

**Abamectin / Levamisole Hydrochloride / Cobalt EDTA / Sodium Selenate Formulation**

Version 5.0      Revision Date: 2023/12/04      SDS Number: 10813893-00005      Date of last issue: 2023/09/30  
Date of first issue: 2022/07/12

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**1. PRODUCT AND COMPANY IDENTIFICATION**

Chemical product name : Abamectin / Levamisole Hydrochloride / Cobalt EDTA / Sodium Selenate Formulation

Other means of identification : Converge (A010119)

**Supplier's company name, address and phone number**

Company name of supplier : MSD

Address : Kumagaya, Saitama Prefecture , Xicheng 810 MSD Co., Ltd.  
Menuma factory

Telephone : 048-588-8411

E-mail address : EHSDATASTEWARD@msd.com

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

**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 of chemical product**

Acute toxicity (Oral) : Category 4

Respiratory sensitisation : Category 1

Germ cell mutagenicity : Category 2

Carcinogenicity : Category 2

Reproductive toxicity : Category 2

Specific target organ toxicity - repeated exposure : Category 2 (Respiratory Tract, Thyroid, Heart, Blood)


Short-term (acute) aquatic hazard : Category 1

Long-term (chronic) aquatic hazard : Category 1

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## GHS label elements

- Hazard pictograms : 
- Signal word : Danger
- Hazard statements : H302 Harmful if swallowed.  
 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
 H341 Suspected of causing genetic defects.  
 H351 Suspected of causing cancer.  
 H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.  
 H373 May cause damage to organs (Respiratory Tract, Thyroid, Heart, Blood) through prolonged or repeated exposure.  
 H410 Very toxic to aquatic life with long lasting effects.
- Precautionary statements : **Prevention:**  
 P201 Obtain special instructions before use.  
 P202 Do not handle until all safety precautions have been read and understood.  
 P260 Do not breathe mist or vapours.  
 P264 Wash skin thoroughly after handling.  
 P270 Do not eat, drink or smoke when using this product.  
 P273 Avoid release to the environment.  
 P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.  
 P284 Wear respiratory protection.
- Response:**  
 P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.  
 P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
 P308 + P313 IF exposed or concerned: Get medical advice/ attention.  
 P342 + P311 If experiencing respiratory symptoms: Call a POISON CENTER/ doctor.  
 P391 Collect spillage.
- Storage:**  
 P405 Store locked up.
- Disposal:**  
 P501 Dispose of contents/ container to an approved waste disposal plant.

## Other hazards which do not result in classification

None known.

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### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

#### Components

Chemical name	CAS-No.	Concentration (% w/w)	ENCS No.
levamisole hydrochloride	16595-80-5	8.8	
Cobalt disodium ethylenediaminetetraacetate	15137-09-4	> 0 - < 10	
Benzyl alcohol	100-51-6	> 0 - < 10	3-1011
Citric acid	77-92-9	>= 1 - < 10	2-1318
Sodium selenate	13410-01-0	0.24	1-1212
abamectin (combination of avermectin B1a and avermectin B1b) (ISO)	71751-41-2	0.2	

### 4. FIRST AID MEASURES

- General advice : In the case of accident or if you feel unwell, seek medical advice immediately.  
 When symptoms persist or in all cases of doubt seek medical advice.
- If inhaled : If inhaled, remove to fresh air.  
 If not breathing, give artificial respiration.  
 If breathing is difficult, give oxygen.  
 Get medical attention.
- In case of skin contact : In case of contact, immediately flush skin with soap and plenty of water.  
 Remove contaminated clothing and shoes.  
 Get medical attention.  
 Wash clothing before reuse.  
 Thoroughly clean shoes before reuse.
- In case of eye contact : 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 : Harmful if swallowed.  
 May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
 Suspected of causing genetic defects.  
 Suspected of causing cancer.  
 Suspected of damaging fertility. Suspected of damaging the unborn child.  
 May cause damage to organs through prolonged or repeated

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- exposure.  
Excessive exposure may aggravate preexisting asthma and other respiratory disorders (e.g. emphysema, bronchitis, reactive airways dysfunction syndrome).
- 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.

### 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  
Oxides of phosphorus  
Cobalt compounds  
Nitrogen oxides (NO<sub>x</sub>)  
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.

