SAFETY DATA SHEET

Fluazuron / Fipronil Formulation

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
   20 Spartan Road
   1619 Spartan, South Africa
   Telephone: +27119239300
   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

   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: \[\text{Images}\]
   Signal word: Danger
   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.

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.</th>
<th>Index-No.</th>
<th>Classification</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-(2-Butoxyethoxy)ethanol</td>
<td>112-34-5</td>
<td>203-961-6</td>
<td>603-096-00-8</td>
<td>Eye Irrit. 2; H319</td>
<td>&gt;= 50 - &lt; 70</td>
</tr>
<tr>
<td>Ethanol#</td>
<td>64-17-5</td>
<td>200-578-6</td>
<td>603-002-00-5</td>
<td>Flam. Liq. 2; H225 Eye Irrit. 2; H319</td>
<td>&gt;= 10 - &lt; 20</td>
</tr>
<tr>
<td>N-Methyl-2-pyrrolidone</td>
<td>872-50-4</td>
<td></td>
<td></td>
<td>Skin Irrit. 2; H315</td>
<td>&gt;= 10 - &lt; 20</td>
</tr>
<tr>
<td>Chemical Name</td>
<td>CAS Number</td>
<td>Aquatic Acute</td>
<td>Aquatic Chronic</td>
<td>M-Factor (Acute aquatic toxicity):</td>
<td>M-Factor (Chronic aquatic toxicity):</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------------------------------------</td>
<td>---------------</td>
<td>----------------</td>
<td>-----------------------------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>Fluazuron</td>
<td>212-828-1 606-021-00-7</td>
<td>Eye Irrit. 2; H319 Repr. 1B; H360D STOT SE 3; H335</td>
<td></td>
<td>&gt;= 2,5 - &lt; 10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fipronil (ISO)</td>
<td>120068-37-3 424-610-5 608-055-00-8</td>
<td>Acute Tox. 3; H301 Acute Tox. 2; H330 Acute Tox. 3; H311 STOT RE 1; H372 (Central nervous system, Kidney) Aquatic Acute 1; H400 Aquatic Chronic 1; H410</td>
<td></td>
<td>&gt;= 1 - &lt; 2,5</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2,6-Di-tert-butyl-p-cresol</td>
<td>128-37-0 204-881-4</td>
<td>Aquatic Acute 1; H400 Aquatic Chronic 1; H410</td>
<td></td>
<td>&gt;= 0,1 - &lt; 0,25</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tert-Butyl-4-methoxyphenol</td>
<td>25013-16-5 246-563-8</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>
<td>&gt;= 0,1 - &lt; 0,25</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: 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 dyking or other appropriate containment to keep material from spreading. If dyked material can be pumped, store recovered material in appropriate container.
Clean up remaining materials from spill with suitable absorbent.
Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.
Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

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

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Technical measures: See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.
Local/Total ventilation: 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 67.5 mg/m3</td>
<td>2006/15/EC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>15 ppm 101.2 mg/m3</td>
<td>2006/15/EC</td>
</tr>
<tr>
<td>N-Methyl-2-pyrrolidone</td>
<td>872-50-4</td>
<td>TWA OEL-RL</td>
<td>100 ppm 400 mg/m3</td>
<td>ZA OEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Further information: Recommended Limit</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>10 ppm 40 mg/m3</td>
<td>2009/161/EU</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>20 ppm 80 mg/m3</td>
<td>2009/161/EU</td>
</tr>
<tr>
<td>Ethanol</td>
<td>64-17-5</td>
<td>TWA OEL-RL</td>
<td>1.000 ppm 1.900 mg/m3</td>
<td>ZA OEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Further information: Recommended Limit</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></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/100 cm2</td>
<td>Internal</td>
</tr>
<tr>
<td>Fluazuron</td>
<td>86811-58-7</td>
<td>TWA</td>
<td>2 µg/m3 (OEB 4)</td>
<td>Internal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Further information: Skin</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wipe limit</td>
<td>20 µg/100 cm2</td>
<td>Internal</td>
</tr>
<tr>
<td>Fipronil (ISO)</td>
<td>120068-37-3</td>
<td>TWA</td>
<td>10 mg/m3</td>
<td>ZA OEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Further information: Recommended Limit</td>
<td></td>
<td></td>
</tr>
</tbody>
</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>
</table>
**SAFETY DATA SHEET**

