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

1.1 Product identifier

Trade name: Fenbendazole Paste 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
Walton Manor, Walton
MK7 7AJ Milton Keynes - United Kingdom

Telephone: +1-908-740-4000

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)

Reproductive toxicity, Category 2: H361fd: Suspected of damaging fertility. Suspected of damaging the unborn child.
Specific target organ toxicity - repeated exposure, Category 2: H373: May cause damage to organs through prolonged or repeated exposure.
Short-term (acute) aquatic hazard, Category 1: H400: Very toxic to aquatic life.
Long-term (chronic) aquatic hazard, Category 1: H410: Very toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Signal word: Warning

Hazard statements: H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.
H373 May cause damage to organs through prolonged or repeated exposure.
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Fenbendazole Paste Formulation

Version: 6.1  Revision Date: 09.04.2021  SDS Number: 899089-00015  Date of last issue: 18.12.2020
Date of first issue: 16.09.2016

H410  Very toxic to aquatic life with long lasting effects.

Precautionary statements:
Prevention:
P201  Obtain special instructions before use.
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.

Storage:
P405  Store locked up.

Hazardous components which must be listed on the label:
fenbendazole

2.3 Other hazards
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Index-No.</th>
<th>Registration number</th>
<th>Classification</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>fenbendazole</td>
<td>43210-67-9</td>
<td>256-145-7</td>
<td></td>
<td></td>
<td>Repr. 2; H361fd STOT RE 2; H373</td>
<td>&gt;= 10 - &lt;= 18.75</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(Liver, Lymph nodes, Stomach, Nervous system)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Aquatic Acute 1;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>H400</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Aquatic Chronic 1;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>H410 M-Factor (Acute aquatic toxicity): 100</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M-Factor (Chronic aquatic toxicity): 10</td>
<td></td>
</tr>
<tr>
<td>Ethanol#</td>
<td>64-17-5</td>
<td>200-578-6</td>
<td>603-002-00-5</td>
<td></td>
<td>Flam. Liq. 2; H225 Eye Irrit. 2; H319</td>
<td>&lt;= 0.04</td>
</tr>
<tr>
<td>Diethyl malonate#</td>
<td>105-53-3</td>
<td>203-305-9</td>
<td></td>
<td></td>
<td>Eye Irrit. 2; H319</td>
<td>&lt;= 0.006</td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET
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2-Furaldehyde# 98-01-1 202-627-7 605-010-00-4 Flam. Liq. 3; H226
Acute Tox. 3; H301
Acute Tox. 2; H330
Acute Tox. 4; H312
Skin Irrit. 2; H315
Eye Irrit. 2; H319
Carc. 2; H351
STOT SE 3; H335
Aquatic Chronic 3; H412 <= 0.006

Cinnamaldehyde# 104-55-2 203-213-9 Acute Tox. 4; H312
Skin Irrit. 2; H315
Eye Irrit. 2; H319
Skin Sens. 1B; H317 <= 0.002

Isovaleraldehyde# 590-86-3 209-691-5 Flam. Liq. 2; H225
Eye Irrit. 2; H319
Skin Sens. 1B; H317
STOT SE 3; H335
Aquatic Chronic 2; H411 <= 0.002

Acetaldehyde# 75-07-0 200-836-8 605-003-00-6 Flam. Liq. 1; H224
Acute Tox. 4; H302
Eye Irrit. 2; H319
Muta. 2; H341
Carc. 1B; H350
STOT SE 3; H335 <= 0.0002

Trans-hex-2-en-1-ol# 928-95-0 213-191-2 Skin Corr. 1B; H314
Eye Dam. 1; H318 <= 0.0002

# Voluntarily-disclosed non-hazardous substance
For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

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

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

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

In case of skin contact: In case of contact, immediately flush skin with 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: Flush eyes with water as a precaution.
Get medical attention if irritation develops and persists.

If swallowed: If swallowed, DO NOT induce vomiting.
Get medical attention.
Rinse mouth thoroughly with water.

4.2 Most important symptoms and effects, both acute and delayed
Risks: Suspected of damaging fertility. Suspected of damaging 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: None known.

5.2 Special hazards arising from the substance or mixture
Specific hazards during firefighting: Exposure to combustion products may be a hazard to health.

Hazardous combustion products: Carbon oxides

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

Specific extinguishing methods: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use water spray to cool unopened containers. Remove undamaged containers from fire area if it is safe to do so. Evacuate area.
SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Personal precautions: Use personal protective equipment. Follow safe handling advice (see section 7) and personal protective equipment recommendations (see section 8).

6.2 Environmental precautions
Environmental precautions: Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Prevent spreading over a wide area (e.g. by containment or oil barriers). Retain and dispose of contaminated wash water. Local authorities should be advised if significant spillages cannot be contained.

