory or skin sensitisation

Skin sensitisation
Not classified based on available information.

Respiratory sensitisation
Not classified based on available information.

Components:

2-(2-Butoxyethoxy)ethanol:
- Test Type: Maximisation Test
- Exposure routes: Skin contact
- Species: Guinea pig
- Result: negative

Ethanol:
- Test Type: Local lymph node assay (LLNA)
- Exposure routes: Skin contact
- Species: Mouse
- Result: negative

N-Methyl-2-pyrrolidone:
- Test Type: Local lymph node assay (LLNA)
- Exposure routes: Skin contact
- Species: Mouse
- Method: OECD Test Guideline 429
- Result: negative
- Remarks: Based on data from similar materials

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

Fipronil (ISO):
- Test Type: Buehler Test
- Exposure routes: Skin contact
- Species: Guinea pig
- Method: OECD Test Guideline 406
- Result: negative

2,6-Di-tert-butyl-p-cresol:
- Test Type: Human repeat insult patch test (HRIPT)
- Exposure routes: Skin contact
- Species: Humans
- Result: negative

tert-Butyl-4-methoxyphenol:
- Test Type: Human repeat insult patch test (HRIPT)
Exposure routes : Skin contact  
Result : negative  

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

**Components:**  

**2-(2-Butoxyethoxy)ethanol:**  
Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)  
Result: negative  
Test Type: In vitro mammalian cell gene mutation test  
Result: negative  
Test Type: Chromosome aberration test in vitro  
Result: negative  
Genotoxicity in vivo : Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)  
Species: Mouse  
Application Route: Ingestion  
Result: negative  

**Ethanol:**  
Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test  
Result: negative  
Test Type: Bacterial reverse mutation assay (AMES)  
Result: negative  
Genotoxicity in vivo : Test Type: Rodent dominant lethal test (germ cell) (in vivo)  
Species: Mouse  
Application Route: Ingestion  
Result: equivocal  

**N-Methyl-2-pyrrolidone:**  
Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)  
Method: OECD Test Guideline 471  
Result: negative  
Test Type: In vitro mammalian cell gene mutation test  
Method: OECD Test Guideline 476  
Result: negative  
Test Type: DNA damage and repair, unscheduled DNA synthesis in mammalian cells (in vitro)  
Result: negative  
Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)  
Species: Mouse
**Application Route:** Ingestion  
**Method:** OECD Test Guideline 474  
**Result:** negative

**Test Type:** Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)  
**Species:** Hamster  
**Application Route:** Ingestion  
**Method:** OECD Test Guideline 475  
**Result:** negative

### Fluazuron:

<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>Genotoxicity in vivo</th>
<th>Test Type: Cytogenetic assay</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Species: Hamster</td>
</tr>
<tr>
<td></td>
<td>Result: equivocal</td>
</tr>
</tbody>
</table>

### Fipronil (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>Method: OECD Test Guideline 471</td>
</tr>
<tr>
<td></td>
<td>Result: negative</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Genotoxicity in vitro</th>
<th>Test Type: In vitro mammalian cell gene mutation test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Method: OECD Test Guideline 476</td>
</tr>
<tr>
<td></td>
<td>Result: negative</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Genotoxicity in vivo</th>
<th>Test Type: Chromosome aberration test in vitro</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Method: OECD Test Guideline 473</td>
</tr>
<tr>
<td></td>
<td>Result: negative</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Genotoxicity in vivo</th>
<th>Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Species: Mouse</td>
</tr>
<tr>
<td></td>
<td>Application Route: Ingestion</td>
</tr>
<tr>
<td></td>
<td>Method: OECD Test Guideline 474</td>
</tr>
<tr>
<td></td>
<td>Result: negative</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Genotoxicity in vivo</th>
<th>Test Type: Unscheduled DNA synthesis (UDS) test with mammalian liver cells in vivo</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Species: Rat</td>
</tr>
<tr>
<td></td>
<td>Application Route: Ingestion</td>
</tr>
<tr>
<td></td>
<td>Method: OECD Test Guideline 486</td>
</tr>
<tr>
<td></td>
<td>Result: negative</td>
</tr>
</tbody>
</table>
2,6-Di-tert-butyl-p-cresol:
Genotoxicity in vitro:
- Test Type: Bacterial reverse mutation assay (AMES)
  Result: negative
- Test Type: In vitro mammalian cell gene mutation test
  Result: negative
- Test Type: Chromosome aberration test in vitro
  Result: negative