**Fluazuron / Fipronil Formulation**

<table>
<thead>
<tr>
<th>N-Methyl-2-pyrrolidone</th>
<th>Workers</th>
<th>Inhalation</th>
<th>Long-term systemic effects</th>
<th>14,4 mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term local effects</td>
<td>40 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Workers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
<td>4,8 mg/kg bw/day</td>
<td></td>
</tr>
<tr>
<td>Consumers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
<td>3,6 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Consumers</td>
<td>Inhalation</td>
<td>Long-term local effects</td>
<td>4,5 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Consumers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
<td>2,4 mg/kg bw/day</td>
<td></td>
</tr>
<tr>
<td>Consumers</td>
<td>Ingestion</td>
<td>Long-term systemic effects</td>
<td>0,85 mg/kg bw/day</td>
<td></td>
</tr>
</tbody>
</table>

**Ethanol**

<table>
<thead>
<tr>
<th>Workers</th>
<th>Inhalation</th>
<th>Long-term systemic effects</th>
<th>950 mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
<td>343 mg/kg bw/day</td>
</tr>
<tr>
<td>Consumers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
<td>114 mg/m³</td>
</tr>
<tr>
<td>Consumers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
<td>206 mg/kg bw/day</td>
</tr>
<tr>
<td>Consumers</td>
<td>Ingestion</td>
<td>Long-term systemic effects</td>
<td>87 mg/kg bw/day</td>
</tr>
</tbody>
</table>

**2-(2-Butoxyethoxy)ethanol**

<table>
<thead>
<tr>
<th>Workers</th>
<th>Inhalation</th>
<th>Long-term systemic effects</th>
<th>67,5 mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term local effects</td>
<td>67,5 mg/m³</td>
</tr>
<tr>
<td>Workers</td>
<td>Skin contact</td>
<td>Acute local effects</td>
<td>101,2 mg/m³</td>
</tr>
<tr>
<td>Consumers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
<td>83 mg/kg bw/day</td>
</tr>
<tr>
<td>Consumers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
<td>40,5 mg/m³</td>
</tr>
<tr>
<td>Consumers</td>
<td>Inhalation</td>
<td>Long-term local effects</td>
<td>40,5 mg/m³</td>
</tr>
<tr>
<td>Consumers</td>
<td>Ingestion</td>
<td>Long-term systemic effects</td>
<td>50 mg/kg bw/day</td>
</tr>
<tr>
<td>Consumers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
<td>5 mg/kg bw/day</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Workers</th>
<th>Inhalation</th>
<th>Long-term systemic effects</th>
<th>3,5 mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers</td>
<td>Dermal</td>
<td>Long-term systemic effects</td>
<td>0,5 mg/kg bw/day</td>
</tr>
<tr>
<td>Consumers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
<td>0,86 mg/m³</td>
</tr>
<tr>
<td>Consumers</td>
<td>Dermal</td>
<td>Long-term systemic effects</td>
<td>0,25 mg/kg bw/day</td>
</tr>
<tr>
<td>Consumers</td>
<td>Ingestion</td>
<td>Long-term systemic effects</td>
<td>0,25 mg/kg bw/day</td>
</tr>
</tbody>
</table>

**t-Butyl-4-methoxyphenol**

<table>
<thead>
<tr>
<th>Workers</th>
<th>Inhalation</th>
<th>Long-term systemic effects</th>
<th>4,93 mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
<td>1,4 mg/kg bw/day</td>
</tr>
</tbody>
</table>
## SAFETY DATA SHEET