6.3 Methods and material for containment and cleaning up
Methods for cleaning up: Soak up with inert absorbent material. 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: Use only with adequate ventilation.
Advice on safe handling: Do not breathe vapours. Do not swallow. Avoid contact with eyes. Avoid prolonged or repeated contact with skin. Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment. 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...
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 decontamination 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. Store in accordance with the particular national regulations.
Advice on common storage: Do not store with the following product types: Strong oxidizing agents

7.3 Specific end use(s)
Specific use(s): No data available

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>fenbendazole</td>
<td>43210-67-9</td>
<td>TWA</td>
<td>100 µg/m³ (OEB 2)</td>
<td>Internal</td>
</tr>
<tr>
<td>Propylene glycol</td>
<td>57-55-6</td>
<td>TWA (particles)</td>
<td>10 mg/m³</td>
<td>GB EH40</td>
</tr>
<tr>
<td>Glycerine</td>
<td>56-81-5</td>
<td>TWA (Total vapour and particles)</td>
<td>150 ppm 474 mg/m³</td>
<td>GB EH40</td>
</tr>
<tr>
<td>Ethanol</td>
<td>64-17-5</td>
<td>TWA</td>
<td>1,000 ppm 1,920 mg/m³</td>
<td>GB EH40</td>
</tr>
<tr>
<td>2-Furaldehyde</td>
<td>98-01-1</td>
<td>TWA</td>
<td>2 ppm 8 mg/m³</td>
<td>GB EH40</td>
</tr>
</tbody>
</table>

Further information: Where no specific short-term exposure limit is listed, a figure three times the long-term exposure limit should be used.

Further information: Can be absorbed through the skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.

Further information: Can be absorbed through the skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.
# Fenbendazole Paste Formulation

**SAFETY DATA SHEET**

according to Regulation (EC) No. 1907/2006

Fenbendazole Paste Formulation

**Version**: 6.1

**Revision Date**: 09.04.2021

**SDS Number**: 899089-00015

**Date of last issue**: 18.12.2020

**Date of first issue**: 16.09.2016

<table>
<thead>
<tr>
<th>Substance name</th>
<th>End Use</th>
<th>Exposure routes</th>
<th>Potential health effects</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetaldehyde 75-07-0</td>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term local effects</td>
<td>10 mg/m3</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
<td>168 mg/m3</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Inhalation</td>
<td>Long-term local effects</td>
<td>10 mg/m3</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
<td>50 mg/m3</td>
</tr>
<tr>
<td>Glycerine</td>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term local effects</td>
<td>56 mg/m3</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Ingestion</td>
<td>Long-term systemic effects</td>
<td>229 mg/kg bw/day</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Inhalation</td>
<td>Long-term local effects</td>
<td>33 mg/m3</td>
</tr>
<tr>
<td>Ethanol</td>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
<td>950 mg/m3</td>
</tr>
<tr>
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<td>Workers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
<td>343 mg/kg bw/day</td>
</tr>
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<td>Consumers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
<td>114 mg/m3</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
<td>206 mg/kg bw/day</td>
</tr>
<tr>
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<td>Consumers</td>
<td>Ingestion</td>
<td>Long-term systemic effects</td>
<td>87 mg/kg bw/day</td>
</tr>
<tr>
<td>2-Furaldehyde</td>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
<td>17.8 mg/m3</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Inhalation</td>
<td>Acute systemic effects</td>
<td>152 mg/m3</td>
</tr>
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<td></td>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term local effects</td>
<td>8 mg/m3</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Inhalation</td>
<td>Acute local effects</td>
<td>20 mg/m3</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
<td>4 mg/kg bw/day</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
<td>8 mg/m3</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Inhalation</td>
<td>Acute systemic effects</td>
<td>136 mg/m3</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Inhalation</td>
<td>Long-term local effects</td>
<td>8 mg/m3</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Inhalation</td>
<td>Acute local effects</td>
<td>20 mg/m3</td>
</tr>
<tr>
<td></td>
<td>Environmental Compartment</td>
<td>Value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------</td>
<td>---------------------------------</td>
<td>---------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Propylene glycol</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumers Skin contact</td>
<td>Fresh water</td>
<td>260 mg/l</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Marine water</td>
<td>26 mg/l</td>
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</tr>
<tr>
<td></td>
<td>Intermittent use/release</td>
<td>183 mg/l</td>
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</tr>
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<td></td>
<td>Sewage treatment plant</td>
<td>20000 mg/l</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>572 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marine sediment</td>
<td>57.2 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Soil</td>
<td>50 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumers Ingestion</td>
<td>Fresh water</td>
<td>0.885 mg/l</td>
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<td></td>
<td>Marine water</td>
<td>0.0885 mg/l</td>
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<td>Intermittent use/release</td>
<td>8.85 mg/l</td>
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<td>Sewage treatment plant</td>
<td>1000 mg/l</td>
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<tr>
<td></td>
<td>Fresh water sediment</td>
<td>3.3 mg/kg dry weight (d.w.)</td>
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<tr>
<td></td>
<td>Marine sediment</td>
<td>0.33 mg/kg dry weight (d.w.)</td>
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</tr>
<tr>
<td></td>
<td>Soil</td>
<td>0.141 mg/kg dry weight (d.w.)</td>
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<td></td>
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<tr>
<td><strong>Glycerine</strong></td>
<td>Fresh water</td>
<td>0.96 mg/l</td>
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<tr>
<td></td>
<td>Freshwater - intermittent</td>
<td>2.75 mg/l</td>
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<td></td>
<td>Marine water</td>
<td>0.79 mg/l</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Sewage treatment plant</td>
<td>580 mg/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>3.6 mg/kg dry weight (d.w.)</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Marine sediment</td>
<td>2.9 mg/kg dry weight (d.w.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Soil</td>
<td>0.63 mg/kg dry weight (d.w.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ethanol</strong></td>
<td>Fresh water</td>
<td>0.033 mg/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Freshwater - intermittent</td>
<td>0.027 mg/l</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Marine water</td>
<td>0.003 mg/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sewage treatment plant</td>
<td>7.6 mg/l</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Fresh water sediment</td>
<td>0.12 mg/kg dry weight (d.w.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2-Furaldehyde</strong></td>
<td>Fresh water</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Freshwater - intermittent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marine water</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sewage treatment plant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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Fenbendazole Paste Formulation

