SAFETY DATA SHEET

Fluazuron / Fipronil Formulation

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Fluazuron / Fipronil Formulation

Manufacturer or supplier's details
Company name of supplier: MSD
Address: 2000 Galloping Hill Road
Kenilworth - New Jersey - U.S.A. 07033
Telephone: 908-740-4000
Emergency telephone: 1-908-423-6000
E-mail address: EHSDATASTEWARD@msd.com

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

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification
Flammable liquids: Category 3
Acute toxicity (Oral): Category 5
Acute toxicity (Dermal): Category 5
Skin irritation: Category 2
Eye irritation: Category 2A
Carcinogenicity: Category 2
Reproductive toxicity: Category 1B
Specific target organ toxicity - single exposure: Category 3
Specific target organ toxicity - repeated exposure: Category 1 (Central nervous system, Kidney)

GHS label elements
Hazard pictograms: ![Pictograms]
Signal Word: Danger
Hazard Statements: H226 Flammable liquid and vapor.
H303 + H313 May be harmful if swallowed or in contact with skin.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H351 Suspected of causing cancer.
H360D May damage the unborn child. 
H372 Causes 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, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260 Do not breathe mist or vapors.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

**Response:**
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. 
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. 
P312 Call a POISON CENTER or doctor/ physician if you feel unwell. 
P332 + P313 If skin irritation occurs: Get medical advice/ attention. 
P337 + P313 If eye irritation persists: Get medical advice/ attention. 
P362 + P364 Take off contaminated clothing and wash it before reuse.

**Storage:**
P405 Store locked up.

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

**Other hazards**
Vapors may form explosive mixture with air.

### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

#### Substance / Mixture: Mixture

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-(2-Butoxyethoxy)ethanol</td>
<td>112-34-5</td>
<td>&gt;= 50 - &lt; 70</td>
</tr>
<tr>
<td>N-Methyl-2-pyrrolidone</td>
<td>872-50-4</td>
<td>&gt;= 10 - &lt; 20</td>
</tr>
<tr>
<td>Ethanol#</td>
<td>64-17-5</td>
<td>&gt;= 10 - &lt; 20</td>
</tr>
</tbody>
</table>
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Fluazuron / Fipronil Formulation

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: May be harmful if swallowed or in contact with skin. Causes skin irritation. Causes serious eye irritation. May cause respiratory irritation. Suspected of causing cancer. May damage the unborn child. Causes 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 media: High volume water jet

Specific hazards during fire fighting: Do not use a solid water stream as it may scatter and spread fire. Flash back possible over considerable distance. Vapors may form explosive mixtures with air. Exposure to combustion products may be a hazard to health.
Hazardous combustion products: Carbon oxides
Nitrigen oxides (NOx)
Chlorine compounds
Fluorine compounds
Sulfur 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 fire-fighters: In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment.

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 (see section 7) and personal protective equipment recommendations (see section 8).

Environmental precautions: Avoid release to the environment.
Prevent further leakage or spillage if safe to do so.
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/vapors/mists with a water spray jet.
For large spills, provide diking or other appropriate containment to keep material from spreading. If diked 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/PERSOAL PROTECTION section.

Local/Total ventilation: If sufficient ventilation is unavailable, use with local exhaust ventilation.
Use explosion-proof electrical, ventilating and lighting equip-

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Advice on safe handling:
- Do not get on skin or clothing.
- Do not breathe mist or vapors.
- 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 sensitized individuals should consult their physician regarding working with respiratory irritants or sensitizers.
- 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.

Conditions for safe storage:
- Keep in properly labeled 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:
  - 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

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients 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>
</table>

5 / 25
Biological occupational exposure limits

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Control parameters</th>
<th>Biological specimen</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</td>
<td>100 mg/l</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></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>
</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.

Use explosion-proof electrical, ventilating and lighting equipment.

