SAFETY DATA SHEET
Abamectin / Fluazuron Formulation

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

1.1 Product identifier
   Trade name : Abamectin / Fluazuron 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
   Telefax : 908-735-1496
   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
Acute toxicity, Category 4
Skin irritation, Category 2
Eye irritation, Category 2
Skin sensitisation, Category 1
Reproductive toxicity, Category 1B
Specific target organ toxicity - single exposure, Category 3
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.
H332: Harmful if inhaled.
H315: Causes skin irritation.
H319: Causes serious eye irritation.
H317: May cause an allergic skin reaction.
H360D: May damage the unborn child.
H336: May cause drowsiness or dizziness.
H335: May cause respiratory irritation.
H373: May cause damage to organs through prolonged or repeated exposure.
H400: Very toxic to aquatic life.
H410: Very toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)
Hazard pictograms:

Signal word: Danger

Hazard statements:
- H226 Flammable liquid and vapour.
- H315 Causes skin irritation.
- H317 May cause an allergic skin reaction.
- H319 Causes serious eye irritation.
- H332 Harmful if inhaled.
- H335 May cause respiratory irritation.
- H336 May cause drowsiness or dizziness.
- 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:
- Propan-2-ol
- N-Methyl-2-pyrrolidone
- 7-Oxabicyclo[4.1.0]hept-3-ylmethyl 7-oxabicyclo[4.1.0]heptane-3-carboxylate
- Abamectin (combination of avermectin B1a and avermectin B1b)

Additional Labelling:
- Restricted to professional users.

2.3 Other hazards
Vapours may form explosive mixture with air.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Classification</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propan-2-ol</td>
<td>67-63-0</td>
<td>Flam. Liq. 2; H225</td>
<td>&gt;= 30 - &lt; 50</td>
</tr>
</tbody>
</table>
## 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. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

In case of skin contact: In case of contact, immediately flush skin with plenty of water. Remove 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. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed
Risks: Causes skin irritation. May cause an allergic skin reaction. Causes serious eye irritation. Harmful if inhaled. May cause respiratory irritation. May cause drowsiness or dizziness. May damage the unborn child. May cause damage to organs through prolonged or repeated exposure.

4.3 Indication of any immediate medical attention and special treatment needed
Treatment: Treat symptomatically and supportively.

SECTION 5: Firefighting measures

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

Unsuitable extinguishing media: High volume water jet

Date of last issue: 24.04.2019
Date of first issue: 12.07.2016
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

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 and personal protective equipment recommendations.

6.2 Environmental precautions

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.

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. 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.

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>Occupational Exposure Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Components</td>
</tr>
<tr>
<td>Propan-2-ol</td>
</tr>
<tr>
<td>Further information</td>
</tr>
<tr>
<td>Absorption through the skin, Recommended Limit</td>
</tr>
<tr>
<td>Further information</td>
</tr>
<tr>
<td>Absorption through the skin, Recommended Limit</td>
</tr>
<tr>
<td>N-Methyl-2-pyrrolidone</td>
</tr>
<tr>
<td>Further information</td>
</tr>
<tr>
<td>Recommended Limit</td>
</tr>
<tr>
<td>Fluazuron</td>
</tr>
<tr>
<td>Abamectin (combination of avermectin B1a and avermectin B1b)</td>
</tr>
<tr>
<td>2,6-Di-tert-butyl-p-cresol</td>
</tr>
<tr>
<td>Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:</td>
</tr>
<tr>
<td>Substance name</td>
</tr>
<tr>
<td>N-Methyl-2-pyrrolidone</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
### 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>7-Oxabicyclo[4.1.0]hept-3-ylmethyl 7-oxabicyclo[4.1.0]heptane-3-carboxylate</td>
<td>Fresh water</td>
<td>0.024 mg/l</td>
</tr>
</tbody>
</table>
8.2 Exposure controls