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.
Laboratory operations do not require special containment.

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

Skin and body protection: Work uniform or laboratory coat.

Respiratory protection: If adequate local exhaust ventilation is not available or exposure assessment demonstrates exposures outside the recommended guidelines, use respiratory protection.
Equipment should conform to BS EN 14387
Filter type: Combined particulates and organic vapour type (A-P)

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties
Appearance: paste
Colour: white to off-white
Odour: cinnamon-like
Odour Threshold: No data available
pH: 6 - 8
Melting point/freezing point: No data available
Fenbendazole Paste Formulation

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial boiling point and boiling range</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point</td>
<td>No data available</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>Flammability (liquids)</td>
<td>No data available</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>
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</tr>
<tr>
<td>Relative vapour density</td>
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<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>insoluble</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>
<tr>
<td>Viscosity, kinematic</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not explosive</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>The substance or mixture is not classified as oxidizing.</td>
</tr>
</tbody>
</table>

9.2 Other information

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular weight</td>
<td>No data available</td>
</tr>
<tr>
<td>Particle size</td>
<td>No data available</td>
</tr>
</tbody>
</table>

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: Can react with strong oxidizing agents.

10.4 Conditions to avoid
Conditions to avoid: None known.

10.5 Incompatible materials
Materials to avoid: Oxidizing agents

10.6 Hazardous decomposition products
No hazardous decomposition products are known.

SECTION 11: Toxicological information

11.1 Information on toxicological effects
Information on likely routes of exposure:
- Inhalation
- Skin contact
- Ingestion
- Eye contact

Acute toxicity
Not classified based on available information.

Components:

fenbendazole:
Acute oral toxicity: LD50 (Rat): > 10,000 mg/kg
LD50 (Mouse): > 10,000 mg/kg

Ethanol:
Acute oral toxicity: LD50 (Rat): > 5,000 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity: LC50 (Rat): 124.7 mg/l
Exposure time: 4 h
Test atmosphere: vapour

Diethyl malonate:
Acute oral toxicity: LD50 (Rat): > 5,000 mg/kg

Acute dermal toxicity: LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 402
Remarks: Based on data from similar materials

2-Furaldehyde:
Acute oral toxicity: LD50 (Rat): 108 mg/kg
Method: OECD Test Guideline 401
Fenbendazole Paste Formulation

Acute inhalation toxicity: LC50 (Rat): 1 mg/l
    Exposure time: 4 h
    Test atmosphere: vapour

Acute dermal toxicity: Acute toxicity estimate: 1,100 mg/kg
    Method: Expert judgement
    Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI

Cinnamaldehyde:
    Acute oral toxicity: LD50 (Rat): 2,200 mg/kg
    Acute dermal toxicity: LD50 (Rabbit): 1,260 mg/kg

Isovaleraldehyde:
    Acute oral toxicity: LD50 (Rat): 5,740 mg/kg
    Acute inhalation toxicity: LC50 (Rat): 42.7 mg/l
        Exposure time: 4 h
        Test atmosphere: vapour
    Acute dermal toxicity: LD50 (Rabbit): 2,534 mg/kg

Acetaldehyde:
    Acute oral toxicity: LD50 (Rat): 661 mg/kg
    Acute dermal toxicity: LD50 (Rabbit): 3,540 mg/kg

Trans-hex-2-en-1-ol:
    Acute oral toxicity: LD50 (Rat): 3,500 mg/kg
    Acute inhalation toxicity: Assessment: Corrosive to the respiratory tract.
    Acute dermal toxicity: LD50 (Rabbit): 4,500 mg/kg

Skin corrosion/irritation
Not classified based on available information.

Components:

fenbendazole:
    Species: Rabbit
    Result: No skin irritation

Ethanol:
    Species: Rabbit
    Method: OECD Test Guideline 404
    Result: No skin irritation
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Fenbendazole Paste Formulation

Version 6.1
Revision Date: 09.04.2021
SDS Number: 899089-00015
Date of last issue: 18.12.2020
Date of first issue: 16.09.2016

Diethyl malonate:
Species: Rabbit
Result: No skin irritation

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

Cinnamaldehyde:
Species: human skin
Result: Skin irritation

Isovaleraldehyde:
Species: Rabbit
Method: OECD Test Guideline 404
Result: Skin irritation

Acetaldehyde:
Species: Rabbit
Method: OECD Test Guideline 404
Result: Mild skin irritation

Trans-hex-2-en-1-ol:
Species: reconstructed human epidermis (RhE)
Method: OECD Test Guideline 431
Result: Corrosive after 3 minutes to 1 hour of exposure

Serious eye damage/eye irritation
Not classified based on available information.