Genotoxicity in vivo:
- Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)
  Species: Rat
  Application Route: Ingestion
  Result: negative

tert-Butyl-4-methoxyphenol:
Genotoxicity in vitro:
- Test Type: Bacterial reverse mutation assay (AMES)
  Result: negative
- Test Type: In vitro mammalian cell gene mutation test
  Method: OECD Test Guideline 476
  Result: negative
- Test Type: Chromosome aberration test in vitro
  Result: negative

Genotoxicity in vivo:
- Test Type: Sex-linked recessive lethal test in Drosophila melanogaster (in vivo)
  Species: Drosophila melanogaster (vinegar fly)
  Application Route: Ingestion
  Result: negative

Carcinogenicity
Not classified based on available information.

Components:

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

Species: Rat
Application Route: Inhalation (vapour)
Exposure time: 2 Years
Result: negative

Fluazuron:
Species: Rat
Application Route: Ingestion
<table>
<thead>
<tr>
<th>Component</th>
<th>Species</th>
<th>Application Route</th>
<th>Exposure time</th>
<th>Method</th>
<th>Result</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fluazuron / Fipronil</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exposure time</td>
<td></td>
<td></td>
<td>2 Years</td>
<td>OECD Test Guideline 453</td>
<td>negative</td>
<td></td>
</tr>
<tr>
<td>Method</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Result</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Species</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Mouse</td>
<td></td>
</tr>
<tr>
<td>Application Route</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ingestion</td>
<td></td>
</tr>
<tr>
<td>Exposure time</td>
<td></td>
<td></td>
<td>2 Years</td>
<td></td>
<td>negative</td>
<td></td>
</tr>
<tr>
<td><strong>Fipronil (ISO):</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Species</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Mouse</td>
<td></td>
</tr>
<tr>
<td>Application Route</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ingestion</td>
<td></td>
</tr>
<tr>
<td>Exposure time</td>
<td></td>
<td></td>
<td>78 weeks</td>
<td>Directive 67/548/EEC, Annex V, B.32</td>
<td>negative</td>
<td></td>
</tr>
<tr>
<td>Method</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Result</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2,6-Di-tert-butyl-p-cresol:</strong></td>
<td>Rat</td>
<td>Ingestion</td>
<td>22 Months</td>
<td>Directive 67/548/EEC, Annex, B.33</td>
<td>negative</td>
<td>The mechanism or mode of action is not relevant in humans.</td>
</tr>
<tr>
<td><strong>tert-Butyl-4-methoxyphenol:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Species</td>
<td></td>
<td></td>
<td></td>
<td>Hamster</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Application Route</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ingestion</td>
<td></td>
</tr>
<tr>
<td>Exposure time</td>
<td></td>
<td></td>
<td>24 weeks</td>
<td></td>
<td>positive</td>
<td></td>
</tr>
<tr>
<td>Result</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Species</td>
<td></td>
<td></td>
<td></td>
<td>Rat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Application Route</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ingestion</td>
<td></td>
</tr>
<tr>
<td>Exposure time</td>
<td></td>
<td></td>
<td>15 Months</td>
<td></td>
<td>positive</td>
<td></td>
</tr>
<tr>
<td>Result</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carcinogenicity - Assessment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Limited evidence of carcinogenicity in animal studies</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>May damage the unborn child.</td>
</tr>
<tr>
<td>Components:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2-(2-Butoxyethoxy)ethanol:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effects on fertility</td>
<td></td>
<td></td>
<td></td>
<td>Test Type: One-generation reproduction toxicity study</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Species</td>
<td></td>
<td></td>
<td></td>
<td>Rat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Application Route</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ingestion</td>
<td></td>
</tr>
</tbody>
</table>