### 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.
- 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

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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

#### 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 mist or vapours.<br>Do not swallow.<br>Avoid contact with eyes.<br>Avoid prolonged or repeated contact with skin.<br>Wash skin thoroughly after handling.<br>Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment<br>Keep container tightly closed.<br>Already sensitised individuals, and those susceptible to asthma, allergies, chronic or recurrent respiratory disease, should consult their physician regarding working with respiratory irritants or sensitisers.<br>Do not eat, drink or smoke when using this product.<br>Take care to prevent spills, waste and minimize release to the environment. |
| Avoidance of contact    | : | Oxidizing agents  |
| 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>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.  |

#### Storage

- |                             |   |  |
|-----------------------------|---|--|
| Conditions for safe storage | : | Keep in properly labelled containers.<br>Store locked up.<br>Keep tightly closed.<br>Store in accordance with the particular national regulations. |
| Materials to avoid          | : | Do not store with the following product types:   |

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Strong oxidizing agents

Packaging material : Unsuitable material: None known.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Threshold limit value and permissible exposure limits for each component in the work environment**

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Reference concentration / Permissible concentration	Basis
levamisole hydrochloride	16595-80-5	TWA	20 µg/m <sup>3</sup> (OEB 3)	Internal
		Further information: Skin		
		Wipe limit	200 µg/100 cm <sup>2</sup>	Internal
Cobalt disodium ethylenediaminetetraacetate	15137-09-4	OEL-M	0.05 mg/m <sup>3</sup> (Cobalt)	JP OEL JSOH
		Further information: Airway sensitizing agent; Group 1 substances which induce allergic reactions in humans, Skin sensitizing agent; Group 1 substances which induce allergic reactions in humans, Group 2B: possibly carcinogenic to humans		
Benzyl alcohol	100-51-6	OEL-C	25 mg/m <sup>3</sup>	JP OEL JSOH
		Further information: Skin sensitizing agent; Group 2 substances which probably induce allergic reactions in humans.		
Sodium selenate	13410-01-0	OEL-M	0.1 mg/m <sup>3</sup> (selenium)	JP OEL JSOH
		TWA	20 µg/m <sup>3</sup> (OEB 3)	Internal
		Wipe limit	200 µg/100 cm <sup>2</sup>	Internal
		TWA	0.2 mg/m <sup>3</sup> (selenium)	ACGIH
abamectin (combination of avermectin B1a and avermectin B1b) (ISO)	71751-41-2	TWA	15 µg/m <sup>3</sup> (OEB 3)	Internal
		Wipe limit	150 µg/100 cm <sup>2</sup>	Internal

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

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### Personal protective equipment

Respiratory protection	:	If adequate local exhaust ventilation is not available or exposure assessment demonstrates exposures outside the recommended guidelines, use respiratory protection.
Filter type	:	Combined particulates and organic vapour type
Hand protection	:	
Material	:	Chemical-resistant gloves
Remarks	:	Consider double gloving.
Eye protection	:	Wear safety glasses with side shields or goggles. If the work environment or activity involves dusty conditions, mists or aerosols, wear the appropriate goggles. Wear a faceshield or other full face protection if there is a potential for direct contact to the face with dusts, mists, or aerosols.
Skin and body protection	:	Work uniform or laboratory coat. Additional body garments should be used based upon the task being performed (e.g., sleevelets, apron, gauntlets, disposable suits) to avoid exposed skin surfaces. Use appropriate degowning techniques to remove potentially contaminated clothing.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	:	suspension
Colour	:	No data available
Odour	:	No data available
Odour Threshold	:	No data available
Melting point/freezing point	:	No data available
Boiling point, initial boiling point and boiling range	:	No data available
Flammability (solid, gas)	:	Not applicable
Flammability (liquids)	:	No data available
Lower explosion limit and upper explosion limit / flammability limit	:	
Upper explosion limit / Upper per flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Flash point	:	No data available

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Decomposition temperature	:	No data available
pH	:	No data available
Evaporation rate	:	No data available
Auto-ignition temperature	:	No data available
Viscosity	:	
Viscosity, kinematic	:	No data available
Solubility(ies)	:	
Water solubility	:	No data available
Partition coefficient: n-octanol/water	:	Not applicable
Vapour pressure	:	No data available
Density and / or relative density	:	
Relative density	:	No data available
Density	:	No data available
Relative vapour density	:	No data available
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.
Molecular weight	:	No data available
Particle characteristics	:	
Particle size	:	Not applicable

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**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.

