SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Abamectin (with Propylene Glycol) Formulation

Manufacturer or supplier's details

Company: MSD

Address: Rua Coronel Bento Soares, 530
Cruzeiro - Sao Paulo - Brazil
CEP 12730-340

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 in accordance with ABNT NBR 14725 Standard

Flammable liquids: Category 2

Acute toxicity (Oral): Category 5

Acute toxicity (Inhalation): Category 4

Eye irritation: Category 2A

Specific target organ toxicity - repeated exposure: Category 2 (Central nervous system)

Aspiration hazard: Category 2

Short-term (acute) aquatic hazard: Category 1

Long-term (chronic) aquatic hazard: Category 1

GHS label elements in accordance with ABNT NBR 14725 Standard

Hazard pictograms:

Signal Word: Danger
Hazard Statements:
H225 Highly flammable liquid and vapor.
H303 May be harmful if swallowed.
H305 May be harmful if swallowed and enters airways.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H373 May cause damage to organs (Central nervous system) through prolonged or repeated exposure.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary Statements:
Prevention:
P210 Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P233 Keep container tightly closed.
P273 Avoid release to the environment.
Response:
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
P331 Do NOT induce vomiting.
P391 Collect spillage.

Other hazards which do not result in classification:
Vapors may form explosive mixture with air.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Substance / Mixture</th>
<th>Mixture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Components</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Classification</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,3-Dioxan-5-ol</td>
<td>4740-78-7</td>
<td>Flammable liquids, Category 4 Eye irritation, Category 2A</td>
<td>&gt;= 30 - &lt; 50</td>
</tr>
<tr>
<td>Butanone</td>
<td>78-93-3</td>
<td>Flammable liquids, Category 2 Acute toxicity (Oral), Category 5 Eye irritation, Category 2A Specific target organ toxicity - single exposure, Category 3 Aspiration hazard, Category 2</td>
<td>&gt;= 10 - &lt; 20</td>
</tr>
<tr>
<td>abamectin (combination of avermectin B1a and avermectin B1b) (ISO)</td>
<td>71751-41-2</td>
<td>Acute toxicity (Oral), Category 2 Acute toxicity (Inhalation), Category 1 Acute toxicity (Der-</td>
<td>&gt;= 1 - &lt; 2,5</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. 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 soap and 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. If vomiting occurs have person lean forward. Call a physician or poison control center immediately. Rinse mouth thoroughly with water. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed: May be harmful if swallowed. May be harmful if swallowed and enters airways. Causes serious eye irritation. Harmful if inhaled. 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 media: High volume water jet

Specific hazards during firefighting:
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

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.
Ventilate the area.
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/PERSONAL PROTECTION section.

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

Advice on safe handling: Do not breathe mist or vapors. Do not swallow. Do not get in eyes. Avoid prolonged or repeated contact with skin. 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. 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.


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...
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flashable 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>
<tbody>
<tr>
<td>Butanone</td>
<td>78-93-3</td>
<td>LT</td>
<td>155 ppm 460 mg/m³</td>
<td>BR OEL</td>
</tr>
<tr>
<td>abamectin (combination of avermectin B1a and avermectin B1b) (ISO)</td>
<td>71751-41-2</td>
<td>TWA</td>
<td>15 µg/m³ (OEB 3)</td>
<td>Internal</td>
</tr>
</tbody>
</table>

Further information: Degree of harmfulness: medium

<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>Butanone</td>
<td>78-93-3</td>
<td>MEK (methyl-ethyl-ketone)</td>
<td>Urine</td>
<td>End of workday</td>
<td>2 mg/l</td>
<td>BR BEI</td>
</tr>
<tr>
<td>methyl ethyl ketone</td>
<td></td>
<td>Urine</td>
<td>End of shift (As soon as possible after exposure ceases)</td>
<td>2 mg/l</td>
<td>ACGIH BEI</td>
<td></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.
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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: 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

Color: Colorless to pale yellow

Odor: characteristic

Odor Threshold: No data available

pH: No data available

Melting point/freezing point: < -66 °C

Initial boiling point and boiling range: 82 °C

Flash point: 16 °C

Evaporation rate: No data available

Flammability (solid, gas): Not applicable

Flammability (liquids): Not applicable

Upper explosion limit / Upper flammability limit: No data available
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- Lower explosion limit / Lower flammability limit: No data available
- Vapor pressure: No data available
- Relative vapor density: No data available
- Relative density: 1.05 - 1.09
- Density: No data available
- Solubility(ies):
  - Water solubility: slightly soluble
  - Solubility in other solvents: soluble
  - Solvent: Ethanol
- Partition coefficient: n-octanol/water: Not applicable
- 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: Not applicable

SECTION 10. STABILITY AND REACTIVITY

- Reactivity: Not classified as a reactivity hazard.
- Chemical stability: Stable under normal conditions.
- Possibility of hazardous reactions:
  - Highly 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.
Harmful if inhaled.

