SAFETY DATA SHEET

Fluazuron / Fipronil Formulation

Section 1: Identification

Product name: Fluazuron / Fipronil Formulation

Manufacturer or supplier’s details
Company: MSD
Address: 33 Whakatiki Street - Private Bag 908
Upper Hutt - New Zealand
Telephone: 908-740-4000
Emergency telephone number: 1-908-423-6000
E-mail address: EHSDATASTEWARD@msd.com
Telefax: 908-735-1496

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

Section 2: hazard identification

GHS Classification
Flammable liquids: Flam. Liq.3
Skin corrosion/irritation: 2
Serious eye damage/eye irritation: 2A
Carcinogenicity: Carc.1B
Reproductive toxicity: Repr.1B
Specific target organ toxicity - single exposure: STOT SE3
Specific target organ toxicity - repeated exposure: STOT RE2 (Central nervous system, Kidney)

GHS label elements
Hazard pictograms: [Diagram]
Signal word: Danger
Hazard statements: H226 Flammable liquid and vapour. H315 Causes skin irritation.
H319 Causes serious eye irritation.  
H335 May cause respiratory irritation.  
H350 May cause cancer.  
H360D May damage the unborn child.  
H373 May cause damage to organs (Central nervous system, Kidney) through prolonged or repeated exposure.

Precautionary statements:

Prevention:
- P201 Obtain special instructions before use.  
- P202 Do not handle until all safety precautions have been read and understood.  
- P210 Keep away from heat/ sparks/ open flames/ hot surfaces.  
- No smoking.  
- P233 Keep container tightly closed.  
- P241 Use explosion-proof electrical/ ventilating/ lighting equipment.  
- P242 Use only non-sparking tools.  
- P243 Take precautionary measures against static discharge.  
- P260 Do not breathe mist or vapours.  
- P264 Wash skin thoroughly after handling.  
- P271 Use only outdoors or in a well-ventilated area.  
- P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.  
- P281 Use personal protective equipment as required.

Response:
- P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.  
- P304 + P340 + P312 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.  
- P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
- P308 + P313 IF exposed or concerned: Get medical advice/ attention.  
- P332 + P313 If skin irritation occurs: Get medical advice/ attention.  
- P337 + P313 If eye irritation persists: Get medical advice/ attention.  
- P362 Take off contaminated clothing and wash before reuse.

Storage:
- P403 + P235 Store in a well-ventilated place. Keep cool.  
- P405 Store locked up.

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

Other hazards which do not result in classification
Vapours may form explosive mixture with air.
Section 3: Composition/information on ingredients

<table>
<thead>
<tr>
<th>Substance / Mixture</th>
<th>Components</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Chemical name</td>
</tr>
<tr>
<td>Mixture</td>
<td>2-(2-Butoxyethoxy)ethanol</td>
</tr>
<tr>
<td></td>
<td>N-Methyl-2-pyrrolidone</td>
</tr>
<tr>
<td></td>
<td>Ethanol</td>
</tr>
<tr>
<td></td>
<td>Fluazuron</td>
</tr>
<tr>
<td></td>
<td>Fipronil (ISO)</td>
</tr>
<tr>
<td></td>
<td>tert-butyl-4-methoxyphenol</td>
</tr>
</tbody>
</table>

Section 4: First-aid measures

General advice: In the case of accident or if you feel unwell, seek medical advice immediately. When symptoms persist or in all cases of doubt seek medical advice.

If inhaled: If inhaled, remove to fresh air. Get medical attention.

In case of skin contact: In case of contact, immediately flush skin with 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.

Most important symptoms and effects, both acute and delayed: Causes skin irritation. Causes serious eye irritation. May cause respiratory irritation. May cause cancer. May damage the unborn child. May cause damage to organs through prolonged or repeated exposure.

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

Notes to physician: Treat symptomatically and supportively.

Section 5: Fire-fighting measures

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

Unsuitable extinguishing: High volume water jet
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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

Specific extinguishing methods:
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use water spray to cool unopened containers. Remove undamaged containers from fire area if it is safe to do so. Evacuate area.