Components:

fenbendazole:
Species: Rabbit
Result: No eye irritation

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

Diethyl malonate:
Species: Rabbit
Result: Irritation to eyes, reversing within 21 days

2-Furaldehyde:
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according to Regulation (EC) No. 1907/2006

---

**Fenbendazole Paste Formulation**

<table>
<thead>
<tr>
<th>Version</th>
<th>Revision Date:</th>
<th>SDS Number:</th>
<th>Date of last issue:</th>
<th>Date of first issue:</th>
</tr>
</thead>
</table>

### Species

<table>
<thead>
<tr>
<th>Method</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Species</td>
<td></td>
</tr>
<tr>
<td>Cinnamaldehyde</td>
<td><strong>Species</strong>: Rabbit, <strong>Method</strong>: OECD Test Guideline 405, <strong>Result</strong>: Irritation to eyes, reversing within 21 days</td>
</tr>
<tr>
<td>Isovaleraldehyde</td>
<td><strong>Species</strong>: Rabbit, <strong>Method</strong>: OECD Test Guideline 405, <strong>Result</strong>: Irritation to eyes, reversing within 21 days</td>
</tr>
<tr>
<td>Acetaldehyde</td>
<td><strong>Species</strong>: Rabbit, <strong>Method</strong>: OECD Test Guideline 405, <strong>Result</strong>: Irritation to eyes, reversing within 21 days</td>
</tr>
<tr>
<td>Trans-hex-2-en-1-ol</td>
<td><strong>Result</strong>: Irreversible effects on the eye, <strong>Remarks</strong>: Based on skin corrosivity</td>
</tr>
</tbody>
</table>

**Respiratory or skin sensitisation**

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

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

**Components**

**Ethanol**

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Exposure routes</th>
<th>Species</th>
<th>Result</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local lymph node assay (LLNA)</td>
<td>Skin contact</td>
<td>Mouse</td>
<td>negative</td>
<td></td>
</tr>
</tbody>
</table>

**Diethyl malonate**

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Exposure routes</th>
<th>Species</th>
<th>Method</th>
<th>Result</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buehler Test</td>
<td>Skin contact</td>
<td>Guinea pig</td>
<td>OECD Test Guideline 406</td>
<td>negative</td>
<td>Based on data from similar materials</td>
</tr>
</tbody>
</table>

**2-Furaldehyde**

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Exposure routes</th>
<th>Species</th>
<th>Method</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximisation Test</td>
<td>Skin contact</td>
<td>Guinea pig</td>
<td>OECD Test Guideline 406</td>
<td></td>
</tr>
</tbody>
</table>
Cinnamaldehyde:
Test Type: Local lymph node assay (LLNA)
Exposure routes: Skin contact
Species: Mouse
Result: positive
Assessment: Probability or evidence of low to moderate skin sensitisation rate in humans

Isovaleraldehyde:
Test Type: Maximisation Test
Exposure routes: Skin contact
Species: Guinea pig
Method: OECD Test Guideline 406
Result: positive
Remarks: Based on data from similar materials
Assessment: Probability or evidence of low to moderate skin sensitisation rate in humans

Acetaldehyde:
Test Type: Maximisation Test
Exposure routes: Skin contact
Species: Guinea pig
Method: OECD Test Guideline 406
Result: negative

Trans-hex-2-en-1-ol:
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

Germ cell mutagenicity
Not classified based on available information.

Components:
fenbendazole:
Genotoxicity in vitro: Test Type: Bacterial reverse mutation assay (AMES)
Result: negative
Test Type: DNA Repair
Result: negative
Test Type: Chromosomal aberration
Result: negative
<table>
<thead>
<tr>
<th><strong>Test Type</strong></th>
<th><strong>Genotoxicity in vitro</strong></th>
<th><strong>Genotoxicity in vivo</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ethanol:</strong></td>
<td>Test Type: In vitro mammalian cell gene mutation test</td>
<td>Test Type: Rodent dominant lethal test (germ cell) (in vivo)</td>
</tr>
<tr>
<td>Method</td>
<td>Result: negative</td>
<td>Species: Mouse</td>
</tr>
<tr>
<td>Directive</td>
<td></td>
<td>Application Route: Ingestion</td>
</tr>
<tr>
<td><strong>Diethyl malonate:</strong></td>
<td>Test Type: Bacterial reverse mutation assay (AMES)</td>
<td>Test Type: Unscheduled DNA synthesis (UDS) test with mammalian liver cells in vivo</td>
</tr>
<tr>
<td>Method</td>
<td>Result: negative</td>
<td>Species: Rat</td>
</tr>
<tr>
<td>OECD Test Guideline 471</td>
<td></td>
<td>Application Route: Ingestion</td>
</tr>
<tr>
<td><strong>2-Furaldehyde:</strong></td>
<td>Test Type: Bacterial reverse mutation assay (AMES)</td>
<td>Test Type: DNA damage and repair, unscheduled DNA synthesis in mammalian cells (in vitro)</td>
</tr>
<tr>
<td>Method</td>
<td>Result: negative</td>
<td>Result: positive</td>
</tr>
<tr>
<td>OECD Test Guideline 471</td>
<td></td>
<td>Test Type: In vitro sister chromatid exchange assay in mammalian cells</td>
</tr>
<tr>
<td><strong>Remarks:</strong></td>
<td>Based on data from similar materials</td>
<td>Result: positive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Test Type: In vitro mammalian cell gene mutation test</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Result: positive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Test Type: Chromosome aberration test in vitro</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Result: positive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Test Type: DNA damage and repair, unscheduled DNA synthesis in mammalian cells (in vitro)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Result: positive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Test Type: In vitro sister chromatid exchange assay in mammalian cells</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Result: positive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Test Type: Unscheduled DNA synthesis (UDS) test with mammalian liver cells in vivo</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Species: Rat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Application Route: Ingestion</td>
</tr>
</tbody>
</table>
Result: negative