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Method: OECD Test Guideline 415
Result: negative

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

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

N-Methyl-2-pyrrolidone:
- Effects on fertility:
  - Test Type: Two-generation reproduction toxicity study
  - Species: Rat
  - Application Route: Ingestion
  - Method: OECD Test Guideline 416
  - Result: negative

- Effects on foetal development:
  - Test Type: Embryo-foetal development
  - Species: Rat
  - Application Route: Ingestion
  - Method: OECD Test Guideline 414
  - Result: positive

  - Test Type: Fertility/early embryonic development
  - Species: Rat
  - Application Route: inhalation (vapour)
  - Result: positive

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

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

Fluazuron:
- 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
Species: Rabbit
Application Route: Ingestion
Method: OECD Test Guideline 414
Result: negative

Fipronil (ISO):
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: Rabbit
Application Route: Ingestion
Method: OECD Test Guideline 414
Result: negative

2,6-Di-tert-butyl-p-cresol:
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

tert-Butyl-4-methoxyphenol:
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: Mouse
Application Route: Ingestion
Result: positive

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

STOT - single exposure
May cause respiratory irritation.

Components:

N-Methyl-2-pyrrolidone:
Assessment : May cause respiratory irritation.
STOT - repeated exposure
May cause damage to organs through prolonged or repeated exposure.

Components:

**Fipronil (ISO):**
- Exposure routes: Ingestion
- Target Organs: Central nervous system, Kidney
- Assessment: Shown to produce significant health effects in animals at concentrations of 10 mg/kg bw or less.

**2,6-Di-tert-butyl-p-cresol:**
- Assessment: No significant health effects observed in animals at concentrations of 100 mg/kg bw or less.

Repeated dose toxicity

Components:

**2-(2-Butoxyethoxy)ethanol:**
- Species: Rat
- NOAEL: 250 mg/kg
- LOAEL: 1.000 mg/kg
- Application Route: Ingestion
- Exposure time: 90 Days
- Method: OECD Test Guideline 408

**Ethanol:**
- Species: Rat
- NOAEL: 1.280 mg/kg
- LOAEL: 3.156 mg/kg
- Application Route: Ingestion
- Exposure time: 90 Days
- Method: OECD Test Guideline 408

**N-Methyl-2-pyrrolidone:**
- Species: Rat, male
- NOAEL: 169 mg/kg
- LOAEL: 433 mg/kg
- Application Route: Ingestion
- Exposure time: 90 Days
- Method: OECD Test Guideline 408
Species: Rat
NOAEL: 0.5 mg/l
LOAEL: 1 mg/l
Application Route: inhalation (dust/mist/fume)
Exposure time: 96 Days
Method: OECD Test Guideline 413

Species: Rabbit
NOAEL: 826 mg/kg
LOAEL: 1.653 mg/kg
Application Route: Skin contact
Exposure time: 20 Days

Fluazuron:
Species: Rat
NOAEL: 240 mg/kg
LOAEL: 100 mg/kg
Application Route: Ingestion
Exposure time: 13 Weeks
Target Organs: Liver, Thyroid, Pituitary gland

Species: Rat
NOAEL: 10 mg/kg
LOAEL: 100 mg/kg
Application Route: Skin contact
Exposure time: 3 Weeks

Species: Dog
NOAEL: 7.5 mg/kg
LOAEL: 110 mg/kg
Application Route: Ingestion
Exposure time: 52 Weeks
Target Organs: Liver

Fipronil (ISO):
Species: Rabbit
NOAEL: 5 mg/kg
LOAEL: 10 mg/kg
Application Route: Skin contact
Exposure time: 21 Days
Method: OECD Test Guideline 410

Species: Rat, male
NOAEL: 0.059 mg/kg
LOAEL: 0.019 mg/kg
Application Route: Ingestion
Exposure time: 89 Weeks

2,6-Di-tert-butyl-p-cresol:
Species: Rat
NOAEL: 25 mg/kg
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

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Application Route: Ingestion
Exposure time: 22 Months

tert-Butyl-4-methoxyphenol:
Species: Rat
NOAEL: 50 mg/kg
LOAEL: 250 mg/kg
Application Route: Ingestion
Exposure time: 8 Months

