

**Albendazole / Closantel Sodium Formulation**

Version	Revision Date:	SDS Number:	Date of last issue:
6.0	2025/04/14	10843101-00015	2024/07/06
			Date of first issue: 2022/08/26

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**1. PRODUCT AND COMPANY IDENTIFICATION**

Product name : Albendazole / Closantel Sodium Formulation

Other means of identification : Closal (A005093)

**Manufacturer or supplier's details**

Company : MSD

Address : 126 E. Lincoln Avenue  
Rahway, New Jersey U.S.A. 07065

Telephone : +1-908-740-4000

Emergency telephone number : +1-908-423-6000

E-mail address : EHSDATASTEWARD@msd.com

**Recommended use of the chemical and restrictions on use**

Recommended use : Veterinary product

Restrictions on use : Not applicable

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**2. HAZARDS IDENTIFICATION****GHS Classification**

Skin sensitisation : Category 1

Short-term (acute) aquatic hazard : Category 1

Long-term (chronic) aquatic hazard : Category 1

**GHS label elements**

Hazard pictograms :



Signal word : Warning

Hazard statements : H317 May cause an allergic skin reaction.  
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**  
P261 Avoid breathing mist or vapours.

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P272 Contaminated work clothing should not be allowed out of the workplace.

P273 Avoid release to the environment.

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.

P391 Collect spillage.

**Disposal:**

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

**Other hazards which do not result in classification**

None known.

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Substance / Mixture : Mixture

**Components**

Chemical name	CAS-No.	Concentration (% w/w)
Closantel	57808-65-8	$\geq 2.5$ -< 10
Albendazole Sulfoxide	54029-12-8	$\geq 1$ -< 2.5
Octamethylcyclotetrasiloxane	556-67-2	$\geq 0.025$ -< 0.25

**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	: May cause an allergic skin reaction.

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and effects, both acute and delayed

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.

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**5. FIREFIGHTING MEASURES**

Suitable extinguishing media : Water spray  
Alcohol-resistant foam  
Carbon dioxide (CO<sub>2</sub>)  
Dry chemical

Unsuitable extinguishing media : None known.

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

Hazardous combustion products : Carbon oxides  
Nitrogen oxides (NO<sub>x</sub>)  
Sulphur oxides  
Chlorine compounds  
Iodine compounds  
Metal 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 firefighters : In the event of fire, wear self-contained breathing apparatus.  
Use personal protective equipment.

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**6. ACCIDENTAL RELEASE MEASURES**

Personal precautions, protective equipment and emergency procedures : 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.

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Methods and materials for containment and 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.

**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.  
Do not breathe mist or vapours.  
Do not swallow.  
Avoid contact with eyes.  
Wash skin thoroughly after handling.  
Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment  
Do not eat, drink or smoke when using this product.  
Take care to prevent spills, waste and minimize release to the environment.

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

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

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Components with workplace control parameters**

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Closantel	57808-65-8	TWA	$\geq 10 < 100$ $\mu\text{g}/\text{m}^3$ (OEB 3)	Internal
Albendazole Sulfoxide	54029-12-8	TWA	45 $\mu\text{g}/\text{m}^3$ (OEB 3)	Internal
Further information: DSEN				
		Wipe limit	100 $\mu\text{g}/100 \text{ cm}^2$	Internal

Engineering measures : Use appropriate engineering controls and manufacturing technologies to control airborne concentrations (e.g., drip-

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less quick connections).

All engineering controls should be implemented by facility design and operated in accordance with GMP principles to protect products, workers, and the environment.

Containment technologies suitable for controlling compounds are required to control at source and to prevent migration of the compound to uncontrolled areas (e.g., open-face containment devices).

Minimize open handling.