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

Hazchem Code: 2Y

Section 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures:
Remove all sources of ignition. Use personal protective equipment. Follow safe handling advice and personal protective equipment recommendations.

Environmental precautions:
Discharge into the environment must be avoided. 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.

Methods and materials for containment and 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.
Section 7: Handling and storage

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

Local/Total ventilation : If sufficient ventilation is unavailable, use with local exhaust ventilation.
If advised by assessment of the local exposure potential, use only in an area equipped with explosion-proof exhaust ventilation.

Advice on safe handling : Do not get on skin or clothing.
Do not breathe vapours or spray mist.
Do not swallow.
Do not get in eyes.
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 and sources of ignition.
Take precautionary measures against static discharges.
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.

Conditions for safe storage : 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.

Materials to avoid : Do not store with the following product types:
Self-reactive substances and mixtures
Organic peroxides
Oxidizing agents
Flammable gases
Pyrophoric liquids
Pyrophoric solids
Self-heating substances and mixtures
Poisonous gases
Explosives
Section 8: Exposure controls/personal protection

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-(2-Butoxyethoxy)ethanol</td>
<td>112-34-5</td>
<td>TWA (Inhalable fraction and vapor)</td>
<td>10 ppm</td>
<td>ACGIH</td>
</tr>
<tr>
<td>N-Methyl-2-pyrrolidone</td>
<td>872-50-4</td>
<td>WES- STEL</td>
<td>75 ppm 309 mg/m3</td>
<td>NZ OEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Further information: Skin absorption</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>WES-TWA</td>
<td>25 ppm 103 mg/m3</td>
<td>NZ OEL</td>
</tr>
<tr>
<td>Ethanol</td>
<td>64-17-5</td>
<td>WES-TWA</td>
<td>1,000 ppm 1,880 mg/m3</td>
<td>NZ OEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>1,000 ppm</td>
<td>ACGIH</td>
</tr>
<tr>
<td>Fluazuron</td>
<td>86811-58-7</td>
<td>TWA</td>
<td>60 µg/m3 (OEB 3) Internal</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wipe limit</td>
<td>600 µg/100 cm2 Internal</td>
<td>Internal</td>
</tr>
<tr>
<td>Fipronil (ISO)</td>
<td>120068-37-3</td>
<td>TWA</td>
<td>2 µg/m3 (OEB 4) Internal</td>
<td>Internal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wipe limit</td>
<td>20 µg/100 cm2 Internal</td>
<td>Internal</td>
</tr>
</tbody>
</table>

Biological occupational exposure limits

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Control parameters</th>
<th>Biological specimen</th>
<th>Sampling time</th>
<th>Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-Methyl-2-pyrrolidone</td>
<td>872-50-4</td>
<td>5-Hydroxy-N-methyl-2-pyrrolidone</td>
<td>Urine</td>
<td>End of shift (As soon as possible after exposure ceases)</td>
<td>100 mg/l</td>
<td>ACGIH BEI</td>
</tr>
</tbody>
</table>

Engineering measures

Use appropriate engineering controls and manufacturing technologies to control airborne concentrations (e.g., dripless 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.

Personal protective equipment

Respiratory protection

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

Filter type

Combined particulates and organic vapour type
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.

Eye protection

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

Skin and body protection

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

Section 9: 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
- **Flammability (liquids):** 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
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Version 4.0 Revision Date: 23.03.2020 SDS Number: 557856-00009 Date of last issue: 13.09.2019

Date of first issue: 15.03.2016

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.
Molecular weight: No data available
Particle size: No data available

Section 10: Stability and reactivity
Reactivity: Not classified as a reactivity hazard.
Chemical stability: Stable under normal conditions.
Possibility of hazardous reactions
Flammable liquid and vapour.
Vapours may form explosive mixture with air.
Can react with strong oxidizing agents.
Conditions to avoid: Heat, flames and sparks.
Incompatible materials: Oxidizing agents
Hazardous decomposition products: No hazardous decomposition products are known.