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:

N-Methyl-2-pyrrolidone:
Skin contact: Symptoms: Skin irritation

SECTION 12: Ecological information

12.1 Toxicity

Components:

2-(2-Butoxyethoxy)ethanol:
Toxicity to fish: LC50 (Lepomis macrochirus (Bluegill sunfish)): 1.300 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates: EC50 (Daphnia magna (Water flea)): > 100 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants: ErC50 (Desmodesmus subspicatus (green algae)): > 100 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 201

NOEC (Desmodesmus subspicatus (green algae)): >= 100 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 201
Toxicity to microorganisms:
- EC10: > 1.995 mg/l
  Exposure time: 30 min

Ethanol:
Toxicity to fish:
- LC50 (Pimephales promelas (fathead minnow)): > 1.000 mg/l
  Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates:
- EC50 (Ceriodaphnia (water flea)): > 1.000 mg/l
  Exposure time: 48 h

Toxicity to algae/aquatic plants:
- ErC50 (Chlorella vulgaris (Fresh water algae)): 275 mg/l
  Exposure time: 72 h
- EC10 (Chlorella vulgaris (Fresh water algae)): 11.5 mg/l
  Exposure time: 72 h

Toxicity to microorganisms:
- EC50 (Pseudomonas putida): 6.500 mg/l
  Exposure time: 16 h

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity):
- NOEC: 9.6 mg/l
  Exposure time: 9 d
  Species: Daphnia magna (Water flea)

N-Methyl-2-pyrrolidone:
Toxicity to fish:
- LC50 (Oncorhynchus mykiss (rainbow trout)): > 500 mg/l
  Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates:
- EC50 (Daphnia magna (Water flea)): > 1.000 mg/l
  Exposure time: 24 h
  Method: DIN 38412

Toxicity to algae/aquatic plants:
- ErC50 (Desmodesmus subspicatus (green algae)): 600,5 mg/l
  Exposure time: 72 h
- EC10 (Desmodesmus subspicatus (green algae)): 92,6 mg/l
  Exposure time: 72 h

Toxicity to microorganisms:
- EC50: > 600 mg/l
  Exposure time: 30 min
  Method: ISO 8192

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity):
- NOEC: 12.5 mg/l
  Exposure time: 21 d
  Species: Daphnia magna (Water flea)
  Method: OECD Test Guideline 211

Fluazuron:
Toxicity to fish:
- LC50 (Cyprinus carpio (Carp)): > 9,1 mg/l
  Exposure time: 96 h

Toxicity to daphnia and other:
- EC50 (Daphnia sp. (water flea)): 0,0006 mg/l
Fluazuron / Fipronil Formulation

aquatic invertebrates

Toxicity to algae/aquatic plants:
- NOEC (Raphidocelis subcapitata (freshwater green alga)): 27.9 mg/l
- Exposure time: 72 h

M-Factor (Acute aquatic toxicity):
- 1.000

M-Factor (Chronic aquatic toxicity):
- 1.000

Fipronil (ISO):

Toxicity to fish:
- LC50 (Lepomis macrochirus (Bluegill sunfish)): 85.2 µg/l
- Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates:
- LC50 (Mysidopsis bahia (opossum shrimp)): 0.14 µg/l
- Exposure time: 96 h

Toxicity to algae/aquatic plants:
- EC50 (Desmodesmus subspicatus (green algae)): 68 µg/l
- Exposure time: 96 h
- Method: OECD Test Guideline 201
- NOEC (Desmodesmus subspicatus (green algae)): 40 µg/l
- Exposure time: 96 h
- Method: OECD Test Guideline 201

M-Factor (Acute aquatic toxicity):
- 1.000

Toxicity to microorganisms:
- EC50: > 1.000 mg/l
- Exposure time: 3 h

Toxicity to fish (Chronic toxicity):
- NOEC: 2.9 µg/l
- Exposure time: 35 d
- Species: Cyprinodon variegatus (sheepshead minnow)