### Fluazuron / Fipronil Formulation

#### 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></td>
<td>Freshwater - intermittent</td>
<td>5 mg/l</td>
</tr>
<tr>
<td></td>
<td>Marine water</td>
<td>0.025 mg/l</td>
</tr>
<tr>
<td></td>
<td>Sewage treatment plant</td>
<td>10 mg/l</td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>1.09 mg/kg dry weight (d.w.)</td>
</tr>
<tr>
<td></td>
<td>Marine sediment</td>
<td>1.09 mg/kg dry weight (d.w.)</td>
</tr>
<tr>
<td></td>
<td>Soil</td>
<td>0.07 mg/kg dry weight (d.w.)</td>
</tr>
<tr>
<td>Ethanol</td>
<td>Fresh water</td>
<td>0.96 mg/l</td>
</tr>
<tr>
<td></td>
<td>Freshwater - intermittent</td>
<td>2.75 mg/l</td>
</tr>
<tr>
<td></td>
<td>Marine water</td>
<td>0.79 mg/l</td>
</tr>
<tr>
<td></td>
<td>Sewage treatment plant</td>
<td>580 mg/l</td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>3.6 mg/kg dry weight (d.w.)</td>
</tr>
<tr>
<td></td>
<td>Marine sediment</td>
<td>2.9 mg/kg dry weight (d.w.)</td>
</tr>
<tr>
<td></td>
<td>Soil</td>
<td>0.63 mg/kg dry weight (d.w.)</td>
</tr>
<tr>
<td>Oral (Secondary Poisoning)</td>
<td>380 mg/kg food</td>
<td></td>
</tr>
<tr>
<td>2-(2-Butoxyethoxy)ethanol</td>
<td>Fresh water</td>
<td>1.1 mg/l</td>
</tr>
<tr>
<td></td>
<td>Freshwater - intermittent</td>
<td>11 mg/l</td>
</tr>
<tr>
<td></td>
<td>Marine water</td>
<td>0.11 mg/l</td>
</tr>
<tr>
<td></td>
<td>Sewage treatment plant</td>
<td>200 mg/l</td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>4.4 mg/kg dry weight (d.w.)</td>
</tr>
<tr>
<td></td>
<td>Marine sediment</td>
<td>0.44 mg/kg dry weight (d.w.)</td>
</tr>
<tr>
<td></td>
<td>Soil</td>
<td>0.32 mg/kg dry weight (d.w.)</td>
</tr>
<tr>
<td>Secondary Poisoning</td>
<td>56 mg/kg food</td>
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<tr>
<td>2,6-Di-tert-butyl-p-cresol</td>
<td>Fresh water</td>
<td>0.199 µg/l</td>
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<tr>
<td></td>
<td>Intermittent use/release</td>
<td>0.02 µg/l</td>
</tr>
<tr>
<td></td>
<td>Marine water</td>
<td>0.02 µg/l</td>
</tr>
<tr>
<td></td>
<td>Sewage treatment plant</td>
<td>0.17 µg/l</td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>0.0996 mg/kg dry weight (d.w.)</td>
</tr>
<tr>
<td></td>
<td>Marine sediment</td>
<td>0.00996 mg/kg dry weight (d.w.)</td>
</tr>
<tr>
<td></td>
<td>Soil</td>
<td>0.04769 mg/kg dry weight (d.w.)</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>
<tr>
<td></td>
<td>Freshwater - intermittent</td>
<td>0.0156 mg/l</td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET

Fluazuron / Fipronil Formulation

<table>
<thead>
<tr>
<th>Marine water</th>
<th>0,00124 mg/l</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marine water - intermittent</td>
<td>0,00156 mg/l</td>
</tr>
<tr>
<td>Fresh water sediment</td>
<td>1,78 mg/kg dry weight (d.w.)</td>
</tr>
<tr>
<td>Marine sediment</td>
<td>0,178 mg/kg dry weight (d.w.)</td>
</tr>
<tr>
<td>Soil</td>
<td>0,348 mg/kg dry weight (d.w.)</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 : If adequate local exhaust ventilation is not available or exposure assessment demonstrates exposures outside the recommended guidelines, use respiratory protection.
Filter type : Combined particulates and organic vapour type (A-P)

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance : liquid
Colour : light yellow
Odour : solvent-like
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 : 32 °C
Evaporation rate : No data available
Flammability (solid, gas) : Not applicable
Upper explosion limit / Upper flammability limit : No data available
Lower explosion limit / Lower flammability limit : No data available
Vapour pressure : No data available
Relative vapour density : No data available
Relative density : No data available
Solubility(ies)
  Water solubility : No data available
  Partition coefficient: n-octanol/water : No data available
  Auto-ignition temperature : No data available
  Decomposition temperature : No data available
Viscosity
  Viscosity, kinematic : No data available
Explosive properties : Not explosive
Oxidizing properties : The substance or mixture is not classified as oxidizing.