Section 11: Toxicological information
Exposure routes: Inhalation
Skin contact
Ingestion
Eye contact

Acute toxicity
Not classified based on available information.

Product:
Acute oral toxicity: Acute toxicity estimate: > 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

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

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

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 inhalation toxicity: LC50 (Rat): 0.36 mg/l
  Exposure time: 4 h
  Test atmosphere: dust/mist
- Acute dermal toxicity: LD50 (Rabbit): 354 mg/kg

tert-butyl-4-methoxyphenol:
- Acute oral toxicity: LD50 (Rat): 2,000 mg/kg
Acute dermal toxicity: LD50 (Rabbit): > 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

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

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

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

N-Methyl-2-pyrrolidone:
   Species: Rabbit
   Result: Irritation to eyes, reversing within 21 days
## Ethanol:
- **Species**: Rabbit
- **Result**: Irritation to eyes, reversing within 21 days
- **Method**: OECD Test Guideline 405

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

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

## tert-butyl-4-methoxyphenol:
- **Species**: Rabbit
- **Result**: Irritation to eyes, reversing within 21 days

### 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

#### 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

#### Ethanol:
- **Test Type**: Local lymph node assay (LLNA)
- **Exposure routes**: Skin contact
- **Species**: Mouse
- **Result**: negative
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</tbody>
</table>

### 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

### tert-butyl-4-methoxyphenol:

- **Test Type**: Human repeat insult patch test (HRIPT)
- **Exposure routes**: Skin contact
- **Result**: negative

### Chronic toxicity

#### 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

#### 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

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

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

tert-butyl-4-methoxyphenol:
Genotoxicity in vitro:
Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

Carcinogenicity:
May cause cancer.

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

Fluazuron:
Species: Rat
Application Route: Ingestion
Exposure time: 2 Years
Method: OECD Test Guideline 453
Result: negative

Species: Mouse
Application Route: Ingestion
Exposure time: 2 Years
Result: negative

Fipronil (ISO):
Species: Mouse
Application Route: Ingestion
Exposure time: 78 weeks
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</tbody>
</table>

- **Result**: negative
- **Species**: Rat
- **Application Route**: Ingestion
- **Exposure time**: 104 weeks
- **Result**: positive

**Remarks**: The mechanism or mode of action is not relevant in humans.

**tert-butyl-4-methoxyphenol**:

- **Species**: Hamster
- **Application Route**: Ingestion
- **Exposure time**: 24 weeks
- **Result**: positive

**Species**: Rat
- **Application Route**: Ingestion
- **Exposure time**: 12 Months
- **Result**: positive

**Carcinogenicity - Assessment**: Sufficient evidence of carcinogenicity in animal experiments

**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

**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
### Reproductive toxicity - Assessment

- **Species**: Rat  
  **Application Route**: inhalation (vapour)  
  **Result**: positive  
  **Test Type**: Embryo-foetal development  
  **Species**: Rabbit  
  **Application Route**: Ingestion  
  **Result**: positive  

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

**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

**tert-butyl-4-methoxyphenol**:  
**Effects on fertility**: Test Type: One-generation reproduction toxicity study  
**Species**: Rat  
**Application Route**: Ingestion  
**Result**: positive
Effects on foetal development:
- Test Type: Embryo-foetal development
- Species: Rat
- Application Route: Ingestion
- Result: positive

Reproductive toxicity - Assessment:
- Some evidence of adverse effects on sexual function and fertility, and/or 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 (Central nervous system, Kidney) 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.

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

- Species: Rat
- NOAEL: >= 0.094 mg/l
- Application Route: Inhalation (vapour)
- Exposure time: 90 Days
- Method: OECD Test Guideline 413

- Species: Rat
- NOAEL: >= 2,000 mg/kg
- Application Route: Skin contact
- Exposure time: 90 Days

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

Ethanol:
Species: Rat
NOAEL: 1,280 mg/kg
LOAEL: 3,156 mg/kg
Application Route: Ingestion
Exposure time: 90 Days

Fluazuron:
Species: Rat
LOAEL: 240 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