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity):
- NOEC: 0.0077 µg/l
- Exposure time: 28 d
- Species: Mysidopsis bahia (opossum shrimp)

M-Factor (Chronic aquatic toxicity):
- 10.000

2,6-Di-tert-butyl-p-cresol:

Toxicity to fish:
- LC50 (Danio rerio (zebra fish)): > 0.57 mg/l
- Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates:
- EC50 (Daphnia magna (Water flea)): 0.48 mg/l
- Exposure time: 48 h
- Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants:
- ErC50 (Pseudokirchneriella subcapitata (green algae)): > 0.24 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 0,24 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

M-Factor (Acute aquatic toxicity): 1

Toxicity to microorganisms: EC50: > 10.000 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209

Toxicity to fish (Chronic toxicity): NOEC: 0,053 mg/l
Exposure time: 30 d
Species: Oryzias latipes (Japanese medaka)
Method: OECD Test Guideline 210

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity): NOEC: 0,316 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)

M-Factor (Chronic aquatic toxicity): 1

tert-Butyl-4-methoxyphenol:
Toxicity to fish: LC50 (Danio rerio (zebra fish)): 1,56 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates: EC50 (Daphnia magna (Water flea)): 2,3 mg/l
Exposure time: 48 h

Toxicity to algae/aquatic plants: ErC50 (Pseudokirchneriella subcapitata (green algae)): 5,2 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 0,25 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

Toxicity to microorganisms: EC50 (Protozoa): > 1 - 10 mg/l
Exposure time: 48 h
Remarks: Based on data from similar materials

12.2 Persistence and degradability

Components:

2-(2-Butoxyethoxy)ethanol:
### Fluazuron / Fipronil Formulation

<table>
<thead>
<tr>
<th>Components</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biodegradability</strong></td>
<td><strong>Result:</strong> Readily biodegradable.</td>
</tr>
<tr>
<td><strong>Exposure time:</strong></td>
<td><strong>28 d</strong></td>
</tr>
<tr>
<td><strong>Method:</strong></td>
<td>OECD Test Guideline 301C</td>
</tr>
<tr>
<td><strong>Biodegradation:</strong></td>
<td><strong>85 %</strong></td>
</tr>
<tr>
<td><strong>Biodegradability</strong></td>
<td><strong>Result:</strong> Readily biodegradable.</td>
</tr>
<tr>
<td><strong>Exposure time:</strong></td>
<td><strong>28 d</strong></td>
</tr>
<tr>
<td><strong>Method:</strong></td>
<td>OECD Test Guideline 301C</td>
</tr>
<tr>
<td><strong>Biodegradation:</strong></td>
<td><strong>84 %</strong></td>
</tr>
<tr>
<td><strong>Ethanol:</strong></td>
<td><strong>Result:</strong> Readily biodegradable.</td>
</tr>
<tr>
<td><strong>Exposure time:</strong></td>
<td><strong>20 d</strong></td>
</tr>
<tr>
<td><strong>Method:</strong></td>
<td>OECD Test Guideline 301C</td>
</tr>
<tr>
<td><strong>Biodegradation:</strong></td>
<td><strong>73 %</strong></td>
</tr>
<tr>
<td><strong>N-Methyl-2-pyrrolidone:</strong></td>
<td><strong>Result:</strong> Readily biodegradable.</td>
</tr>
<tr>
<td><strong>Exposure time:</strong></td>
<td><strong>28 d</strong></td>
</tr>
<tr>
<td><strong>Method:</strong></td>
<td>OECD Test Guideline 301C</td>
</tr>
<tr>
<td><strong>Biodegradation:</strong></td>
<td><strong>47 %</strong></td>
</tr>
<tr>
<td><strong>Fipronil (ISO):</strong></td>
<td><strong>Result:</strong> Not readily biodegradable.</td>
</tr>
<tr>
<td><strong>Exposure time:</strong></td>
<td><strong>28 d</strong></td>
</tr>
<tr>
<td><strong>Method:</strong></td>
<td>OECD Test Guideline 301B</td>
</tr>
<tr>
<td><strong>Biodegradation:</strong></td>
<td><strong>4,5 %</strong></td>
</tr>
<tr>
<td><strong>2,6-Di-tert-butyl-p-cresol:</strong></td>
<td><strong>Result:</strong> Not readily biodegradable.</td>
</tr>
<tr>
<td><strong>Exposure time:</strong></td>
<td><strong>28 d</strong></td>
</tr>
<tr>
<td><strong>Method:</strong></td>
<td>OECD Test Guideline 301C</td>
</tr>
<tr>
<td><strong>Biodegradation:</strong></td>
<td><strong>34,41 %</strong></td>
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<tr>
<td><strong>tert-Butyl-4-methoxyphenol:</strong></td>
<td><strong>Result:</strong> Not readily biodegradable.</td>
</tr>
<tr>
<td><strong>Exposure time:</strong></td>
<td><strong>28 d</strong></td>
</tr>
<tr>
<td><strong>Method:</strong></td>
<td>OECD Test Guideline 301D</td>
</tr>
<tr>
<td><strong>Biodegradation:</strong></td>
<td><strong>34,41 %</strong></td>
</tr>
</tbody>
</table>