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

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.
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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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>liquid</td>
</tr>
<tr>
<td>Colour</td>
<td>No data available</td>
</tr>
<tr>
<td>Odour</td>
<td>No data available</td>
</tr>
<tr>
<td>Odour Threshold</td>
<td>No data available</td>
</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 range</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point</td>
<td>28 °C</td>
</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>Upper explosion limit / Upper flammability limit</td>
<td>No data available</td>
</tr>
<tr>
<td>Lower explosion limit / Lower flammability limit</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative vapour density</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative density</td>
<td>No data available</td>
</tr>
<tr>
<td>Density</td>
<td>No data available</td>
</tr>
<tr>
<td>Solubility(ies)</td>
<td></td>
</tr>
<tr>
<td>Water solubility</td>
<td>No data available</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity</td>
<td></td>
</tr>
</tbody>
</table>
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: Not applicable

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
Harmful if inhaled.

Product:
Acute oral toxicity: Acute toxicity estimate: > 2.000 mg/kg
Method: Calculation method

Acute inhalation toxicity: Acute toxicity estimate: 2.06 mg/l
### Acute dermal toxicity
- **Acute toxicity estimate:** > 2.000 mg/kg
- **Method:** Calculation method

### Components
#### Propan-2-ol:
- **Acute oral toxicity:** LD50 (Rat): > 5.000 mg/kg
- **Acute inhalation toxicity:** LC50 (Rat): > 25 mg/l
  - **Exposure time:** 6 h
  - **Test atmosphere:** vapour
- **Acute dermal toxicity:** LD50 (Rabbit): > 5.000 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
  - **Assessment:** The substance or mixture has no acute inhalation toxicity
- **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

#### Abamectin (combination of avermectin B1a and avermectin B1b):
- **Acute oral toxicity:** LD50 (Rat): 24 mg/kg
  - **LD50 (Mouse):** 10 mg/kg
  - **LDLo (Monkey):** 24 mg/kg
  - **Symptoms:** Dilatation of the pupil
- **Acute inhalation toxicity:** LC50 (Rat): 0,023 mg/l
  - **Exposure time:** 4 h
Test atmosphere: dust/mist

**Acute dermal toxicity**

LD50 (Rat): 330 mg/kg  
LD50 (Rabbit): 2.000 mg/kg

**7-Oxabicyclo[4.1.0]hept-3-ylmethyl 7-oxabicyclo[4.1.0]heptane-3-carboxylate:**

- **Acute oral toxicity**: LD50 (Rat, male): 2.959 - 5.000 mg/kg  
  Method: OECD Test Guideline 401

- **Acute inhalation toxicity**: LC50 (Rat): >= 5.19 mg/l  
  Exposure time: 4 h  
  Test atmosphere: dust/mist  
  Method: OECD Test Guideline 436  
  Assessment: The substance or mixture has no acute inhalation toxicity

- **Acute dermal toxicity**: LD50 (Rat): > 2.000 mg/kg  
  Method: OECD Test Guideline 402  
  Assessment: The substance or mixture has no acute dermal toxicity

**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

**Skin corrosion/irritation**

Causes skin irritation.

**Components:**

**Propan-2-ol:**

- **Species**: Rabbit  
- **Result**: No skin irritation

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

- **Result**: Skin irritation  
- **Remarks**: Based on harmonised classification in EU regulation 1272/2008, Annex VI

**Fluazuron:**

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

**Abamectin (combination of avermectin B1a and avermectin B1b):**
Species: Rabbit
Result: No skin irritation

7-Oxabicyclo[4.1.0]hept-3-ylmethyl 7-oxabicyclo[4.1.0]heptane-3-carboxylate:
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

Serious eye damage/eye irritation
Causes serious eye irritation.

Components:

Propan-2-ol:
Species: Rabbit
Result: Irritation to eyes, reversing within 21 days

N-Methyl-2-pyrrolidone:
Result: Irritation to eyes, reversing within 21 days
Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI

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

Abamectin (combination of avermectin B1a and avermectin B1b):
Species: Rabbit
Result: Mild eye irritation

7-Oxabicyclo[4.1.0]hept-3-ylmethyl 7-oxabicyclo[4.1.0]heptane-3-carboxylate:
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
Respiratory or skin sensitisation

**Skin sensitisation**
May cause an allergic skin reaction.

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

**Components:**

**Propan-2-ol:**
- **Test Type:** Buehler Test
- **Exposure routes:** Skin contact
- **Species:** Guinea pig
- **Method:** OECD Test Guideline 406
- **Result:** negative

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

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

**Abamectin (combination of avermectin B1a and avermectin B1b):**
- **Test Type:** Maximisation Test
- **Exposure routes:** Skin contact
- **Result:** Not a skin sensitizer.

