SAFETY DATA SHEET

Albendazole Sulfoxide (1.9%) Formulation

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Albendazole Sulfoxide (1.9%) 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
Telefax: 908-735-1496

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
Skin sensitization: Category 1

GHS label elements in accordance with ABNT NBR 14725 Standard
Hazard pictograms: ⚠️

Signal Word: Warning
Hazard Statements: H317 May cause an allergic skin reaction.
Precautionary Statements: Prevention:
P272 Contaminated work clothing should not be allowed out of the workplace.
P280 Wear protective gloves.
Response:
P302 + P352 IF ON SKIN: Wash with plenty of water.
P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.
P362 + P364 Take off contaminated clothing and wash it before reuse.
SAFETY DATA SHEET

Albendazole Sulfoxide (1.9%) Formulation

Additional Labeling
The following percentage of the mixture consists of ingredient(s) with unknown hazards to the aquatic environment: 1.9%

Other hazards which do not result in classification
None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

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

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albendazole Sulfoxide</td>
<td>54029-12-8</td>
<td>Acute toxicity (Oral), Category 4, Skin sensitization, Sub-category 1B, Reproductive toxicity, Category 2, Specific target organ toxicity - single exposure (Oral) (Gastrointestinal tract, Central nervous system), Category 2, Specific target organ toxicity - repeated exposure (Oral) (Gastrointestinal tract, Central nervous system, Immune system, Liver), Category 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;= 1 - &lt; 3</td>
</tr>
</tbody>
</table>

SECTION 4. FIRST AID MEASURES

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

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

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

Most important symptoms and effects, both acute and delayed:

- May cause an allergic skin reaction.

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:
- None known.

Specific hazards during firefighting:
- Exposure to combustion products may be a hazard to health.

Hazardous combustion products:
- Carbon oxides
- Nitrogen oxides (NOx)
- Sulfur oxides

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

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

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:
- Use personal protective equipment.
- Follow safe handling advice and personal protective equipment recommendations.

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

Methods and materials for containment and cleaning up:
- Soak up with inert absorbent material.
- 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: Use only with adequate ventilation.

Advice on safe handling: Do not get on skin or clothing. Avoid inhalation of vapor or mist. Do not swallow. Avoid contact with eyes. 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 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 deboning and decontamination procedures, industrial hygiene monitoring, medical surveillance and the use of administrative controls.

Conditions for safe storage: Keep in properly labeled containers. Store in accordance with the particular national regulations.

Materials to avoid: Do not store with the following product types: Strong oxidizing agents.

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>Albendazole Sulfoxide</td>
<td>54029-12-8</td>
<td>TWA</td>
<td>40 µg/m³ (OEB 3)</td>
<td>Internal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Wipe limit 100 µg/100 cm²</td>
<td>Internal</td>
</tr>
</tbody>
</table>

Further information: DSEN

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. Laboratory operations do not require special containment.
Personal protective equipment

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

Filter type: Combined particulates and organic vapor type

Hand protection Material: Chemical-resistant gloves

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.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: suspension
Color: white
Odor: No data available
Odor Threshold: No data available
pH: No data available
Melting point/freezing point: No data available
Initial boiling point and boiling range: No data available
Flash point: No data available
Evaporation rate: No data available
Flammability (solid, gas): Not applicable
Flammability (liquids): No data available
Upper explosion limit / Upper flammability limit: No data available
Lower explosion limit / Lower flammability limit: No data available
Vapor pressure: No data available
Relative vapor density: No data available
Relative density: No data available
Density: No data available
Solubility(ies)
Water solubility : No data available

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 : Can react with strong oxidizing agents.
Conditions to avoid : None known.
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
Not classified based on available information.