Test Type: Transgenic rodent somatic cell gene mutation assay
Species: Mouse
Application Route: Ingestion
Result: negative

Cinnamaldehyde:
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: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Mouse
Application Route: Ingestion
Result: negative
Remarks: Based on data from similar materials

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

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

Test Type: Unscheduled DNA synthesis (UDS) test with mammalian liver cells in vivo
Species: Rat
Application Route: Ingestion
Result: negative

Isovaleraldehyde:
Genotoxicity in vitro:
Test Type: Bacterial reverse mutation assay (AMES)
Method: OECD Test Guideline 471
Result: negative
Remarks: Based on data from similar materials

Test Type: DNA damage and repair, unscheduled DNA synthesis in mammalian cells (in vitro)
Result: positive
Remarks: Based on data from similar materials
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Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Mouse
Application Route: Intraperitoneal injection
Method: OECD Test Guideline 474
Result: negative

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

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

Test Type: Chromosome aberration test in vitro
Result: positive

Test Type: In vitro micronucleus test
Result: positive

Test Type: In vitro sister chromatid exchange assay in mammalian cells
Result: positive

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

Genotoxicity in vivo : Test Type: In vivo micronucleus test
Species: Rat
Application Route: Intraperitoneal injection
Result: positive

Test Type: Mammalian bone marrow sister chromatid exchange
Species: Mouse
Application Route: Intraperitoneal injection
Result: positive

Germ cell mutagenicity- Assessment : Positive result(s) from in vivo mammalian somatic cell mutagenicity tests.

Trans-hex-2-en-1-ol:
Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Method: OECD Test Guideline 471
Result: negative

Test Type: In vitro micronucleus test
Method: OECD Test Guideline 487
Result: negative

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo
cytogenetic assay)
Species: Mouse
Application Route: Intraperitoneal injection
Method: OECD Test Guideline 474
Result: negative
Remarks: Based on data from similar materials

Carcinogenicity
Not classified based on available information.

Components:

fenbendazole:
Species: Mouse
Application Route: oral (feed)
Exposure time: 2 Years
NOAEL: 405 mg/kg body weight
Result: negative

Species: Rat
Application Route: Oral
Exposure time: 2 Years
NOAEL: 5 mg/kg body weight
Result: negative
Target Organs: Lymph nodes, Liver

2-Furaldehyde:
Species: Mouse
Application Route: Ingestion
Exposure time: 103 weeks
Method: OECD Test Guideline 451
Result: positive
Remarks: The mechanism or mode of action is not relevant in humans.

Species: Hamster
Application Route: inhalation (vapour)
Exposure time: 52 weeks
Result: negative

Species: Mouse
Application Route: Skin contact
Exposure time: 47 weeks
Result: positive

Carcinogenicity - Assessment: Limited evidence of carcinogenicity in animal studies

Cinnamaldehyde:
Species: Rat
Application Route: Ingestion
Exposure time: 106 weeks
Result: negative
Remarks: Based on data from similar materials
## Fenbendazole Paste Formulation

**Species** : Mouse  
**Application Route** : Intraperitoneal injection  
**Exposure time** : 24 weeks  
**Result** : negative

### Isovaleraldehyde:

| Species | Rat  
| Application Route | Inhalation (vapour)  
| Exposure time | 2 Years  
| Result | negative  
| Remarks | Based on data from similar materials

### Acetaldehyde:

| Species | Rat  
| Application Route | Inhalation  
| Exposure time | 121 weeks  
| Result | positive

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

### Reproductive toxicity

Suspected of damaging fertility. Suspected of damaging the unborn child.