**7-Oxabicyclo[4.1.0]hept-3-ylmethyl 7-oxabicyclo[4.1.0]heptane-3-carboxylate:**
- **Test Type:** Maximisation Test
- **Exposure routes:** Skin contact
- **Species:** Guinea pig
- **Result:** positive
- **Assessment:** Probability or evidence of skin sensitisation in humans

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

**Germ cell mutagenicity**
Not classified based on available information.
## Components:

### Propan-2-ol:
- **Genotoxicity in vitro**
  - Test Type: Bacterial reverse mutation assay (AMES)
  - Result: negative
  - Test Type: In vitro mammalian cell gene mutation test
  - Result: negative
- **Genotoxicity in vivo**
  - Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
  - Species: Mouse
  - Application Route: Intraperitoneal injection
  - 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
- **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

### 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

### Abamectin (combination of avermectin B1a and avermectin B1b):
- **Genotoxicity in vitro**
  - Test Type: Bacterial reverse mutation assay (AMES)
    - Result: negative
  - Test Type: In vitro mammalian cell gene mutation test
    - Test system: Chinese hamster lung cells
    - Result: negative

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**Abamectin / Fluazuron Formulation**

**Version** 4.2  **Revision Date:** 09/13/2019  **SDS Number:** 800411-00013  **Date of last issue:** 24.04.2019  **Date of first issue:** 12.07.2016
Test Type: Alkaline elution assay  
Result: negative

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

7-Oxabicyclo[4.1.0]hept-3-ylmethyl 7-oxabicyclo[4.1.0]heptane-3-carboxylate:

Genotoxicity in vitro :  
Test Type: In vitro mammalian cell gene mutation test  
Result: positive

Genotoxicity in vivo :  
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

Test Type: Micronucleus test  
Species: Mouse  
Application Route: Intraperitoneal injection  
Result: negative

Germ cell mutagenicity- Assessment :  
Weight of evidence does not support classification as a germ cell mutagen.

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

Carcinogenicity
Not classified based on available information.

Components:

Propan-2-ol:
Species : Rat  
Application Route : Inhalation (vapour)  
Exposure time : 104 weeks
Method : OECD Test Guideline 451
Result : negative

**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

**Abamectin (combination of avermectin B1a and avermectin B1b):**
Species : Rat
Application Route : Oral
Exposure time : 105 weeks
Result : negative

Species : Mouse
Application Route : Oral
Exposure time : 93 weeks
Result : negative

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

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

**Components:**

**Propan-2-ol:**
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
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

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

Abamectin (combination of avermectin B1a and avermectin B1b):

Effects on fertility: Test Type: Fertility  
Species: Rat, male  
Application Route: Oral  
Result: Effects on fertility

Abamectin (combination of avermectin B1a and avermectin B1b): Test Type: Two-generation reproduction toxicity study  
Species: Rat
Application Route: Oral
Early Embryonic Development: NOAEL: 0,12 mg/kg body weight
Result: Fetotoxicity

Effects on foetal development:
Species: Mouse
Application Route: Oral
General Toxicity Maternal: NOAEL: 0,05 mg/kg body weight
Developmental Toxicity: NOAEL: 0,2 mg/kg body weight
Result: Cleft palate
Remarks: Adverse developmental effects were observed

Test Type: Embryo-foetal development
Species: Rabbit
Application Route: Oral
Developmental Toxicity: LOAEL: 2 mg/kg body weight
Result: Cleft palate, Teratogenic effects, Reduced embryonic survival
Remarks: Adverse developmental effects were observed

Test Type: Development
Species: Rat
Application Route: Oral
Developmental Toxicity: LOAEL: 1,6 mg/kg body weight
Result: Teratogenic effects

Reproductive toxicity - Assessment:
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 414
Result: negative

Effects on fertility:
Species: Rat
Application Route: Ingestion
Result: negative

Effects on foetal development:
Species: Rat
Application Route: Ingestion
Result: negative

STOT - single exposure:
May cause respiratory irritation.
May cause drowsiness or dizziness.
Components:

Propan-2-ol:
Assessment: May cause drowsiness or dizziness.