**Product:**

<table>
<thead>
<tr>
<th>Toxicity Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute oral toxicity</td>
<td>Acute toxicity estimate: 2.190 mg/kg</td>
</tr>
<tr>
<td>Acute inhalation toxicity</td>
<td>Acute toxicity estimate: 2.3 mg/l Exposure time: 4 h Test atmosphere: dust/mist</td>
</tr>
<tr>
<td>Acute dermal toxicity</td>
<td>Acute toxicity estimate: &gt; 5.000 mg/kg</td>
</tr>
</tbody>
</table>

**Components:**

**1,3-Dioxan-5-ol:**

<table>
<thead>
<tr>
<th>Toxicity Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute oral toxicity</td>
<td>LD50 (Rat): &gt; 5.000 mg/kg</td>
</tr>
<tr>
<td>Acute dermal toxicity</td>
<td>LD50 (Rat): &gt; 2.000 mg/kg Remarks: Based on data from similar materials</td>
</tr>
</tbody>
</table>

**Butanone:**

<table>
<thead>
<tr>
<th>Toxicity Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute oral toxicity</td>
<td>LD50 (Rat): &gt; 2.000 - 5.000 mg/kg Remarks: Based on data from similar materials</td>
</tr>
<tr>
<td>Acute inhalation toxicity</td>
<td>LC50 (Rat): &gt; 25.5 mg/l Exposure time: 4 h Test atmosphere: vapor Method: OECD Test Guideline 436 Remarks: Based on data from similar materials</td>
</tr>
<tr>
<td>Acute dermal toxicity</td>
<td>LD50 (Rabbit): &gt; 5.000 mg/kg</td>
</tr>
</tbody>
</table>

**abamectin (combination of avermectin B1a and avermectin B1b) (ISO):**

<table>
<thead>
<tr>
<th>Toxicity Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute oral toxicity</td>
<td>LD50 (Rat): 24 mg/kg</td>
</tr>
<tr>
<td></td>
<td>LD50 (Mouse): 10 mg/kg</td>
</tr>
<tr>
<td></td>
<td>LDLo (Monkey): 24 mg/kg Symptoms: Dilatation of the pupil</td>
</tr>
<tr>
<td>Acute inhalation toxicity</td>
<td>LC50 (Rat): 0.023 mg/l Exposure time: 4 h Test atmosphere: dust/mist</td>
</tr>
<tr>
<td>Acute dermal toxicity</td>
<td>LD50 (Rat): 330 mg/kg</td>
</tr>
</tbody>
</table>
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LD50 (Rabbit): 2.000 mg/kg

Skin corrosion/irritation
Not classified based on available information.

Components:

1,3-Dioxan-5-ol:
Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation
Remarks: Based on data from similar materials

Butanone:
Assessment: Repeated exposure may cause skin dryness or cracking.
Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation
Remarks: Based on data from similar materials

abamectin (combination of avermectin B1a and avermectin B1b) (ISO):
Species: Rabbit
Result: No skin irritation

Serious eye damage/eye irritation
Causes serious eye irritation.

Components:

1,3-Dioxan-5-ol:
Species: Rabbit
Result: Irritation to eyes, reversing within 21 days
Method: OECD Test Guideline 405
Remarks: Based on data from similar materials

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

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

Respiratory or skin sensitization
Skin sensitization
Not classified based on available information.
Respiratory sensitization
Not classified based on available information.

Components:

1,3-Dioxan-5-ol:
- Test Type: Maximization Test
- Routes of exposure: Skin contact
- Species: Guinea pig
- Method: OECD Test Guideline 406
- Result: negative
- Remarks: Based on data from similar materials

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

abamectin (combination of avermectin B1a and avermectin B1b) (ISO):
- Test Type: Maximization Test
- Routes of exposure: Skin contact
- Result: Not a skin sensitizer.

Germ cell mutagenicity
Not classified based on available information.