### 12.3 Bioaccumulative potential

<table>
<thead>
<tr>
<th>Components</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2-(2-Butoxyethoxy)ethanol:</strong></td>
<td><strong>Partition coefficient:</strong> n-octanol/water: <strong>log Pow: 1</strong></td>
</tr>
<tr>
<td><strong>Ethanol:</strong></td>
<td><strong>Partition coefficient:</strong> n-octanol/water: <strong>log Pow: -0,35</strong></td>
</tr>
<tr>
<td><strong>N-Methyl-2-pyrrolidone:</strong></td>
<td><strong>Partition coefficient:</strong> n-octanol/water: <strong>log Pow: -0,46</strong></td>
</tr>
</tbody>
</table>

**Method:** OECD Test Guideline 107
Fluazuron / Fipronil Formulation

12.4 Mobility in soil
No data available

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. Empty containers retain residue and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury and/or death. If not otherwise specified: Dispose of as unused product.

---

**SECTION 14: Transport information**

**14.1 UN number or ID number**

| ADN | UN 1170 |
| ADR | UN 1170 |
| RID | UN 1170 |
| IMDG | UN 1170 |
| IATA | UN 1170 |

**14.2 UN proper shipping name**

| ADN | ETHANOL SOLUTION |
| ADR | ETHANOL SOLUTION |
| RID | ETHANOL SOLUTION |
| IMDG | ETHANOL SOLUTION (Fluazuron, Fipronil (ISO)) |
| IATA | Ethanol solution |

**14.3 Transport hazard class(es)**

| ADN | 3 |
| ADR | 3 |
| RID | 3 |
| IMDG | 3 |
| IATA | 3 |

**14.4 Packing group**

| ADN |
| Packing group | III |
| Classification Code | F1 |
| Hazard Identification Number | 30 |
| Labels | 3 |

ADR
| Packing group | III |
Fluazuron / Fipronil Formulation

Classification Code: F1
Hazard Identification Number: 30
Labels: 3
Tunnel restriction code: (D/E)

RID
Packing group: III
Classification Code: F1
Hazard Identification Number: 30
Labels: 3

IMDG
Packing group: III
Labels: 3

IATA (Cargo)
Packing instruction (cargo aircraft): 366
Packing instruction (LQ): Y344
Packing group: III
Labels: Flammable Liquids

IATA (Passenger)
Packing instruction (passenger aircraft): 355
Packing instruction (LQ): Y344
Packing group: III
Labels: Flammable Liquids

14.5 Environmental hazards

ADN
Environmentally hazardous: yes

ADR
Environmentally hazardous: yes

RID
Environmentally hazardous: yes

IMDG
Marine pollutant: 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 : Conditions of restriction for the fol-
the market and use of certain dangerous substances, preparations and articles (Annex XVII) lowing entries should be considered:

- Number on list 3
- N-Methyl-2-pyrrolidone (Number on list 72, 71, 30)
- 2-(2-Butoxyethoxy)ethanol (Number on list 55)

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59).