N-Methyl-2-pyrrolidone:
Assessment: May cause respiratory irritation.
Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI

STOT - repeated exposure
May cause damage to organs through prolonged or repeated exposure.

Components:

Abamectin (combination of avermectin B1a and avermectin B1b):
Exposure routes: Ingestion
Target Organs: Central nervous system
Assessment: Causes damage to organs through prolonged or repeated exposure.

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:

Propan-2-ol:
Species: Rat
NOAEL: 12.5 mg/l
Application Route: Inhalation (vapour)
Exposure time: 104 Weeks

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

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

Abamectin (combination of avermectin B1a and avermectin B1b):
Species : Rat  
NOAEL : 1,5 mg/kg  
Application Route : Oral  
Exposure time : 24 Months  
Target Organs : Central nervous system  
Symptoms : Tremors, ataxia

Species : Mouse  
NOAEL : 4,0 mg/kg  
Application Route : Oral  
Exposure time : 24 Months  
Target Organs : Central nervous system  
Symptoms : Tremors, ataxia

Species : Dog  
NOAEL : 0,25 mg/kg  
LOAEL : 0,5 mg/kg  
Application Route : Oral  
Exposure time : 53 Weeks  
Target Organs : Central nervous system  
Symptoms : Tremors, weight loss  
Remarks : mortality observed

Species : Monkey  
NOAEL : 1,0 mg/kg  
Application Route : Oral  
Exposure time : 14 Weeks  
Target Organs : Central nervous system

2,6-Di-tert-butyl-p-cresol:
Species : Rat  
NOAEL : 25 mg/kg  
Application Route : Ingestion  
Exposure time : 22 Months

**Aspiration toxicity**  
Not classified based on available information.
Experience with human exposure

Components:

Abamectin (combination of avermectin B1a and avermectin B1b):
Ingestion: Symptoms: May cause, Tremors, Diarrhoea, central nervous system effects, Salivation, tearing

SECTION 12: Ecological information

12.1 Toxicity

Components:

Propan-2-ol:
Toxicity to fish: LC50 (Pimephales promelas (fathead minnow)): 9.640 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates: EC50 (Daphnia magna (Water flea)): > 10.000 mg/l Exposure time: 24 h
Toxicity to microorganisms: EC50 (Pseudomonas putida): > 1.050 mg/l Exposure time: 16 h

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

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

**Abamectin (combination of avermectin B1a and avermectin B1b):**

Toxicity to fish: LC50 (Oncorhynchus mykiss (rainbow trout)): 3.2 µg/l
Exposure time: 96 h

LC50 (Lepomis macrochirus (Bluegill sunfish)): 9.6 µg/l
Exposure time: 96 h

LC50 (Ictalurus punctatus (channel catfish)): 24 µg/l
Exposure time: 96 h

LC50 (Cyprinus carpio (Carp)): 42 µg/l
Exposure time: 96 h

LC50 (Cyprinodon variegatus (sheepshead minnow)): 15 µg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates: EC50 (Americamysis): 0.022 µg/l
Exposure time: 96 h

EC50 (Daphnia magna (Water flea)): 0.34 µg/l
Exposure time: 48 h

Toxicity to algae/aquatic plants: EC50 (Pseudokirchneriella subcapitata (green algae)): 100 mg/l
Exposure time: 72 h

M-Factor (Acute aquatic toxicity): 10.000

Toxicity to microorganisms: EC50: > 1.000 mg/l
Exposure time: 3 h
Test Type: Respiration inhibition