**Components:**

**fenbendazole:**

- **Effects on fertility** : Test Type: Three-generation reproduction toxicity study  
  Species: Rat  
  Application Route: oral (feed)  
  General Toxicity - Parent: NOAEL: 15 mg/kg body weight  
  Fertility: LOAEL: 45 mg/kg body weight  
  Result: Effects on fertility

- **Effects on foetal development** : Test Type: Development  
  Species: Dog, female  
  Application Route: Oral  
  Developmental Toxicity: LOAEL: 100 mg/kg body weight  
  Result: Embryotoxic effects and adverse effects on the offspring were detected., No teratogenic effects

  Test Type: Embryo-foetal development  
  Species: Rabbit  
  Application Route: Oral  
  Developmental Toxicity: NOAEL: 25 mg/kg body weight  
  Result: Fetotoxicity

  Test Type: Embryo-foetal development  
  Species: Rabbit  
  Application Route: Oral  
  Developmental Toxicity: LOAEL: 63 mg/kg body weight
Fenbendazole Paste Formulation

Test Type: Embryo-foetal development
Species: Rat
Application Route: Oral
Developmental Toxicity: NOAEL: 120 mg/kg body weight
Result: No effects on foetal development

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.

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

Diethyl malonate:
Effects on fertility:
- Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test
  Species: Rat
  Application Route: Ingestion
  Method: OECD Test Guideline 422
  Result: negative
  Remarks: Based on data from similar materials

Effects on foetal development:
- Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test
  Species: Rat
  Application Route: Ingestion
  Method: OECD Test Guideline 422
  Result: negative
  Remarks: Based on data from similar materials

2-Furaldehyde:
Effects on foetal development:
- Test Type: Embryo-foetal development
  Species: Rat
  Application Route: Ingestion
  Result: negative

Cinnamaldehyde:
Effects on foetal development:
- Test Type: Embryo-foetal development
  Species: Mouse
  Application Route: Ingestion
  Result: negative

Acetaldehyde:
Effects on foetal development:
- Test Type: Embryo-foetal development
  Species: Rat
  Application Route: Ingestion
Result: negative

**Trans-hex-2-en-1-ol:**
Effects on fertility: Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 422
Result: negative
Remarks: Based on data from similar materials

Effects on foetal development: Test Type: Embryo-foetal development
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 414
Result: negative
Remarks: Based on data from similar materials

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

**Components:**

**2-Furaldehyde:**
Assessment: May cause respiratory irritation.

**Isovaleraldehyde:**
Assessment: May cause respiratory irritation.

**Acetaldehyde:**
Assessment: May cause respiratory irritation.

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

**Components:**

**fenbendazole:**
Exposure routes: Ingestion
Target Organs: Liver, Lymph nodes, Stomach, Nervous system
Assessment: May cause damage to organs through prolonged or repeated exposure.

**2-Furaldehyde:**
Assessment: No significant health effects observed in animals at concentrations of 100 mg/kg bw or less.
Repeated dose toxicity

Components:

fenbendazole:
Species: Rat
LOAEL: 500 mg/kg
Application Route: Oral
Exposure time: 2 Weeks
Target Organs: Kidney, Liver

Species: Rat
NOAEL: > 2,500 mg/kg
Application Route: Oral
Exposure time: 30 Days
Remarks: No significant adverse effects were reported

Species: Rat
LOAEL: 1,600 mg/kg
Application Route: Oral
Exposure time: 90 Days
Target Organs: Central nervous system
Symptoms: Tremors

Species: Dog
NOAEL: 4 mg/kg
LOAEL: 8 mg/kg
Exposure time: 6 Months
Target Organs: Stomach, Lymph nodes, Nervous system

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

2-Furaldehyde:
Species: Rat
NOAEL: 53 mg/kg
Application Route: Ingestion
Exposure time: 13 Weeks

Cinnamaldehyde:
Species: Rat
NOAEL: 200 mg/kg
Application Route: Ingestion
Exposure time: 12 Weeks
Acetaldehyde:
Species: Rat
NOAEL: 125 mg/kg
LOAEL: 675 mg/kg
Application Route: Ingestion
Exposure time: 28 Days

Species: Rat
NOAEL: 0.3 mg/kg
LOAEL: 1 mg/kg
Application Route: Inhalation (vapour)
Exposure time: 13 Weeks

Trans-hex-2-en-1-ol:
Species: Rat
NOAEL: > 100 mg/kg
Application Route: Ingestion
Exposure time: 98 Days
Remarks: Based on data from similar materials

Aspiration toxicity
Not classified based on available information.

Components:
fenbendazole:
No aspiration toxicity classification

Experience with human exposure

Components:
fenbendazole:
Ingestion: Symptoms: Rapid respiration, Salivation, anorexia, Diarrhoea

SECTION 12: Ecological information

12.1 Toxicity

Components:
fenbendazole:
Toxicity to fish: LC50 (Oncorhynchus mykiss (rainbow trout)): > 7.5 mg/l
Exposure time: 96 h
Remarks: No toxicity at the limit of solubility

Toxicity to daphnia and other aquatic invertebrates: EC50 (Daphnia magna (Water flea)): 0.008 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

M-Factor (Acute aquatic toxicity): 100
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity):

- **NOEC**: 0.0015 mg/l  
  Exposure time: 21 Days  
  Species: *Daphnia magna* (Water flea)  
  Method: OECD Test Guideline 211