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**11. TOXICOLOGICAL INFORMATION**



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Information on likely routes of exposure : Inhalation  
Skin contact  
Ingestion  
Eye contact

**Acute toxicity**

Harmful if swallowed.

**Product:**

Acute oral toxicity : Acute toxicity estimate: 939.39 mg/kg  
Method: Calculation method

Acute inhalation toxicity : Acute toxicity estimate: > 5 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate: > 2,000 mg/kg  
Method: Calculation method

**Components:****levamisole hydrochloride:**

Acute oral toxicity : LD50 (Rat): 180 mg/kg  
LD50 (Mouse): 223 mg/kg  
LD50 (Rabbit): 458 mg/kg

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available

**Cobalt disodium ethylenediaminetetraacetate:**

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg  
Remarks: Based on data from similar materials

**Benzyl alcohol:**

Acute oral toxicity : LD50 (Rat): 1,620 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 4.178 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: OECD Test Guideline 403

**Citric acid:**

Acute oral toxicity : LD50 (Mouse): 5,400 mg/kg

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Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg  
Method: OECD Test Guideline 402  
Assessment: The substance or mixture has no acute dermal toxicity

**Sodium selenate:**

Acute oral toxicity : LD50 (Rat): > 5 - 50 mg/kg  
Remarks: Based on data from similar materials

Acute inhalation toxicity : LC50 (Rat): > 0.052 - 0.51 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: OECD Test Guideline 403

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

Acute oral toxicity : LD50 (Rat): 24 mg/kg  
LD50 (Mouse): 10 mg/kg  
LDLo (Monkey): 24 mg/kg  
Symptoms: Dilatation of the pupil

Acute inhalation toxicity : LC50 (Rat): 0.023 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rat): 330 mg/kg  
LD50 (Rabbit): 2,000 mg/kg

**Skin corrosion/irritation**

Not classified based on available information.

**Components:****levamisole hydrochloride:**

Remarks : No data available

**Cobalt disodium ethylenediaminetetraacetate:**

Species : Rabbit  
Method : OECD Test Guideline 404  
Result : No skin irritation  
Remarks : Based on data from similar materials

**Benzyl alcohol:**

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

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**Citric acid:**

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

**Sodium selenate:**

Species : reconstructed human epidermis (RhE)  
Method : OECD Test Guideline 431

Species : reconstructed human epidermis (RhE)  
Method : OECD Test Guideline 439

Result : Skin irritation

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

Species : Rabbit  
Result : No skin irritation

**Serious eye damage/eye irritation**

Not classified based on available information.

**Components:****levamisole hydrochloride:**

Remarks : No data available

**Cobalt disodium ethylenediaminetetraacetate:**

Species : Rabbit  
Result : No eye irritation  
Remarks : Based on data from similar materials

**Benzyl alcohol:**

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

**Citric acid:**

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

**Sodium selenate:**

Species : Bovine cornea  
Method : OECD Test Guideline 437

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|| Result : No eye irritation

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

|| Species : Rabbit  
|| Result : Mild eye irritation

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

Not classified based on available information.

**Respiratory sensitisation**

May cause allergy or asthma symptoms or breathing difficulties if inhaled.

**Components:****levamisole hydrochloride:**

|| Remarks : No data available

**Cobalt disodium ethylenediaminetetraacetate:**

|| Exposure routes : inhalation (dust/mist/fume)  
|| Species : Humans  
|| Result : positive  
|| Remarks : Based on data from similar materials

|| Assessment : Probability or evidence of low to moderate respiratory sensitisation rate in humans

**Benzyl alcohol:**

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

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

|| Test Type : Maximisation Test  
|| Exposure routes : Skin contact  
|| Result : Not a skin sensitizer.

**Germ cell mutagenicity**

Suspected of causing genetic defects.