9.2 Other information
  Flammability (liquids) : Not applicable
  Molecular weight : No data available
  Particle size : 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 toxicological effects
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:
- 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  
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
# SAFETY DATA SHEET

## Fluazuron / Fipronil Formulation

<table>
<thead>
<tr>
<th>Component</th>
<th>Genotoxicity in vitro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td>Test Type: Local lymph node assay (LLNA)</td>
</tr>
<tr>
<td></td>
<td>Exposure routes: Skin contact</td>
</tr>
<tr>
<td></td>
<td>Species: Mouse</td>
</tr>
<tr>
<td></td>
<td>Result: negative</td>
</tr>
<tr>
<td>N-Methyl-2-pyrrolidone</td>
<td>Test Type: Local lymph node assay (LLNA)</td>
</tr>
<tr>
<td></td>
<td>Exposure routes: Skin contact</td>
</tr>
<tr>
<td></td>
<td>Species: Mouse</td>
</tr>
<tr>
<td></td>
<td>Method: OECD Test Guideline 429</td>
</tr>
<tr>
<td></td>
<td>Result: negative</td>
</tr>
<tr>
<td></td>
<td>Remarks: Based on data from similar materials</td>
</tr>
<tr>
<td>Fluazuron</td>
<td>Exposure routes: Skin contact</td>
</tr>
<tr>
<td></td>
<td>Species: Guinea pig</td>
</tr>
<tr>
<td></td>
<td>Result: negative</td>
</tr>
<tr>
<td>Fipronil (ISO)</td>
<td>Test Type: Buehler Test</td>
</tr>
<tr>
<td></td>
<td>Exposure routes: Skin contact</td>
</tr>
<tr>
<td></td>
<td>Species: Guinea pig</td>
</tr>
<tr>
<td></td>
<td>Method: OECD Test Guideline 406</td>
</tr>
<tr>
<td></td>
<td>Result: negative</td>
</tr>
<tr>
<td>2,6-Di-tert-butyl-p-cresol</td>
<td>Test Type: Human repeat insult patch test (HRIPT)</td>
</tr>
<tr>
<td></td>
<td>Exposure routes: Skin contact</td>
</tr>
<tr>
<td></td>
<td>Species: Humans</td>
</tr>
<tr>
<td></td>
<td>Result: negative</td>
</tr>
<tr>
<td>tert-Butyl-4-methoxyphenol</td>
<td>Test Type: Human repeat insult patch test (HRIPT)</td>
</tr>
<tr>
<td></td>
<td>Exposure routes: Skin contact</td>
</tr>
<tr>
<td></td>
<td>Result: negative</td>
</tr>
<tr>
<td>Germ cell mutagenicity</td>
<td>Not classified based on available information.</td>
</tr>
</tbody>
</table>

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

Test Type: DNA Repair
Result: negative

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

Genotoxicity in vivo
: Test Type: Cytogenetic assay
Species: Hamster
Result: equivocal

Fipronil (ISO):
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: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
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: Unscheduled DNA synthesis (UDS) test with mammalian liver cells in vivo
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 486
Result: negative

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:**

<table>
<thead>
<tr>
<th>Species</th>
<th>Rat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Route</td>
<td>Ingestion</td>
</tr>
<tr>
<td>Exposure time</td>
<td>2 Years</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Species</th>
<th>Rat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Route</td>
<td>inhalation (vapour)</td>
</tr>
<tr>
<td>Exposure time</td>
<td>2 Years</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
</tbody>
</table>

**Fluazuron:**

<table>
<thead>
<tr>
<th>Species</th>
<th>Rat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Route</td>
<td>Ingestion</td>
</tr>
<tr>
<td>Exposure time</td>
<td>2 Years</td>
</tr>
<tr>
<td>Method</td>
<td>OECD Test Guideline 453</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Species</th>
<th>Mouse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Route</td>
<td>Ingestion</td>
</tr>
<tr>
<td>Exposure time</td>
<td>2 Years</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
</tbody>
</table>

**Fipronil (ISO):**

<table>
<thead>
<tr>
<th>Species</th>
<th>Mouse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Route</td>
<td>Ingestion</td>
</tr>
<tr>
<td>Exposure time</td>
<td>78 weeks</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Species</th>
<th>Rat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Route</td>
<td>Ingestion</td>
</tr>
</tbody>
</table>
Exposure time : 104 weeks
Result : positive
Remarks : The mechanism or mode of action is not relevant in humans.