**M-Factor (Chronic aquatic toxicity)**: 10

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

**Diethyl malonate**:

- **Toxicity to fish**:
  - **LC50** (*Pimephales promelas* (fathead minnow)): 12 - 17 mg/l  
    Exposure time: 96 h

- **Toxicity to daphnia and other aquatic invertebrates**:
  - **EC50** (*Daphnia magna* (Water flea)): 179 mg/l  
    Exposure time: 48 h  

- **Toxicity to algae/aquatic plants**:
  - **ErC50** (*Desmodesmus subspicatus* (green algae)): > 800 mg/l  
    Exposure time: 72 h  
  - **EC10** (*Desmodesmus subspicatus* (green algae)): 115 mg/l  
    Exposure time: 72 h

- **Toxicity to microorganisms**:
  - **EC50** (*Pseudomonas putida*): 3,097 mg/l  
    Exposure time: 16 h  
    Method: DIN 38 412 Part 8

**2-Furaldehyde**:

- **Toxicity to fish**:
  - **EC50** (*Leuciscus idus* (Golden orfe)): 29 mg/l  
    Exposure time: 48 h

- **Toxicity to daphnia and other aquatic invertebrates**:
  - **EC50** (*Daphnia magna* (Water flea)): 29 mg/l  
    Exposure time: 24 h
Fenbendazole Paste Formulation

### Toxicity to algae/aquatic plants
- **NOEC (Microcystis aeruginosa (blue-green algae))**: 2.7 mg/l
- Exposure time: 8 d

### Toxicity to microorganisms
- **EC50**: 760 mg/l
- Exposure time: 30 min
- Method: OECD Test Guideline 209

### Toxicity to fish (Chronic toxicity)
- **NOEC**: 0.33 mg/l
- Exposure time: 12 d
- Species: Danio rerio (zebra fish)

### Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)
- **NOEC**: 1.9 mg/l
- Exposure time: 21 d
- Species: Daphnia magna (Water flea)
- Method: OECD Test Guideline 211

### Cinnamaldehyde:

#### Toxicity to fish
- **LC50 (Danio rerio (zebra fish))**: 4.15 mg/l
- Exposure time: 96 h

#### Toxicity to daphnia and other aquatic invertebrates
- **EC50 (Daphnia magna (Water flea))**: 3.21 mg/l
- Exposure time: 48 h
- Method: OECD Test Guideline 202

#### Toxicity to algae/aquatic plants
- **ErC50 (Chlorella vulgaris (Fresh water algae))**: 16.09 mg/l
- Exposure time: 72 h
- Method: OECD Test Guideline 201

#### Toxicity to microorganisms
- **EC50**: 71 mg/l
- Exposure time: 3 h
- Method: ISO 8192

### Isovaleraldehyde:

#### Toxicity to fish
- **LC50 (Pimephales promelas (fathead minnow))**: 3.25 mg/l
- Exposure time: 96 h

#### Toxicity to daphnia and other aquatic invertebrates
- **EC50 (Daphnia magna (Water flea))**: 177 mg/l
- Exposure time: 48 h

#### Toxicity to algae/aquatic plants
- **ErC50 (Desmodesmus subspicatus (green algae))**: 137.37 mg/l
- Exposure time: 96 h
- EC10 (Desmodesmus subspicatus (green algae)): 101.83 mg/l
- Exposure time: 96 h

#### Toxicity to microorganisms
- **EC10 (Pseudomonas putida)**: 310 mg/l
- Exposure time: 17 h
- Method: DIN 38 412 Part 8
Acetaldehyde:
Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 30.8 mg/l
Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 57.4 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): > 100 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

Trans-hex-2-en-1-ol:
Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 100 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203
Remarks: Based on data from similar materials
Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 163 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): 226 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

12.2 Persistence and degradability

Components:

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

Diethyl malonate:
Biodegradability : Result: Readily biodegradable.
Biodegradation: 99 %
Exposure time: 28 d

2-Furaldehyde:
Biodegradability : Result: Readily biodegradable.
Biodegradation: 93.5 %
Exposure time: 14 d

Cinnamaldehyde:
Biodegradability : Result: Readily biodegradable.
Biodegradation: 100 %
Exposure time: 28 d
Method: OECD Test Guideline 301B

Isovaleraldehyde:
Biodegradability : Result: Not readily biodegradable.
Biodegradation: 49.5 %
Exposure time: 28 d
Method: OECD Test Guideline 301D

Acetaldehyde:
Biodegradability : Result: Readily biodegradable.
Biodegradation: 80 %
Exposure time: 14 d
Method: OECD Test Guideline 301C

Trans-hex-2-en-1-ol:
Biodegradability : Result: Readily biodegradable.
Remarks: Based on data from similar materials

12.3 Bioaccumulative potential

Components:

fenbendazole:
Bioaccumulation : Species: Lepomis macrochirus (Bluegill sunfish)
Bioconcentration factor (BCF): 240
Partition coefficient: n-octanol/water : log Pow: 2.3

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

Diethyl malonate:
Partition coefficient: n-octanol/water : log Pow: 0.96

2-Furaldehyde:
Partition coefficient: n-octanol/water : log Pow: 0.83
Remarks: Calculation

Cinnamaldehyde:
Partition coefficient: n-octanol/water : log Pow: 2.107
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12.4 Mobility in soil

Components:
fenbendazole:
Distribution among environmental compartments: log Koc: 4.37

12.5 Results of PBT and vPvB assessment

Product:
Assessment: This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects

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

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product: Dispose of in accordance with local regulations. According to the European Waste Catalogue, Waste Codes are not product specific, but application specific. Waste codes should be assigned by the user, preferably in discussion with the waste disposal authorities.