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 vapor 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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>liquid</td>
</tr>
<tr>
<td>Color</td>
<td>light yellow</td>
</tr>
<tr>
<td>Odor</td>
<td>solvent</td>
</tr>
<tr>
<td>Odor Threshold</td>
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</tr>
<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>Initial boiling point and boiling</td>
<td>No data available</td>
</tr>
<tr>
<td>range</td>
<td></td>
</tr>
<tr>
<td>Flash point</td>
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</tr>
<tr>
<td>Evaporation rate</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability (liquids)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Upper explosion limit / Upper</td>
<td>No data available</td>
</tr>
<tr>
<td>flammability limit</td>
<td></td>
</tr>
<tr>
<td>Lower explosion limit / Lower</td>
<td>No data available</td>
</tr>
<tr>
<td>flammability limit</td>
<td></td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative vapor density</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative density</td>
<td>No data available</td>
</tr>
<tr>
<td>Solubility(ies)</td>
<td>No data available</td>
</tr>
<tr>
<td>Water solubility</td>
<td>No data available</td>
</tr>
<tr>
<td>Partition coefficient: n-</td>
<td>No data available</td>
</tr>
</tbody>
</table>
octanol/water
Autoignition 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 vapor.
  Vapors 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

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

Acute toxicity
May be harmful if swallowed or in contact with skin.

Product:
Acute oral toxicity : Acute toxicity estimate: 2,242 mg/kg
  Method: Calculation method

Acute inhalation toxicity : Acute toxicity estimate: > 10 mg/l
  Exposure time: 4 h
  Test atmosphere: dust/mist
  Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate: 3,646 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: vapor

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:
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 (Mouse): 1,100 mg/kg
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

### 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:
- 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:**
- 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
- Remarks: Based on data from similar materials

**Respiratory or skin sensitization**

**Skin sensitization**
Not classified based on available information.

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

**Components:**

**2-(2-Butoxyethoxy)ethanol:**
- Test Type: Maximization Test
- Routes of exposure: Skin contact
- Species: Guinea pig
- Result: negative

**N-Methyl-2-pyrrolidone:**
- Test Type: Local lymph node assay (LLNA)
- Routes of exposure: 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)
- Routes of exposure: Skin contact
- Species: Mouse
- Result: negative

**Fluazuron:**
- Routes of exposure: Skin contact
- Species: Guinea pig
Result : negative

Fipronil:
Test Type : Buehler Test
Routes of exposure : Skin contact
Species : Guinea pig
Method : OECD Test Guideline 406
Result : negative

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

Germ cell mutagenicity
Not classified based on available information.

Components:

2-(2-Butoxyethoxy)ethanol:
Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Result: negative
Test Type: In vitro mammalian cell gene mutation test
Result: negative
Test Type: Chromosome aberration test in vitro
Result: negative

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

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
<table>
<thead>
<tr>
<th><strong>Method:</strong> OECD Test Guideline 474</th>
<th><strong>Result:</strong> negative</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Test Type:</strong> Mutagenicity (in vivo mammalian bone-marrow</td>
<td><strong>Species:</strong> Hamster</td>
</tr>
<tr>
<td>cytogenetic test, chromosomal analysis)</td>
<td><strong>Application Route:</strong> Ingestion</td>
</tr>
<tr>
<td><strong>Result:</strong> negative</td>
<td><strong>Method:</strong> OECD Test Guideline 475</td>
</tr>
<tr>
<td><strong>Species:</strong> Hamster</td>
<td><strong>Result:</strong> negative</td>
</tr>
<tr>
<td><strong>Application Route:</strong> Ingestion</td>
<td><strong>Method:</strong> OECD Test Guideline 475</td>
</tr>
<tr>
<td><strong>Result:</strong> negative</td>
<td><strong>Species:</strong> Hamster</td>
</tr>
<tr>
<td><strong>Application Route:</strong> Ingestion</td>
<td><strong>Result:</strong> equivocal</td>
</tr>
</tbody>
</table>

**Ethanol:**

<table>
<thead>
<tr>
<th><strong>Genotoxicity in vitro</strong></th>
<th><strong>Test Type:</strong> In vitro mammalian cell gene mutation test</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Method:</strong> OECD Test Guideline 474</td>
<td><strong>Result:</strong> negative</td>
</tr>
<tr>
<td><strong>Test Type:</strong> Bacterial reverse mutation assay (AMES)</td>
<td><strong>Species:</strong> Mouse</td>
</tr>
<tr>
<td><strong>Method:</strong> OECD Test Guideline 475</td>
<td><strong>Application Route:</strong> Ingestion</td>
</tr>
<tr>
<td><strong>Result:</strong> negative</td>
<td><strong>Result:</strong> equivocal</td>
</tr>
</tbody>
</table>