**Personal protective equipment**

- |                          |   |  |
|--------------------------|---|--|
| Respiratory protection   | : | If adequate local exhaust ventilation is not available or exposure assessment demonstrates exposures outside the recommended guidelines, use respiratory protection.   |
| Filter type              | : | Particulates type  |
| Hand protection          | : |  |
| Material                 | : | Chemical-resistant gloves  |
| Remarks                  | : | Consider double gloving.   |
| Eye protection           | : | Wear safety glasses with side shields or goggles.<br>If the work environment or activity involves dusty conditions, mists or aerosols, wear the appropriate goggles.<br>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.<br>Additional body garments should be used based upon the task being performed (e.g., sleevelets, apron, gauntlets, disposable suits) to avoid exposed skin surfaces.<br>Use appropriate degowning techniques to remove potentially contaminated clothing.  |
| Hygiene measures         | : | If exposure to chemical is likely during typical use, provide eye flushing systems and safety showers close to the working place.<br>When using do not eat, drink or smoke.<br>Contaminated work clothing should not be allowed out of the workplace.<br>Wash contaminated clothing before re-use.<br>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. |

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**9. PHYSICAL AND CHEMICAL PROPERTIES**

- |            |   |                              |
|------------|---|------------------------------|
| Appearance | : | suspension, Aqueous solution |
| Colour     | : | white, off-white             |
| Odour      | : | odourless                    |

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Odour Threshold	:	No data available
pH	:	8.5 - 10.5
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
Vapour pressure	:	No data available
Relative vapour density	:	No data available
Relative density	:	1.035 - 1.051
Density	:	No data available
Solubility(ies) Water solubility	:	No data available
Partition coefficient: n-octanol/water	:	Not applicable
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity Viscosity, kinematic	:	70 - 300 m <sup>2</sup> /s
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.
Molecular weight	:	No data available
Particle characteristics	:	

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Particle size : < 80 µm

**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.

**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: > 2,000 mg/kg  
Method: Calculation method

**Components:****Closantel:**

Acute oral toxicity : LD50 (Rat, female): 262 mg/kg

**Albendazole Sulfoxide:**

Acute oral toxicity : LD50 (Mouse): 1,500 mg/kg

LD50 (Rat): 2,400 mg/kg

Acute toxicity (other routes of administration) : LD50 (Rat): 265 mg/kg  
Application Route: Intravenous

**Octamethylcyclotetrasiloxane:**

Acute oral toxicity : LD50 (Rat): > 4,800 mg/kg  
Assessment: The substance or mixture has no acute oral toxicity

Acute inhalation toxicity : LC50 (Rat): 36 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: OECD Test Guideline 403

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Acute dermal toxicity : LD50 (Rat): > 2,375 mg/kg  
Assessment: The substance or mixture has no acute dermal toxicity

**Skin corrosion/irritation**

Not classified based on available information.

**Components:****Albendazole Sulfoxide:**

Species : Rabbit  
Result : No skin irritation

**Octamethylcyclotetrasiloxane:**

Species : Rabbit  
Result : No skin irritation

**Serious eye damage/eye irritation**

Not classified based on available information.

**Components:****Albendazole Sulfoxide:**

Species : Rabbit  
Result : No eye irritation

**Octamethylcyclotetrasiloxane:**

Species : Rabbit  
Result : No eye irritation

**Respiratory or skin sensitisation****Skin sensitisation**

May cause an allergic skin reaction.

**Respiratory sensitisation**

Not classified based on available information.

**Components:****Albendazole Sulfoxide:**

Test Type : Maximisation Test  
Exposure routes : Dermal  
Assessment : Probability or evidence of low to moderate skin sensitisation rate in humans  
Result : positive

Test Type : Maximisation Test  
Exposure routes : Dermal



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Result : Sensitiser

**Octamethylcyclotetrasiloxane:**

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

**Germ cell mutagenicity**

Not classified based on available information.

**Components:****Closantel:**

Genotoxicity in vitro	: Test Type: Bacterial reverse mutation assay (AMES) Result: negative
Genotoxicity in vivo	: Test Type: Rodent dominant lethal test (germ cell) (in vivo) Species: Mouse Application Route: Ingestion Result: negative

**Albendazole Sulfoxide:**

Genotoxicity in vitro	: Test Type: Bacterial reverse mutation assay (AMES) Result: negative  Test Type: Chromosomal aberration Test system: Chinese hamster ovary cells Result: negative
Genotoxicity in vivo	: Test Type: Micronucleus test Species: Mouse Cell type: Bone marrow Result: negative

**Octamethylcyclotetrasiloxane:**

Genotoxicity in vitro	: Test Type: Bacterial reverse mutation assay (AMES) Method: OECD Test Guideline 471 Result: negative  Test Type: In vitro mammalian cell gene mutation test Result: negative  Test Type: Chromosome aberration test in vitro Result: negative
Genotoxicity in vivo	: Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis) Species: Rat

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Application Route: Inhalation  
Result: negative

**Carcinogenicity**

Not classified based on available information.