Toxicity to fish (Chronic toxicity): NOEC: 0.52 µg/l
Exposure time: 32 d
Species: Pimephales promelas (fathead minnow)

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity): NOEC: 0.03 µg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)

NOEC: 0.0035 µg/l
Exposure time: 28 d
Species: Mysidopsis bahia (opossum shrimp)
### M-Factor (Chronic aquatic toxicity):

- **7-Oxabicyclo[4.1.0]hept-3-ylmethyl 7-oxabicyclo[4.1.0]heptane-3-carboxylate:**
  - Toxicity to fish: LC50 (Oncorhynchus mykiss (rainbow trout)): 24 mg/l
    - Exposure time: 96 h
    - Method: OECD Test Guideline 203
  - Toxicity to daphnia and other aquatic invertebrates: EC50 (Daphnia magna (Water flea)): 40 mg/l
    - Exposure time: 48 h
    - Method: OECD Test Guideline 202
  - Toxicity to algae/aquatic plants: ErC50 (Selenastrum capricornutum (green algae)): > 110 mg/l
    - Exposure time: 72 h
    - Method: OECD Test Guideline 201
      - NOEC (Selenastrum capricornutum (green algae)): 30 mg/l
        - Exposure time: 72 h
        - Method: OECD Test Guideline 201
  - Toxicity to microorganisms: EC10 (Natural microorganism): 409 mg/l
    - Exposure time: 3 h
    - Method: OECD Test Guideline 209

- **2,6-Di-tert-butyl-p-cresol:**
  - Toxicity to fish: LC50 (Danio rerio (zebra fish)): > 0,57 mg/l
    - Exposure time: 96 h
  - Toxicity to daphnia and other aquatic invertebrates: EC50 (Daphnia magna (Water flea)): 0,48 mg/l
    - Exposure time: 48 h
    - Method: OECD Test Guideline 202
  - Toxicity to algae/aquatic plants: ErC50 (Pseudokirchneriella subcapitata (green algae)): > 0,24 mg/l
    - Exposure time: 72 h
    - Method: OECD Test Guideline 201
      - NOEC (Pseudokirchneriella subcapitata (green algae)): 0,24 mg/l
        - Exposure time: 72 h
        - Method: OECD Test Guideline 201
  - M-Factor (Acute aquatic toxicity): 1
  - Toxicity to microorganisms: EC50: > 10.000 mg/l
    - Exposure time: 3 h
    - Method: OECD Test Guideline 209
  - Toxicity to fish (Chronic toxicity): NOEC: 0,053 mg/l
    - Exposure time: 30 d
    - Species: Oryzias latipes (Japanese medaka)
    - Method: OECD Test Guideline 210
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 0,316 mg/l Exposure time: 21 d Species: Daphnia magna (Water flea)

M-Factor (Chronic aquatic toxicity) : 1

12.2 Persistence and degradability

Components:

Propan-2-ol:
Biodegradability : Result: rapidly degradable
BOD/COD : BOD: 1.19 (BOD5)
COD: 2.23
BOD/COD: 53 %

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

Abamectin (combination of avermectin B1a and avermectin B1b):
Stability in water : Hydrolysis: 50 % (< 12 h)

7-Oxabicyclo[4.1.0]hept-3-ylmethyl 7-oxabicyclo[4.1.0]heptane-3-carboxylate:
Biodegradability : Biodegradation: 71 %
Exposure time: 28 d
Method: OECD Test Guideline 301B
Stability in water : Degradation half life (DT50): 2 d

2,6-Di-tert-butyl-p-cresol:
Biodegradability : Result: Not readily biodegradable.
Biodegradation: 4.5 %
Exposure time: 28 d
Method: OECD Test Guideline 301C

12.3 Bioaccumulative potential

Components:

Propan-2-ol:
Partition coefficient: n-octanol/water : log Pow: 0.05

N-Methyl-2-pyrrolidone:
Partition coefficient: n-octanol/water : log Pow: -0.46
Fluazuron:
Partition coefficient: n-octanol/water : log Pow: 5,1