2,6-Di-tert-butyl-p-cresol:
Species : Rat
Application Route : Ingestion
Exposure time : 22 Months
Result : negative

tert-Butyl-4-methoxyphenol:
Species : Hamster
Application Route : Ingestion
Exposure time : 24 weeks
Result : positive

Species : Rat
Application Route : Ingestion
Exposure time : 15 Months
Result : positive
Carcinogenicity - Assessment : Limited evidence of carcinogenicity in animal studies

Reproductive toxicity
May damage the unborn child.

Components:

2-(2-Butoxyethoxy)ethanol:
Effects on fertility : Test Type: One-generation reproduction toxicity study
Species: Rat
Application Route: Ingestion
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

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Species</th>
<th>Application Route</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Type: Embryo-foetal development</td>
<td>Rat</td>
<td>Ingestion</td>
<td>positive</td>
</tr>
<tr>
<td>Test Type: Fertility/early embryonic development</td>
<td>Rat</td>
<td>inhalation (vapour)</td>
<td>positive</td>
</tr>
<tr>
<td>Test Type: Embryo-foetal development</td>
<td>Rabbit</td>
<td>Ingestion</td>
<td>positive</td>
</tr>
</tbody>
</table>

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

**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
## Fluazuron / Fipronil Formulation

<table>
<thead>
<tr>
<th>Application Route</th>
<th>Exposure time</th>
<th>NOAEL</th>
<th>LOAEL</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingestion</td>
<td>90 Days</td>
<td>&gt;= 0,094 mg/l</td>
<td></td>
<td>OECD Test Guideline 408</td>
</tr>
<tr>
<td>Inhalation (vapour)</td>
<td>90 Days</td>
<td>&gt;= 2.000 mg/kg</td>
<td></td>
<td>OECD Test Guideline 413</td>
</tr>
<tr>
<td>Skin contact</td>
<td>90 Days</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Ethanol:

<table>
<thead>
<tr>
<th>Application Route</th>
<th>Exposure time</th>
<th>NOAEL</th>
<th>LOAEL</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingestion</td>
<td>90 Days</td>
<td>1.280 mg/kg</td>
<td>3.156 mg/kg</td>
<td></td>
</tr>
</tbody>
</table>

### N-Methyl-2-pyrrolidone:

<table>
<thead>
<tr>
<th>Application Route</th>
<th>Exposure time</th>
<th>NOAEL</th>
<th>LOAEL</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingestion</td>
<td>90 Days</td>
<td>169 mg/kg</td>
<td>433 mg/kg</td>
<td>OECD Test Guideline 408</td>
</tr>
<tr>
<td>Inhalation (dust/mist/fume)</td>
<td>96 Days</td>
<td>1 mg/l</td>
<td></td>
<td>OECD Test Guideline 413</td>
</tr>
</tbody>
</table>

### Fluazuron:

<table>
<thead>
<tr>
<th>Application Route</th>
<th>Exposure time</th>
<th>NOAEL</th>
<th>LOAEL</th>
<th>Target Organs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingestion</td>
<td>13 Weeks</td>
<td>240 mg/kg</td>
<td></td>
<td>Liver, Thyroid, Pituitary gland</td>
</tr>
<tr>
<td>Skin contact</td>
<td>20 Days</td>
<td>10 mg/kg</td>
<td>100 mg/kg</td>
<td></td>
</tr>
</tbody>
</table>
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  
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.

**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:

<table>
<thead>
<tr>
<th>Toxicity</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to fish</td>
<td>LC50 (Lepomis macrochirus (Bluegill sunfish)): 1.300 mg/l Exposure time: 96 h</td>
</tr>
<tr>
<td>Toxicity to daphnia and other aquatic invertebrates</td>
<td>EC50 (Daphnia magna (Water flea)): &gt; 100 mg/l Exposure time: 48 h Method: OECD Test Guideline 202</td>
</tr>
<tr>
<td>Toxicity to algae/aquatic plants</td>
<td>ErC50 (Desmodesmus subspicatus (green algae)): &gt; 100 mg/l Exposure time: 96 h Method: OECD Test Guideline 201</td>
</tr>
<tr>
<td>Toxicity to microorganisms</td>
<td>EC10 : &gt; 1.995 mg/l Exposure time: 30 min</td>
</tr>
</tbody>
</table>

Ethanol:

<table>
<thead>
<tr>
<th>Toxicity</th>
<th>Value</th>
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<tbody>
<tr>
<td>Toxicity to fish</td>
<td>LC50 (Pimephales promelas (fathead minnow)): &gt; 1.000 mg/l Exposure time: 96 h</td>
</tr>
<tr>
<td>Toxicity to daphnia and other aquatic invertebrates</td>
<td>EC50 (Ceriodaphnia (water flea)): &gt; 1.000 mg/l Exposure time: 48 h</td>
</tr>
<tr>
<td>Toxicity to algae/aquatic plants</td>
<td>ErC50 (Chlorella vulgaris (Fresh water algae)): 275 mg/l Exposure time: 72 h</td>
</tr>
<tr>
<td></td>
<td>EC10 (Chlorella vulgaris (Fresh water algae)): 11.5 mg/l Exposure time: 72 h</td>
</tr>
<tr>
<td>Toxicity to microorganisms</td>
<td>EC50 (Pseudomonas putida): 6.500 mg/l Exposure time: 16 h</td>
</tr>
<tr>
<td>Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)</td>
<td>NOEC: 9.6 mg/l Exposure time: 9 d Species: Daphnia magna (Water flea)</td>
</tr>
</tbody>
</table>

N-Methyl-2-pyrrolidone:

<table>
<thead>
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<th>Toxicity</th>
<th>Value</th>
</tr>
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<tbody>
<tr>
<td>Toxicity to fish</td>
<td>LC50 (Oncorhynchus mykiss (rainbow trout)): &gt; 500 mg/l Exposure time: 96 h</td>
</tr>
<tr>
<td>Toxicity to daphnia and other aquatic invertebrates</td>
<td>EC50 (Daphnia magna (Water flea)): &gt; 1.000 mg/l Exposure time: 24 h Method: DIN 38412</td>
</tr>
</tbody>
</table>
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 aquatic invertebrates:
- EC50 (Daphnia sp. (water flea)): 0.0006 mg/l
  Exposure time: 48 h

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 (Mysisopsis bahia (oossum 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
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-buty1-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:
Biodegradability: Result: Readily biodegradable.
Biodegradation: 85 %
Exposure time: 28 d
Method: OECD Test Guideline 301C

Ethanol:
Biodegradability: Result: Readily biodegradable.
Biodegradation: 84 %
Exposure time: 20 d

N-Methyl-2-pyrrolidone:
Biodegradability: Result: Readily biodegradable.
Biodegradation: 73 %
Exposure time: 28 d
Method: OECD Test Guideline 301C

Fipronil (ISO):
Biodegradability: Result: Not readily biodegradable.
Biodegradation: 47 %
Exposure time: 28 d
Method: OECD Test Guideline 301B

2,6-Di-tert-butyl-p-cresol:
Biodegradability: Result: Not readily biodegradable.
Biodegradation: 4,5 %
Exposure time: 28 d
Method: OECD Test Guideline 301C

tert-Butyl-4-methoxyphenol:
Biodegradability: Result: Not readily biodegradable.
Biodegradation: 34,41 %
Exposure time: 28 d
12.3 Bioaccumulative potential

Components:

2-(2-Butoxyethoxy)ethanol:
Partition coefficient: n-octanol/water : log Pow: 1

Ethanol:
Partition coefficient: n-octanol/water : log Pow: -0.35

N-Methyl-2-pyrrolidone:
Partition coefficient: n-octanol/water : log Pow: -0.46
Method: OECD Test Guideline 107

Fluazuron:
Partition coefficient: n-octanol/water : log Pow: 5.1

Fipronil (ISO):
Bioaccumulation : Species: Lepomis macrochirus (Bluegill sunfish)
Bioconcentration factor (BCF): 321
Partition coefficient: n-octanol/water : log Pow: 4

2,6-Di-tert-butyl-p-cresol:
Bioaccumulation : Species: Cyprinus carpio (Carp)
Bioconcentration factor (BCF): 330 - 1.800
Partition coefficient: n-octanol/water : log Pow: 5.1

tert-Butyl-4-methoxyphenol:
Bioaccumulation : Species: Cyprinus carpio (Carp)
Bioconcentration factor (BCF): 8.1 - 21
Partition coefficient: n-octanol/water : log Pow: 2.82
Method: OECD Test Guideline 117

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 Other adverse effects

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

**SECTION 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

<table>
<thead>
<tr>
<th>ADN</th>
<th>ADR</th>
<th>RID</th>
<th>IMDG</th>
<th>IATA</th>
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<td>UN 1170</td>
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14.2 UN proper shipping name