**Components:****Closantel:**

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

**Albendazole Sulfoxide:**

Species : Mouse  
Application Route : Oral  
Exposure time : 2 Years  
NOAEL : 400 mg/kg body weight  
Result : negative

Species : Rat  
Application Route : Oral  
Exposure time : 2 Years  
NOAEL : 20 mg/kg body weight  
Result : negative

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

**Reproductive toxicity**

Not classified based on available information.

**Components:****Closantel:**

Effects on foetal development : Test Type: Three-generation reproduction toxicity study  
Species: Rat  
Application Route: Ingestion  
Result: negative

**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 foetal development : Test Type: Development  
Species: Rat  
Application Route: Oral

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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  
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 off-spring were detected.

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

**Octamethylcyclotetrasiloxane:**

Effects on fertility : Test Type: Two-generation reproduction toxicity study  
Species: Rat  
Application Route: Inhalation  
Method: OPPTS 870.3800  
Result: positive

Effects on foetal development : Test Type: Embryo-foetal development  
Species: Rabbit  
Application Route: Inhalation  
Result: negative

Reproductive toxicity - Assessment : Some evidence of adverse effects on sexual function and fertility, based on animal experiments.

**STOT - single exposure**

Not classified based on available information.

**Components:****Albendazole Sulfoxide:**

Exposure routes : Oral  
Target Organs : Gastrointestinal tract, Central nervous system  
Assessment : May cause damage to organs.

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**STOT - repeated exposure**

Not classified based on available information.

**Components:****Albendazole Sulfoxide:**

Exposure routes	: 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	: Diarrhoea, Vomiting

Species	: Dog
LOAEL	: 48 mg/kg
Application Route	: Oral
Exposure time	: 4 Weeks
Target Organs	: Gastrointestinal tract
Symptoms	: Diarrhoea, 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	: $\geq 30$ 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

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Species	: Rat
NOAEL	: 7 mg/kg
Application Route	: Oral
Exposure time	: 60 d
Target Organs	: Liver, Testis
Symptoms	: Liver effects, male reproductive effects

**Octamethylcyclotetrasiloxane:**

Species	: Rat
NOAEL	: 1.82 mg/l
Application Route	: inhalation (vapour)
Exposure time	: 2 yr

Species	: Rabbit
NOAEL	: >= 960 mg/kg
Application Route	: Skin contact
Exposure time	: 3 Weeks

**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 sensitisation by skin contact.
Ingestion	: Target Organs: Gastrointestinal tract Symptoms: Gastrointestinal disturbance, Diarrhoea, 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

**12. ECOLOGICAL INFORMATION****Ecotoxicity****Components:****Closantel:**

Toxicity to fish	: LC50 (Oncorhynchus mykiss (rainbow trout)): > 0.01 - 0.1 mg/l Exposure time: 96 h
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Method: OECD Test Guideline 203

Remarks: Based on data from similar materials

M-Factor (Acute aquatic toxicity) : 10

M-Factor (Chronic aquatic toxicity) : 10

**Albendazole Sulfoxide:**Toxicity to fish : EC50 (Brachydanio rerio (zebrafish)): 0.042 mg/l  
Exposure time: 144 hrsToxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0.068 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202Toxicity to algae/aquatic plants : EC50 (Raphidocelis subcapitata (freshwater green alga)): 0.024 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