Components:

1,3-Dioxan-5-ol:
- Genotoxicity in vitro:
  - Test Type: Bacterial reverse mutation assay (AMES)
  - Result: negative
  - Test Type: In vitro mammalian cell gene mutation test
  - Result: negative

Butanone:
- 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

Test Type: DNA damage and repair, unscheduled DNA synthesis in mammalian cells (in vitro)
Result: negative

Test Type: Saccharomyces cerevisiae, gene mutation assay (in vitro)
Result: negative

Genotoxicity in vivo:
Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Mouse
Application Route: Intraperitoneal injection
Result: negative

**abamectin (combination of avermectin B1a and avermectin B1b) (ISO):**

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

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

**Carcinogenicity**
Not classified based on available information.

**Components:**

**abamectin (combination of avermectin B1a and avermectin B1b) (ISO):**

<table>
<thead>
<tr>
<th>Species</th>
<th>Rat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Route</td>
<td>Oral</td>
</tr>
<tr>
<td>Exposure time</td>
<td>105 weeks</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Species</th>
<th>Mouse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Route</td>
<td>Oral</td>
</tr>
<tr>
<td>Exposure time</td>
<td>93 weeks</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
</tbody>
</table>

**Reproductive toxicity**
Not classified based on available information.
Components:

Butanone:
- Effects on fertility: Test Type: Two-generation reproduction toxicity study
  Species: Rat
  Application Route: Ingestion
  Result: negative
  Remarks: Based on data from similar materials

- Effects on fetal development: Test Type: Embryo-fetal development
  Species: Rat
  Application Route: Inhalation
  Method: OECD Test Guideline 414
  Result: negative

Abamectin (combination of avermectin B1a and avermectin B1b) (ISO):
- Effects on fertility: Test Type: Fertility
  Species: Rat, male
  Application Route: Oral
  Result: Effects on fertility.

  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 fetal development: Test Type: Embryo-fetal 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-fetal 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:
- Some evidence of adverse effects on sexual function and fertility, based on animal experiments.
- Some evidence of adverse effects on development, based on animal
experiments.

**STOT-single exposure**
Not classified based on available information.

**Components:**

**Butanone:**
Assessment: May cause drowsiness or dizziness.

**STOT-repeated exposure**
May cause damage to organs (Central nervous system) through prolonged or repeated exposure.

**Components:**

**abamectin (combination of avermectin B1a and avermectin B1b) (ISO):**

<table>
<thead>
<tr>
<th>Routes of exposure</th>
<th>Ingestion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target Organs</td>
<td>Central nervous system</td>
</tr>
<tr>
<td>Assessment</td>
<td>Causes damage to organs through prolonged or repeated exposure</td>
</tr>
</tbody>
</table>

**Repeated dose toxicity**

**Components:**

**Butanone:**
Species: Rat
NOAEL: 14,84 mg/l
Application Route: Inhalation (vapor)
Exposure time: 90 Days
Method: OECD Test Guideline 413

**abamectin (combination of avermectin B1a and avermectin B1b) (ISO):**

<table>
<thead>
<tr>
<th>Species</th>
<th>Rat</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOAEL</td>
<td>1,5 mg/kg</td>
</tr>
<tr>
<td>Application Route</td>
<td>Oral</td>
</tr>
<tr>
<td>Exposure time</td>
<td>24 Months</td>
</tr>
<tr>
<td>Target Organs</td>
<td>Central nervous system</td>
</tr>
<tr>
<td>Symptoms</td>
<td>Tremors, ataxia</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Species</th>
<th>Mouse</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOAEL</td>
<td>4,0 mg/kg</td>
</tr>
<tr>
<td>Application Route</td>
<td>Oral</td>
</tr>
<tr>
<td>Exposure time</td>
<td>24 Months</td>
</tr>
<tr>
<td>Target Organs</td>
<td>Central nervous system</td>
</tr>
<tr>
<td>Symptoms</td>
<td>Tremors, ataxia</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Species</th>
<th>Dog</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOAEL</td>
<td>0,25 mg/kg</td>
</tr>
<tr>
<td>LOAEL</td>
<td>0,5 mg/kg</td>
</tr>
<tr>
<td>Application Route</td>
<td>Oral</td>
</tr>
<tr>
<td>Exposure time</td>
<td>53 Weeks</td>
</tr>
</tbody>
</table>
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

Aspiration toxicity
May be harmful if swallowed and enters airways.

Components:
Butanone:
The substance or mixture causes concern owing to the assumption that it causes a human aspiration toxicity hazard.