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<th>IATA</th>
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<tr>
<td>ETHANOL SOLUTION</td>
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<td>ETHANOL SOLUTION</td>
<td>ETHANOL SOLUTION (Fluazuron, Fipronil (ISO))</td>
<td>Ethanol solution</td>
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14.3 Transport hazard class(es)

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<tr>
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</table>
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Revision Date: 27.08.2021
SDS Number: 557859-00012
Date of last issue: 09.04.2021
Date of first issue: 15.03.2016

14.4 Packing group

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

ADR
Packing group: III
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
EmS Code: F-E, S-D

IATA (Cargo)
Packing instruction (cargo aircraft): 366
Packing instruction (LQ): Y344

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

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

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

The components of this product are reported in the following inventories:

- AICS: not determined
- DSL: not determined
- IECSC: not determined

15.2 Chemical safety assessment
A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

Other information: Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

Full text of H-Statements

H225: Highly flammable liquid and vapour.
H301: Toxic if swallowed.
H302: Harmful if swallowed.
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: May damage the unborn child.
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
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STOT RE : Specific target organ toxicity - repeated exposure
STOT SE : Specific target organ toxicity - single exposure
2006/15/EC : Europe. Indicative occupational exposure limit values
2009/161/EU : Europe. COMMISSION DIRECTIVE 2009/161/EU establishing
               a third list of indicative occupational exposure limit values in
               implementation of Council Directive 98/24/EC and amending
ZA OEL : South Africa. Hazardous Chemical Substances Regulations,
         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
ZA OEL / TWA OEL-RL : Long term occupational exposure limits - recommended limit

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways;
ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road;
AIIC - Australian Inventory of Industrial Chemicals;
ASTM - American Society for the Testing of Materials;
bw - Body weight;
CLP - Classification Labelling Packaging 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;
IAIA - International Air Transport Association;
IC50 - Half maximal inhibitory concentration;
ICAO - International Civil Aviation Organization;
IECSC - Inventory of Existing Chemical Substances in China;
IMDG - International Maritime Dangerous Goods;
IMO - International Maritime Organization;
ISHL - Industrial Safety and Health Law (Japan);
ISO - International Organisation for Standardization;
KECI - Korea Existing Chemicals Inventory;
LC50 - Lethal Concentration to 50 % of a test population;
LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose);
MARPOL - International Convention for the Prevention of Pollution from Ships;
          n.o.s. - Not Otherwise Specified;
NO(A)EC - No Observed (Adverse) Effect Concentration;
NO(A)EL - No Observed (Adverse) Effect Level;
NOELR - No Observable Effect Loading Rate;
NZIoC - New Zealand Inventory of Chemicals;
OECD - Organization for Economic Co-operation and Development;
OPPTS - Office of Chemical Safety and Pollution Prevention;
PBT - Persistent, Bioaccumulative and Toxic substance;
PICCS - Philippines Inventory of Chemicals and Chemical Substances;
(Q)SAR - (Quantitative) Structure Activity Relationship;
          and of the Council concerning the Registration, Evaluation,
          Authorisation and Restriction of Chemicals;
RID - Regulations concerning the International Carriage of Dangerous
      Goods by Rail;
SDAT - Self-Accelerating Decomposition Temperature;
SDS - Safety Data Sheet;
SVHC - Substance of very high concern;
TCSI - Taiwan Chemical Substance Inventory;
TECI - 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

Further information
Sources of key data used to compile the Safety Data Sheet : Internal technical data, data from raw material SDSs, OECD

Classification of the mixture: Classification procedure:
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<table>
<thead>
<tr>
<th>Component</th>
<th>Hazard</th>
<th>Code</th>
<th>Calculation Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flam. Liq. 3</td>
<td>H226</td>
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<td>Based on product data or assessment</td>
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<tr>
<td>Skin Irrit. 2</td>
<td>H315</td>
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<tr>
<td>Eye Irrit. 2</td>
<td>H319</td>
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</tr>
<tr>
<td>Repr. 1B</td>
<td>H360D</td>
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<tr>
<td>STOT SE 3</td>
<td>H335</td>
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<td>Aquatic Acute 1</td>
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<tr>
<td>Aquatic Chronic 1</td>
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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.

ZA / EN