M-Factor (Acute aquatic toxicity) : 10

M-Factor (Chronic aquatic toxicity) : 10

**Octamethylcyclotetrasiloxane:**Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 0.022 mg/l  
Exposure time: 96 h  
Remarks: No toxicity at the limit of solubilityToxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 0.015 mg/l  
Exposure time: 48 h  
Remarks: No toxicity at the limit of solubilityToxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): > 0.022 mg/l  
Exposure time: 96 h  
Remarks: No toxicity at the limit of solubilityEC10 (Pseudokirchneriella subcapitata (green algae)): >= 0.022 mg/l  
Exposure time: 96 h  
Remarks: No toxicity at the limit of solubilityToxicity to fish (Chronic toxicity) : NOEC (Oncorhynchus mykiss (rainbow trout)): 0.0044 mg/l  
Exposure time: 14 dToxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.0079 mg/l  
Exposure time: 21 d

M-Factor (Chronic aquatic toxicity) : 10

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**Persistence and degradability****Components:****Octamethylcyclotetrasiloxane:**

Biodegradability	:	Result: Not readily biodegradable. Biodegradation: 3.7 % Exposure time: 29 d Method: OECD Test Guideline 310
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**Bioaccumulative potential****Components:****Closantel:**

Partition coefficient: n-octanol/water	:	log Pow: > 4 Remarks: Expert judgement
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**Albendazole Sulfoxide:**

Partition coefficient: n-octanol/water	:	log Pow: 1.27 pH: 7
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**Octamethylcyclotetrasiloxane:**

Bioaccumulation	:	Species: Pimephales promelas (fathead minnow) Bioconcentration factor (BCF): 12,400 Method: OPPTS 850.1730
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Partition coefficient: n-octanol/water	:	log Pow: 6.488 Method: OECD Test Guideline 123
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**Mobility in soil**

No data available

**Other adverse effects**

No data available

**13. DISPOSAL CONSIDERATIONS****Disposal methods**

Waste from residues	:	Do not dispose of waste into sewer. 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.

**14. TRANSPORT INFORMATION****International Regulations**

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**UNRTDG**

UN number	: UN 3082
Proper shipping name	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Closantel, Albendazole Sulfoxide)
Class	: 9
Packing group	: III
Labels	: 9
Environmentally hazardous	: yes

**IATA-DGR**

UN/ID No.	: UN 3082
Proper shipping name	: Environmentally hazardous substance, liquid, n.o.s. (Closantel, Albendazole Sulfoxide)
Class	: 9
Packing group	: III
Labels	: Miscellaneous
Packing instruction (cargo aircraft)	: 964
Packing instruction (passenger aircraft)	: 964
Environmentally hazardous	: yes

**IMDG-Code**

UN number	: UN 3082
Proper shipping name	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Closantel, Albendazole Sulfoxide)
Class	: 9
Packing group	: III
Labels	: 9
EmS Code	: F-A, S-F
Marine pollutant	: yes

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not applicable for product as supplied.

**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.



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**15. REGULATORY INFORMATION**

**Safety, health and environmental regulations/legislation specific for the substance or mixture**

**Minister of Industry Regulation No. 23/M-IND/PER/4/2013 concerning the Revision of Minister of Industry Regulation No. 87/M-IND/PER/9/2009 concerning Globally Harmonized System of Classification and Labelling of Chemicals.**

**Regulation of the Minister of Health No. 472 of 1996 on the Safeguarding of Substances Hazardous to Health**

Hazardous substances that must be registered : Not applicable

**Government Regulation No. 74 of 2001 on the Management of Hazardous and Toxic Substances**

Hazardous substances approved for use : Not applicable

Prohibited substances : Not applicable

Restricted substances : Not applicable

**Regulation of the Ministry of Trade No. 7 of 2022 on Distribution and Control of Hazardous Materials**

Type of hazardous materials subject to distribution and control, Annex I : Not applicable

Type of hazardous materials subject to distribution and control, Annex II : Not applicable

**The components of this product are reported in the following inventories:**

AICS : not determined

DSL : not determined

IECSC : not determined

**16. OTHER INFORMATION**

Revision Date : 2025/04/14

**Further information**

Sources of key data used to compile the Safety Data Sheet : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, <http://echa.europa.eu/>

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

Date format : yyyy/mm/dd

**Full text of other abbreviations**

**Albendazole / Closantel Sodium Formulation**

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AIIC - Australian Inventory of Industrial Chemicals; 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 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; TECI - Thailand Existing Chemicals Inventory; 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.

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