### Method

#### tert-butyl-4-methoxyphenol:
- Species: Rat
- LOAEL: 63,000 mg/kg
- Application Route: Ingestion
- Exposure time: 6 Weeks

#### Aspiration toxicity
- Not classified based on available information.

#### Experience with human exposure
- Components:
  - N-Methyl-2-pyrrolidone:
    - Skin contact: Symptoms: Skin irritation

### Ecotoxicity
#### 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

- N-Methyl-2-pyrrolidone:
  - Toxicity to fish: LC50 (Oncorhynchus mykiss (rainbow trout)): > 500 mg/l
<table>
<thead>
<tr>
<th>Exposure time: 96 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to daphnia and other aquatic invertebrates</td>
</tr>
<tr>
<td>EC50 (Daphnia magna (Water flea)): &gt; 1,000 mg/l</td>
</tr>
<tr>
<td>Exposure time: 24 h</td>
</tr>
<tr>
<td>Method: DIN 38412</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exposure time: 72 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to algae/aquatic plants</td>
</tr>
<tr>
<td>ErC50 (Desmodesmus subspicatus (green algae)): 600.5 mg/l</td>
</tr>
<tr>
<td>EC10 (Desmodesmus subspicatus (green algae)): 92.6 mg/l</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Exposure time: 72 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to microorganisms</td>
</tr>
<tr>
<td>EC50: &gt; 600 mg/l</td>
</tr>
<tr>
<td>Exposure time: 30 min</td>
</tr>
<tr>
<td>Method: ISO 8192</td>
</tr>
</tbody>
</table>

**Ethanol:**

<table>
<thead>
<tr>
<th>Exposure time: 96 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to fish</td>
</tr>
<tr>
<td>LC50 (Pimephales promelas (fathead minnow)): &gt; 1,000 mg/l</td>
</tr>
<tr>
<td>Exposure time: 96 h</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exposure time: 48 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to daphnia and other aquatic invertebrates</td>
</tr>
<tr>
<td>EC50 (Ceriodaphnia (water flea)): &gt; 1,000 mg/l</td>
</tr>
<tr>
<td>Exposure time: 48 h</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exposure time: 72 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to algae/aquatic plants</td>
</tr>
<tr>
<td>ErC50 (Chlorella vulgaris (Fresh water algae)): 275 mg/l</td>
</tr>
<tr>
<td>EC10 (Chlorella vulgaris (Fresh water algae)): 11.5 mg/l</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Exposure time: 16 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to microorganisms</td>
</tr>
<tr>
<td>EC50 (Pseudomonas putida): 6,500 mg/l</td>
</tr>
</tbody>
</table>

**Fluazuron:**

<table>
<thead>
<tr>
<th>Exposure time: 96 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to fish</td>
</tr>
<tr>
<td>LC50 (Cyprinus carpio (Carp)): &gt; 9.1 mg/l</td>
</tr>
<tr>
<td>Exposure time: 96 h</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exposure time: 48 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to daphnia and other aquatic invertebrates</td>
</tr>
<tr>
<td>EC50 (Daphnia sp. (water flea)): 0.0006 mg/l</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exposure time: 72 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to algae/aquatic plants</td>
</tr>
<tr>
<td>NOEC (Raphidocelis subcapitata (freshwater green alga)): 27.9 mg/l</td>
</tr>
</tbody>
</table>

**Fipronil (ISO):**

<table>
<thead>
<tr>
<th>Exposure time: 96 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to fish</td>
</tr>
<tr>
<td>LC50 (Lepomis macrochirus (Bluegill sunfish)): 85.2 µg/l</td>
</tr>
</tbody>
</table>
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

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

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

Toxicity to microorganisms:
- EC50: >1,000 mg/l
  Exposure time: 3 h

**tert-butyl-4-methoxyphenol:**

Toxicity to fish:
- LC50: 5.8 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: 96 h
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants:
- EC50 (Pseudokirchneriella subcapitata (green algae)): 5.2 mg/l
  Exposure time: 72 h
Method: OECD Test Guideline 201