- N-Methyl-2-pyrrolidone

REACH - List of substances subject to authorisation (Annex XIV)

- Not applicable

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer

- Not applicable

Regulation (EU) 2019/1021 on persistent organic pollutants (recast)

- Not applicable

Regulation (EC) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals

- Fipronil (ISO)


<table>
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<th>P5c</th>
<th>FLAMMABLE LIQUIDS</th>
<th>Quantity 1</th>
<th>Quantity 2</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>5.000 t</td>
<td>50.000 t</td>
</tr>
</tbody>
</table>

| E1 | ENVIRONMENTAL HAZARDS | 100 t | 200 t |

**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**

- 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**

- H225: Highly flammable liquid and vapour.
- H301: Toxic if swallowed.
- H302: Harmful if swallowed.
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Fluazuron / Fipronil 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>4.1</td>
<td>27.08.2021</td>
<td>564222-00012</td>
<td>09.04.2021</td>
<td>15.03.2016</td>
</tr>
</tbody>
</table>

H311 : Toxic in contact with skin.
H315 : Causes skin irritation.
H319 : Causes serious eye irritation.
H330 : Fatal if inhaled.
H335 : May cause respiratory irritation.
H351 : Suspected of causing cancer.
H360D: Causes damage to organs through prolonged or repeated exposure.
H361d: Suspected of damaging the unborn child.
H372 : Causes damage to organs through prolonged or repeated exposure.
H400 : Very toxic to aquatic life.
H410 : Very toxic to aquatic life with long lasting effects.
H411 : Toxic to aquatic life with long lasting effects.

**Full text of other abbreviations**

Acute Tox.: Acute toxicity
Aquatic Acute: Short-term (acute) aquatic hazard
Aquatic Chronic: Long-term (chronic) aquatic hazard
Carc.: Carcinogenicity
Eye Irrit.: Eye irritation
Flam. Liq.: Flammable liquids
Repr.: Reproductive toxicity
Skin Irrit.: Skin irritation
STOT RE: Specific target organ toxicity - repeated exposure
STOT SE: Specific target organ toxicity - single exposure

**FOR-2011-12-06-1358**

2006/15/EC: Europe. Indicative occupational exposure limit values

FOR-2011-12-06-1358 / TWA: Norway. Occupational Exposure limits
2006/15/EC / TWA: Limit Value - eight hours
2006/15/EC / STEL: Short term exposure limit
2009/161/EU / TWA: Limit Value - eight hours
2009/161/EU / STEL: Short term exposure limit
FOR-2011-12-06-1358 / TWA: Long term exposure limit
FOR-2011-12-06-1358 / STEL: Short term exposure limit

ADN - European Agreement concerning the International Carriagge of Dangerous Goods by Inland Waterways; ADR - European Agreement concerning the International Carriagge of Dangerous Goods by Road; AIIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organiza-
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Fluazuron / Fipronil Formulation

Version 4.1
Revision Date: 27.08.2021
SDS Number: 564222-00012
Date of last issue: 09.04.2021
Date of first issue: 15.03.2016

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

Classification of the mixture:

<table>
<thead>
<tr>
<th>Property</th>
<th>Label</th>
<th>Classification procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flam. Liq. 3</td>
<td>H226</td>
<td>Based on product data or assessment</td>
</tr>
<tr>
<td>Skin Irrit. 2</td>
<td>H315</td>
<td>Calculation method</td>
</tr>
<tr>
<td>Eye Irrit. 2</td>
<td>H319</td>
<td>Calculation method</td>
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<tr>
<td>Repr. 1B</td>
<td>H360D</td>
<td>Calculation method</td>
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<tr>
<td>STOT SE 3</td>
<td>H335</td>
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</tr>
<tr>
<td>STOT RE 2</td>
<td>H373</td>
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<tr>
<td>Aquatic Acute 1</td>
<td>H400</td>
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<tr>
<td>Aquatic Chronic 1</td>
<td>H410</td>
<td>Calculation method</td>
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</tbody>
</table>

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