Abamectin (combination of avermectin B1a and avermectin B1b):
Bioaccumulation : Bioconcentration factor (BCF): 52
Partition coefficient: n-octanol/water : log Pow: 4

7-Oxabicyclo[4.1.0]hept-3-ylmethyl 7-oxabicyclo[4.1.0]heptane-3-carboxylate:
Partition coefficient: n-octanol/water : log Pow: 1,34

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

12.4 Mobility in soil

Components:
Abamectin (combination of avermectin B1a and avermectin B1b):
Distribution among environmental compartments : log Koc: > 3,6

12.5 Results of PBT and vPvB assessment
Not relevant

12.6 Other adverse effects
No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods
Product : Dispose of in accordance with local regulations.
          According to the European Waste Catalogue, Waste Codes
          are not product specific, but application specific.
          Waste codes should be assigned by the user, preferably in
          discussion with the waste disposal authorities.
Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.
                         Empty containers retain residue and can be dangerous.
                         Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury and/or death. If not otherwise specified: Dispose of as unused product.

SECTION 14: Transport information

14.1 UN number
ADN : UN 1993
14.2 UN proper shipping name

ADN  :  FLAMMABLE LIQUID, N.O.S. (Propan-2-ol)
ADR  :  FLAMMABLE LIQUID, N.O.S. (Propan-2-ol)
RID  :  FLAMMABLE LIQUID, N.O.S. (Propan-2-ol)
IMDG :  FLAMMABLE LIQUID, N.O.S. (Propan-2-ol, Fluazuron, Abamectin (combination of avermectin B1a and avermectin B1b))
IATA :  Flammable liquid, n.o.s. (Propan-2-ol)

14.3 Transport hazard class(es)

ADN  :  3
ADR  :  3
RID  :  3
IMDG :  3
IATA :  3

14.4 Packing group

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

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

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

14.5 Environmental hazards
ADN
Environmentally hazardous : yes
ADR
Environmentally hazardous : yes
RID
Environmentally hazardous : yes
IMDG
Marine pollutant : yes

14.6 Special precautions for user
The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

14.7 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
SAFETY DATA SHEET

Abamectin / Fluazuron Formulation

Version 4.2
Revision Date: 09/13/2019
SDS Number: 800411-00013
Date of last issue: 24.04.2019
Date of first issue: 12.07.2016

Full text of H-Statements

H225: Highly flammable liquid and vapour.
H300: Fatal if swallowed.
H311: Toxic in contact with skin.
H315: Causes skin irritation.
H317: May cause an allergic skin reaction.
H319: Causes serious eye irritation.
H330: Fatal if inhaled.
H335: May cause respiratory irritation.
H336: May cause drowsiness or dizziness.
H360D: May damage the unborn child.
H361fd: Suspected of damaging fertility. Suspected of damaging the unborn child.
H372: Causes damage to organs through prolonged or repeated exposure if swallowed.
H400: Very toxic to aquatic life.
H410: Very 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
Eye Irrit.: Eye irritation
Flam. Liq.: Flammable liquids
Repr.: Reproductive toxicity
Skin Irrit.: Skin irritation
Skin Sens.: Skin sensitisation
STOT RE: Specific target organ toxicity - repeated exposure
STOT SE: Specific target organ toxicity - single exposure
ZA OEL: South Africa. Hazardous Chemical Substances Regulations, Occupational Exposure Limits
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
ZA OEL / STEL OEL-RL: Short 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; AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentra-
SAFETY DATA SHEET

Abamectin / Fluazuron Formulation

Version 4.2  Revision Date: 09/13/2019  SDS Number: 800411-00013  Date of last issue: 24.04.2019  Date of first issue: 12.07.2016

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

Classification of the mixture:

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<th>Classification</th>
<th>Code</th>
<th>Procedure</th>
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<td>Flam. Liq. 3</td>
<td>H226</td>
<td>Based on product data or assessment</td>
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<tr>
<td>Acute Tox. 4</td>
<td>H332</td>
<td>Calculation method</td>
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<td>Skin Irrit. 2</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