**Persistence and degradability**

**Components:**

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

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

**N-Methyl-2-pyrrolidone:**

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

**Ethanol:**
Biodegradability

<table>
<thead>
<tr>
<th>Component</th>
<th>Result</th>
<th>Biodegradation</th>
<th>Exposure time</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluazuron / Fipronil Formulation</td>
<td>Readily biodegradable.</td>
<td>84 %</td>
<td>20 d</td>
<td></td>
</tr>
<tr>
<td>Fipronil (ISO)</td>
<td>Not readily biodegradable.</td>
<td>47 %</td>
<td>28 d</td>
<td>OECD Test Guideline 301B</td>
</tr>
</tbody>
</table>

Bioaccumulative potential

Components:

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

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

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

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

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

- tert-butyl-4-methoxyphenol:
  - Partition coefficient: n-octanol/water: log Pow: 2.8

Mobility in soil
No data available

Other adverse effects
No data available

Section 13: Disposal considerations

Disposal methods

- Waste from residues: Dispose of in accordance with local regulations.
- Contaminated packaging: Empty containers should be taken to an approved waste handling site for recycling or disposal.
  - 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

International Regulations

**UNRTDG**
- **UN number**: UN 1170
- **Proper shipping name**: ETHANOL SOLUTION
- **Class**: 3
- **Packing group**: III
- **Labels**: 3

**IATA-DGR**
- **UN/ID No.**: UN 1170
- **Proper shipping name**: Ethanol solution
- **Class**: 3
- **Packing group**: III
- **Labels**: Flammable Liquids
- **Packing instruction (cargo aircraft)**: 366
- **Packing instruction (passenger aircraft)**: 355

**IMDG-Code**
- **UN number**: UN 1170
- **Proper shipping name**: ETHANOL SOLUTION (Fluazuron, Fipronil (ISO))
- **Class**: 3
- **Packing group**: III
- **Labels**: 3
- **EmS Code**: F-E, S-D
- **Marine pollutant**: yes

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**
Not applicable for product as supplied.

National Regulations

**NZS 5433**
- **UN number**: UN 1170
- **Proper shipping name**: ETHANOL SOLUTION
- **Class**: 3
- **Packing group**: III
- **Labels**: 3
- **Hazchem Code**: 2Y

**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.
Section 15: Regulatory information

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

HSNO Approval Number
HSR100759 Veterinary Medicines Non dispersive Open System Application Group Standard 2017

HSW Controls
Certified handler certificate not required.
Tracking hazardous substance not required.
Refer to the Health and Safety at Work (Hazardous Substances) Regulations 2017, for further information.

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

<table>
<thead>
<tr>
<th>Inventory</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>AICS</td>
<td>not determined</td>
</tr>
<tr>
<td>DSL</td>
<td>not determined</td>
</tr>
<tr>
<td>IECSC</td>
<td>not determined</td>
</tr>
</tbody>
</table>

Section 16: Other information

Further information

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

Date format: dd.mm.yyyy

Full text of other abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
<tr>
<td>ACGIH BEI</td>
<td>ACGIH - Biological Exposure Indices (BEI)</td>
</tr>
<tr>
<td>NZ OEL</td>
<td>New Zealand. Workplace Exposure Standards for Atmospheric Contaminants</td>
</tr>
<tr>
<td>ACGIH / TWA</td>
<td>8-hour, time-weighted average</td>
</tr>
<tr>
<td>ACGIH / STEL</td>
<td>Short-term exposure limit</td>
</tr>
<tr>
<td>NZ OEL / WES-TWA</td>
<td>Workplace Exposure Standard - Time Weighted average</td>
</tr>
<tr>
<td>NZ OEL / WES-STE L</td>
<td>Workplace Exposure Standard - Short-Term Exposure Limit</td>
</tr>
</tbody>
</table>

AICS - Australian Inventory of Chemical Substances; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxin; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with
SAFETY DATA SHEET

Fluazuron / Fipronil Formulation

Version 4.0  Revision Date: 23.03.2020  SDS Number: 557856-00009  Date of last issue: 13.09.2019  Date of first issue: 15.03.2016

x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

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

NZ / EN