**Fluazuron:**

<table>
<thead>
<tr>
<th><strong>Genotoxicity in vitro</strong></th>
<th><strong>Test Type:</strong> Bacterial reverse mutation assay (AMES)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Method:</strong> OECD Test Guideline 471</td>
<td><strong>Result:</strong> negative</td>
</tr>
<tr>
<td><strong>Result:</strong> negative</td>
<td><strong>Test Type:</strong> DNA Repair</td>
</tr>
<tr>
<td><strong>Result:</strong> negative</td>
<td><strong>Result:</strong> negative</td>
</tr>
<tr>
<td><strong>Application Route:</strong> Ingestion</td>
<td><strong>Result:</strong> negative</td>
</tr>
</tbody>
</table>

**Fipronil:**

<table>
<thead>
<tr>
<th><strong>Genotoxicity in vitro</strong></th>
<th><strong>Test Type:</strong> Bacterial reverse mutation assay (AMES)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Method:</strong> OECD Test Guideline 471</td>
<td><strong>Result:</strong> negative</td>
</tr>
<tr>
<td><strong>Result:</strong> negative</td>
<td><strong>Test Type:</strong> In vitro mammalian cell gene mutation test</td>
</tr>
<tr>
<td><strong>Method:</strong> OECD Test Guideline 476</td>
<td><strong>Application Route:</strong> Ingestion</td>
</tr>
<tr>
<td><strong>Result:</strong> negative</td>
<td><strong>Result:</strong> negative</td>
</tr>
<tr>
<td><strong>Test Type:</strong> Chromosome aberration test in vitro</td>
<td><strong>Result:</strong> negative</td>
</tr>
<tr>
<td><strong>Method:</strong> OECD Test Guideline 473</td>
<td><strong>Species:</strong> Mouse</td>
</tr>
</tbody>
</table>

**Genotoxicity in vivo**

<table>
<thead>
<tr>
<th><strong>Test Type:</strong> Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Species:</strong> Mouse</td>
</tr>
<tr>
<td><strong>Application Route:</strong> Ingestion</td>
</tr>
</tbody>
</table>
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

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**
Suspected of causing cancer.

**Components:**

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

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

Species : Rat
Application Route : Inhalation (vapor)
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
<table>
<thead>
<tr>
<th>Substance</th>
<th>Species</th>
<th>Application Route</th>
<th>Exposure time</th>
<th>Method</th>
<th>Result</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fipronil</strong></td>
<td>Mouse</td>
<td>Ingestion</td>
<td>78 weeks</td>
<td>Directive 67/548/EEC, Annex V, B.32.</td>
<td>negative</td>
<td></td>
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<tr>
<td></td>
<td>Rat</td>
<td>Ingestion</td>
<td>104 weeks</td>
<td>Directive 67/548/EEC, Annex V, B.33.</td>
<td>positive</td>
<td>The mechanism or mode of action is not relevant in humans.</td>
</tr>
<tr>
<td>tert-Butyl-4-methoxyphenol</td>
<td>Hamster</td>
<td>Ingestion</td>
<td>24 weeks</td>
<td></td>
<td>positive</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rat</td>
<td>Ingestion</td>
<td>15 Months</td>
<td></td>
<td>positive</td>
<td></td>
</tr>
<tr>
<td>Carcinogenicity - Assessment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Limited evidence of carcinogenicity in animal studies</td>
<td></td>
</tr>
</tbody>
</table>

**Reproductive toxicity**
May damage the unborn child.

**Components:**

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

<table>
<thead>
<tr>
<th>Effects on fertility</th>
<th>Test Type: One-generation reproduction toxicity study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Species</td>
<td>Rat</td>
</tr>
<tr>
<td>Application Route</td>
<td>Ingestion</td>
</tr>
<tr>
<td>Method</td>
<td>OECD Test Guideline 415</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Effects on fetal development</th>
<th>Test Type: Embryo-fetal development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Species</td>
<td>Rat</td>
</tr>
<tr>
<td>Application Route</td>
<td>Ingestion</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Effects on fertility</th>
<th>Test Type: Two-generation reproduction toxicity study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Species</td>
<td>Rat</td>
</tr>
<tr>
<td>Application Route</td>
<td>Ingestion</td>
</tr>
<tr>
<td>Method</td>
<td>OECD Test Guideline 416</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
</tbody>
</table>
Effects on fetal development:

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

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

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

Reproductive toxicity - Assessment:

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

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 fetal development:

- Test Type: Embryo-fetal development
  Species: Rat
  Application Route: Ingestion
  Result: negative

- Test Type: Embryo-fetal development
  Species: Rabbit
  Application Route: Ingestion
  Method: OECD Test Guideline 414
  Result: negative

Fipronil:

Effects on fertility:

- Test Type: Two-generation reproduction toxicity study
  Species: Rat
  Application Route: Ingestion
  Result: negative

Effects on fetal development:

- Test Type: Embryo-fetal 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: negative

Effects on fetal 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
Causes damage to organs (Central nervous system, Kidney) through prolonged or repeated exposure.

Components:

Fipronil:
Routes of exposure: 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 (vapor)
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:
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

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

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
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates: EC50 (Daphnia magna (Water flea)): > 1,000 mg/l
Exposure time: 24 h
Method: DIN 38412

Toxicity to algae/aquatic plants: ErC50 (Desmodesmus subspicatus (green algae)): 600.5 mg/l
Exposure time: 72 h
EC10 (Desmodesmus subspicatus (green algae)): 92.6 mg/l
Exposure time: 72 h

Toxicity to 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

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

**Ethanol:**

Toxicity to fish: LC50 (Pimephales promelas (fathead minnow)): > 1,000 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates: EC50 (Ceriodaphnia (water flea)): > 1,000 mg/l
Exposure time: 48 h

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

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

Toxicity to microorganisms: EC50 (Pseudomonas putida): 6,500 mg/l
Exposure time: 16 h

**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
SAFETY DATA SHEET
Fluazuron / Fipronil Formulation

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

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

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

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

NOEC (Desmodesmus subspicatus (green algae)): 40 µg/l
Exposure time: 96 h
Method: OECD Test Guideline 201

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 (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
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:** Result: Readily biodegradable. Biodegradation: 84 % Exposure time: 20 d

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

**tert-Butyl-4-methoxyphenol:**
- **Biodegradability:** Result: Not readily biodegradable. Biodegradation: 34.41 % Exposure time: 28 d Method: OECD Test Guideline 301D

Bioaccumulative potential

**Components:**

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

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

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

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

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

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

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
SAFETY DATA SHEET

Fluazuron / Fipronil Formulation

IMDG-Code
UN number : UN 1170
Proper shipping name : ETHANOL SOLUTION (Fluazuron, Fipronil)
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.

Domestic regulation
NOM-002-SCT
UN number : UN 1170
Proper shipping name : ETHANOL SOLUTION
Class : 3
Packing group : III
Labels : 3

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
Federal Law for the control of chemical precursors, essential chemical products and machinery for producing capsules, tablets and pills. : Not applicable

The ingredients of this product are reported in the following inventories:
AICS : not determined
DSL : not determined
IECSC : not determined

SECTION 16. OTHER INFORMATION

Full text of other abbreviations
ACGIH : USA. ACGIH Threshold Limit Values (TLV)
ACGIH BEI : ACGIH - Biological Exposure Indices (BEI)
MX BEI : Official Mexican Norm NOM-047-SSA1-2011, Environmental Health - Biological exposure indices for workers occupational-ly exposed to chemical agents
NOM-010-STPS-2014 : Mexico. Norm NOM-010-STPS-2014 on Chemicals Polluting
## Appendix 1 Occupational Exposure Limits

<table>
<thead>
<tr>
<th>Source</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<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>NOM-010-STS-2014 / VLE-CT</td>
<td>Short term exposure limit value</td>
</tr>
</tbody>
</table>

### Notes

- **ACGIH / TWA**: 8-hour, time-weighted average
- **ACGIH / STEL**: Short-term exposure limit
- **NOM-010-STS-2014 / VLE-CT**: Short term exposure limit value


**Revision Date**: 27.08.2021

The information is considered as correct, but not exhaustive, and will be used only as a guide, which is based in the current knowledge of the substance or mixture, and is applicable to proper safety precautions for the product.

MX / Z8