Experience with human exposure

Components:
abamectin (combination of avermectin B1a and avermectin B1b) (ISO):
Ingestion: Symptoms: May cause, Tremors, Diarrhea, central nervous system effects, Salivation, tearing

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:
1,3-Dioxan-5-ol:
Toxicity to fish: LL50 (Pimephales promelas (fathead minnow)): > 100 mg/l
Exposure time: 96 h
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates: EL50 (Daphnia magna (Water flea)): > 100 mg/l
Exposure time: 48 h
Remarks: Based on data from similar materials

Toxicity to algae/aquatic plants: EL50 (Pseudokirchneriella subcapitata (green algae)): > 100 mg/l
Exposure time: 72 h
Remarks: Based on data from similar materials

NOELR (Pseudokirchneriella subcapitata (green algae)): > 1 mg/l
Exposure time: 72 h
Remarks: Based on data from similar materials

Toxicity to microorganisms: EC10: > 1.000 mg/l
### Abamectin (with Propylene Glycol) Formulation

**Butanone:**
- **Toxicity to fish:**
  - LC50 (Pimephales promelas (fathead minnow)): 2.993 mg/l
  - Exposure time: 96 h
  - Method: OECD Test Guideline 203
- **Toxicity to daphnia and other aquatic invertebrates:**
  - EC50 (Daphnia magna (Water flea)): 308 mg/l
  - Exposure time: 48 h
  - Method: OECD Test Guideline 202
- **Toxicity to algae/aquatic plants:**
  - ErC50 (Pseudokirchneriella subcapitata (green algae)): 2.029 mg/l
  - Exposure time: 96 h
  - Method: OECD Test Guideline 201
  - NOEC (Pseudokirchneriella subcapitata (green algae)): 1.240 mg/l
  - Exposure time: 96 h
  - Method: OECD Test Guideline 201

**Abamectin (combination of avermectin B1a and avermectin B1b) (ISO):**
- **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 fish (Chronic toxicity):** NOEC (Pimephales promelas (fathead minnow)): 0.52 µg/l
Exposure time: 32 d

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity):

- NOEC (Daphnia magna (Water flea)): 0.03 µg/l
  Exposure time: 21 d

- NOEC (Mysisidopsis bahia (opossum shrimp)): 0.0035 µg/l
  Exposure time: 28 d

M-Factor (Chronic aquatic toxicity):

- 10,000

Toxicity to microorganisms:

- EC50: > 1,000 mg/l
  Exposure time: 3 h
  Test Type: Respiration inhibition

Persistence and degradability

Components:

1,3-Dioxan-5-ol:

- Biodegradability: Result: Inherently biodegradable.
  Remarks: Based on data from similar materials

Butanone:

- Biodegradability: Result: Readily biodegradable.
  Biodegradation: 98 %
  Exposure time: 28 d
  Method: OECD Test Guideline 301D

abamectin (combination of avermectin B1a and avermectin B1b) (ISO):

Stability in water: Hydrolysis: 50 % (< 12 h)

Bioaccumulative potential

Components:

1,3-Dioxan-5-ol:

- Partition coefficient: n-octanol/water: log Pow: -0.65

Butanone:

- Partition coefficient: n-octanol/water: log Pow: 0.3

abamectin (combination of avermectin B1a and avermectin B1b) (ISO):

- Bioaccumulation: Bioconcentration factor (BCF): 52
- Partition coefficient: n-octanol/water: log Pow: 4
Mobility in soil

Components:

Abamectin (combination of avermectin B1a and avermectin B1b) (ISO):
Distribution among environmental compartments: log Koc: > 3.6

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 1993
Proper shipping name: FLAMMABLE LIQUID, N.O.S. (Butanone)
Class: 3
Packing group: II
Labels:

IATA-DGR
UN/ID No.: UN 1993
Proper shipping name: Flammable liquid, n.o.s. (Butanone)
Class: 3
Packing group: II
Labels: Flammable Liquids
Packing instruction (cargo aircraft): 364
Packing instruction (passenger aircraft): 353

IMDG-Code
UN number: UN 1993
Proper shipping name: FLAMMABLE LIQUID, N.O.S. (Butanone, abamectin (combination of avermectin B1a and avermectin B1b) (ISO))
Class: 3
SAFETY DATA SHEET

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Version 2.4  Revision Date: 27.08.2021  SDS Number: 4795014-00006  Date of last issue: 26.04.2021
Date of first issue: 29.08.2019

Packing group: II
Labels: 3
EmS Code: F-E, S-E
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

ANTT
UN number: UN 1993
Proper shipping name: FLAMMABLE LIQUID, N.O.S. (Butanone)
Class: 3
Packing group: II
Labels: 3
Hazard Identification Number: 33

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

National List of Carcinogenic Agents for Humans - (LINACH): Not applicable
Brazil. List of chemicals controlled by the Federal Police: 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

Further information

Full text of other abbreviations
Abamectin (with Propylene Glycol) Formulation

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.

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