Contaminated packaging: Empty containers should be taken to an approved waste handling site for recycling or disposal. If not otherwise specified: Dispose of as unused product.

SECTION 14: Transport information

14.1 UN number
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

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Version: 6.1
Revision Date: 09.04.2021
SDS Number: 899089-00015
Date of last issue: 18.12.2020
Date of first issue: 16.09.2016

ADN : UN 3082
ADR : UN 3082
RID : UN 3082
IMDG : UN 3082
IATA : UN 3082

14.2 UN proper shipping name
ADN : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (fenbendazole)
ADR : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (fenbendazole)
RID : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (fenbendazole)
IMDG : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (fenbendazole)
IATA : Environmentally hazardous substance, liquid, n.o.s. (fenbendazole)

14.3 Transport hazard class(es)
ADN : 9
ADR : 9
RID : 9
IMDG : 9
IATA : 9

14.4 Packing group
ADN
Packing group : III
Classification Code : M6
Hazard Identification Number : 90
Labels : 9
ADR
Packing group : III
Classification Code : M6
Hazard Identification Number : 90
Labels : 9
Tunnel restriction code : (-)
RID
Packing group : III
Classification Code : M6
Hazard Identification Number : 90
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14.5 Environmental hazards

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<tr>
<th>Classification</th>
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</tr>
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<tbody>
<tr>
<td>ADN</td>
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<tr>
<td>ADR</td>
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</tr>
<tr>
<td>RID</td>
<td>yes</td>
</tr>
<tr>
<td>IMDG</td>
<td>yes</td>
</tr>
<tr>
<td>IATA (Passenger)</td>
<td>yes</td>
</tr>
<tr>
<td>IATA (Cargo)</td>
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</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Regulation</th>
<th>Conditions of restriction for the following entries should be considered</th>
</tr>
</thead>
<tbody>
<tr>
<td>REACH</td>
<td>Conditions of restriction for the following entries should be considered:</td>
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<tr>
<td></td>
<td>Number on list 3</td>
</tr>
<tr>
<td>REACH</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
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Concern for Authorisation (Article 59).
REACH - List of substances subject to authorisation (Annex XIV) : Not applicable
Regulation (EC) No 1005/2009 on substances that deplete the ozone layer : Not applicable
Regulation (EU) 2019/1021 on persistent organic pollutants (recast) : Not applicable
Regulation (EC) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals : Not applicable

Other regulations:
Take note of Directive 92/85/EEC regarding maternity protection or stricter national regulations, where applicable.
Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.

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

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

SECTION 16: Other information
Other information : Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

Full text of H-Statements
H224 : Extremely flammable liquid and vapour.
H225 : Highly flammable liquid and vapour.
H226 : Flammable liquid and vapour.
H301 : Toxic if swallowed.
H302 : Harmful if swallowed.
H312 : Harmful in contact with skin.
H314 : Causes severe skin burns and eye damage.
H315 : Causes skin irritation.
H317 : May cause an allergic skin reaction.
H318 : Causes serious eye damage.
H319 : Causes serious eye irritation.
H330 : Fatal if inhaled.
H335 : May cause respiratory irritation.
H341 : Suspected of causing genetic defects.
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H350 : May cause cancer.
H351 : Suspected of causing cancer.
H361Id : Suspected of damaging fertility. Suspected of damaging the unborn child.
H373 : May cause 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.
H411 : Toxic to aquatic life with long lasting effects.
H412 : Harmful to aquatic life with long lasting effects.

Full text of other abbreviations

Acute Tox. : Acute toxicity
Aquatic Acute : Short-term (acute) aquatic hazard
Aquatic Chronic : Long-term (chronic) aquatic hazard
Carc. : Carcinogenicity
Eye Dam. : Serious eye damage
Eye Irrit. : Eye irritation
Flam. Liq. : Flammable liquids
Muta. : Germ cell mutagenicity
Repr. : Reproductive toxicity
Skin Corr. : Skin corrosion
Skin Irrit. : Skin irritation
Skin Sens. : Skin sensitisation
STOT RE : Specific target organ toxicity - repeated exposure
STOT SE : Specific target organ toxicity - single exposure
GB EH40 : UK. EH40 WEL - Workplace Exposure Limits
GB EH40 / TWA : Long-term exposure limit (8-hour TWA reference period)
GB EH40 / STEL : Short-term exposure limit (15-minute reference period)

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogenic, 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 concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50% of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantiti-
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Further information

Classification of the mixture:
Repr. 2 H361fd Calculation method
STOT RE 2 H373 Calculation method
Aquatic Acute 1 H400 Calculation method
Aquatic Chronic 1 H410 Calculation method

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.

GB / EN