Product:
Acute oral toxicity : Acute toxicity estimate: > 5,000 mg/kg
Method: Calculation method

Components:
Albendazole Sulfoxide:
Acute oral toxicity : LD50 (Mouse): 1.500 mg/kg
LD50 (Rat): 2.400 mg/kg
LD50 (Rat): 265 mg/kg
Application Route: Intravenous

**Skin corrosion/irritation**
Not classified based on available information.

**Components:**

<table>
<thead>
<tr>
<th>Albendazole Sulfoxide:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Species:</strong> Rabbit</td>
</tr>
<tr>
<td><strong>Result:</strong> No skin irritation</td>
</tr>
</tbody>
</table>

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

**Components:**

<table>
<thead>
<tr>
<th>Albendazole Sulfoxide:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Species:</strong> Rabbit</td>
</tr>
<tr>
<td><strong>Result:</strong> No eye irritation</td>
</tr>
</tbody>
</table>

**Respiratory or skin sensitization**

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

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

**Components:**

<table>
<thead>
<tr>
<th>Albendazole Sulfoxide:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Test Type:</strong> Maximization Test</td>
</tr>
<tr>
<td><strong>Routes of exposure:</strong> Dermal</td>
</tr>
<tr>
<td><strong>Assessment:</strong> Probability or evidence of low to moderate skin sensitization rate in humans</td>
</tr>
<tr>
<td><strong>Result:</strong> positive</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Germ cell mutagenicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not classified based on available information.</td>
</tr>
</tbody>
</table>

**Components:**

<table>
<thead>
<tr>
<th>Albendazole Sulfoxide:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Genotoxicity in vitro:</strong> Test Type: Bacterial reverse mutation assay (AMES)</td>
</tr>
<tr>
<td><strong>Result:</strong> negative</td>
</tr>
<tr>
<td><strong>Test Type:</strong> Chromosomal aberration</td>
</tr>
<tr>
<td><strong>Test system:</strong> Chinese hamster ovary cells</td>
</tr>
<tr>
<td><strong>Result:</strong> negative</td>
</tr>
</tbody>
</table>
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Genotoxicity in vivo:
- Test Type: Micronucleus test
- Species: Mouse
- Cell type: Bone marrow
- Result: negative

Carcinogenicity:
- Not classified based on available information.

Components:

Albendazole Sulfoxide:

<table>
<thead>
<tr>
<th>Species</th>
<th>Application Route</th>
<th>Exposure time</th>
<th>NOAEL</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mouse</td>
<td>Oral</td>
<td>2 Years</td>
<td>400 mg/kg body weight</td>
<td>negative</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Species</th>
<th>Application Route</th>
<th>Exposure time</th>
<th>NOAEL</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rat</td>
<td>Oral</td>
<td>2 Years</td>
<td>20 mg/kg body weight</td>
<td>negative</td>
</tr>
</tbody>
</table>

Carcinogenicity - Assessment:
- No evidence of carcinogenicity in animal studies.

Reproductive toxicity:
- Not classified based on available information.

Components:

Albendazole Sulfoxide:

Effects on fertility:
- Test Type: Fertility
- Species: Rat
- Application Route: Oral
- Fertility: NOAEL: 30 mg/kg body weight
- Result: No effects on fertility.

Effects on fetal development:
- Test Type: Development
- Species: Rat
- Application Route: Oral
- Developmental Toxicity: LOAEL: 10 mg/kg body weight
- Result: Embryotoxic effects., Skeletal malformations.

- Test Type: Development
  - Species: Rabbit
  - Application Route: Oral
  - Developmental Toxicity: LOAEL: 30 mg/kg body weight
  - Result: Embryotoxic effects., Skeletal malformations., Maternal toxicity observed.

- Test Type: Development
  - Species: Rat
  - Application Route: Oral
  - Developmental Toxicity: NOAEL: 5.8 mg/kg body weight
SAFETY DATA SHEET

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Result: Effects on postnatal development.

Test Type: Development
Species: Rat
Application Route: Oral
Developmental Toxicity: LOAEL: 7 mg/kg body weight
Result: Embryotoxic effects and adverse effects on the offspring were detected.

Reproductive toxicity - Assessment: Suspected of damaging the unborn child.

STOT-single exposure
Not classified based on available information.

Components:

Albendazole Sulfoxide:
Routes of exposure: Oral
Target Organs: Gastrointestinal tract, Central nervous system
Assessment: May cause damage to organs.

STOT-repeated exposure
Not classified based on available information.

Components:

Albendazole Sulfoxide:
Routes of exposure: Oral
Target Organs: Gastrointestinal tract, Central nervous system, Immune system, Liver
Assessment: May cause damage to organs through prolonged or repeated exposure.

Repeated dose toxicity

Components:

Albendazole Sulfoxide:
Species: Rat
LOAEL: 168 mg/kg
Application Route: Oral
Exposure time: 4 Weeks
Target Organs: Gastrointestinal tract, Testis
Symptoms: Diarrhea, Vomiting

Species: Dog
LOAEL: 48 mg/kg
Application Route: Oral
Exposure time: 4 Weeks
Target Organs: Gastrointestinal tract
Symptoms: Diarrhea, Vomiting

Species: Mouse
LOAEL: 40 mg/kg
## Application Route
- Oral

## Exposure time
- 3 Months

## Target Organs
- Blood, Liver, Nose

## Symptoms
- Hematologic effects, Liver effects

## Species
- Rat

## LOAEL:
- >= 30 mg/kg

## Application Route
- Oral

## Exposure time
- 6 Months

## Target Organs
- Blood

## Symptoms
- Hematologic effects

## Species
- Dog

## LOAEL
- 40 mg/kg

## Application Route
- Oral

## Exposure time
- 6 Months

## Target Organs
- Blood, Liver

## Symptoms
- Hematologic effects, Liver effects

## Species
- Rat

## NOAEL
- 7 mg/kg

## Application Route
- Oral

## Exposure time
- 60 d

## Target Organs
- Liver, Testis

## Symptoms
- Liver effects, male reproductive effects

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

### Experience with human exposure

#### Components:

### Albendazole Sulfoxide:

#### General Information
- Symptoms: Allergic reactions, hair loss, Gastrointestinal disturbance, Headache, Dizziness

#### Skin contact
- Target Organs: Skin
  - Symptoms: Allergic reactions
  - Remarks: May cause sensitization by skin contact.

#### Ingestion
- Target Organs: Gastrointestinal tract
  - Symptoms: Gastrointestinal disturbance, Diarrhea, Abdominal pain
  - Target Organs: Central nervous system
  - Symptoms: Headache, Dizziness
  - Target Organs: Liver
  - Symptoms: liver function change
  - Target Organs: Immune system
  - Symptoms: immune system effects
SAFETY DATA SHEET

Albendazole Sulfoxide (1.9%) Formulation

Version 2.0  Revision Date: 23.03.2020  SDS Number: 3903401-00004  Date of last issue: 02.08.2019
Date of first issue: 10.12.2018

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Albendazole Sulfoxide:

Ecotoxicology Assessment

Acute aquatic toxicity : Toxic effects cannot be excluded
Chronic aquatic toxicity: Toxic effects cannot be excluded

Persistence and degradability
No data available

Bioaccumulative potential

Components:

Albendazole Sulfoxide:

Partition coefficient: n-octanol/water : log Pow: 2.7

Mobility in soil
No data available

Other adverse effects
No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Dispose of in accordance with local regulations.
Contaminated packaging: Empty containers should be taken to an approved waste handling site for recycling or disposal.
If not otherwise specified: Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG
Not regulated as a dangerous good

IATA-DGR
Not regulated as a dangerous good

IMDG-Code
Not regulated as a dangerous good

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

Domestic regulation
ANTT
Not regulated as a dangerous good

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

International Regulations

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


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 other abbreviations

AICS - Australian Inventory of Chemical Substances; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50% of a test population; LD50 - Lethal Dose to 50% of a test population (Median...
## SAFETY DATA SHEET

### Albendazole Sulfoxide (1.9%) 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>
<tbody>
<tr>
<td>2.0</td>
<td>23.03.2020</td>
<td>3903401-00004</td>
<td>02.08.2019</td>
<td>10.12.2018</td>
</tr>
</tbody>
</table>

Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

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

BR / Z8