**Components:****levamisole hydrochloride:**

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

Test Type: Chromosome aberration test in vitro  
 Result: negative

### Cobalt disodium ethylenediaminetetraacetate:

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: In vitro mammalian cell gene mutation test  
 Method: OECD Test Guideline 476  
 Result: positive  
 Remarks: Based on data from similar materials

Test Type: Chromosome aberration test in vitro  
 Method: OECD Test Guideline 473  
 Result: positive  
 Remarks: Based on data from similar materials

Genotoxicity in vivo : Test Type: Micronucleus test  
 Species: Mouse  
 Application Route: Intraperitoneal injection  
 Result: positive  
 Remarks: Based on data from similar materials

Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)  
 Species: Mouse  
 Application Route: Ingestion  
 Result: positive  
 Remarks: Based on data from similar materials

Test Type: Rodent dominant lethal test (germ cell) (in vivo)  
 Species: Mouse  
 Application Route: Ingestion  
 Result: positive  
 Remarks: Based on data from similar materials

Germ cell mutagenicity - Assessment : Positive result(s) from in vivo mammalian somatic cell mutagenicity tests.  
 Remarks: Based on data from similar materials

### Benzyl alcohol:

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

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

**Citric acid:**

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

Test Type: in vitro micronucleus test  
Result: positive

Test Type: Bacterial reverse mutation assay (AMES)  
Result: negative

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

**Sodium selenate:**

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

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

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

Test Type: In vitro mammalian cell gene mutation test  
Test system: Chinese hamster lung cells  
Result: negative

Test Type: Alkaline elution assay  
Result: negative

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

**Carcinogenicity**

Suspected of causing cancer.

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### Components:

#### **levamisole hydrochloride:**

Species : Mouse  
 Application Route : Oral  
 Exposure time : 2 Years  
 NOAEL : 80 mg/kg body weight  
 Remarks : No significant adverse effects were reported

Species : Rat  
 Application Route : Oral  
 Exposure time : 2 Years  
 NOAEL : 40 mg/kg body weight  
 Remarks : No significant adverse effects were reported

#### **Cobalt disodium ethylenediaminetetraacetate:**

Species : Rat  
 Application Route : inhalation (dust/mist/fume)  
 Exposure time : 105 weeks  
 Result : positive  
 Remarks : Based on data from similar materials

Species : Mouse  
 Application Route : inhalation (dust/mist/fume)  
 Exposure time : 105 weeks  
 Result : positive  
 Remarks : Based on data from similar materials

Carcinogenicity - Assessment : Limited evidence of carcinogenicity in animal studies  
 Remarks: Based on data from similar materials

#### **Benzyl alcohol:**

Species : Mouse  
 Application Route : Ingestion  
 Exposure time : 103 weeks  
 Method : OECD Test Guideline 451  
 Result : negative

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

Species : Rat  
 Application Route : Oral  
 Exposure time : 105 weeks  
 Result : negative

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

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### Reproductive toxicity

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

#### Components:

##### **levamisole hydrochloride:**

Effects on fertility	:	Test Type: Three-generation reproduction toxicity study Species: Rat Application Route: Oral Result: No significant adverse effects were reported
Effects on foetal development	:	Test Type: Embryo-foetal development Species: Rat Application Route: Oral Developmental Toxicity: NOAEL: 20 mg/kg body weight Result: Fetotoxicity
		Test Type: Embryo-foetal development Species: Rabbit Application Route: Oral Developmental Toxicity: LOAEL: 40 mg/kg body weight Result: Fetotoxicity
Reproductive toxicity - Assessment	:	Some evidence of adverse effects on development, based on animal experiments.

##### **Cobalt disodium ethylenediaminetetraacetate:**

Effects on fertility	:	Test Type: Fertility/early embryonic development Species: Rat Application Route: Ingestion Result: positive Remarks: Based on data from similar materials
		Test Type: Fertility/early embryonic development Species: Mouse Application Route: Ingestion Result: positive Remarks: Based on data from similar materials
		Test Type: Fertility/early embryonic development Species: Mouse Application Route: inhalation (dust/mist/fume) Result: positive Remarks: Based on data from similar materials
		Test Type: Fertility/early embryonic development Species: Rat Application Route: inhalation (dust/mist/fume) Result: positive Remarks: Based on data from similar materials



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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

Reproductive toxicity - Assessment : Some evidence of adverse effects on sexual function and fertility, based on animal experiments.  
Remarks: Based on data from similar materials

**Benzyl alcohol:**

Effects on fertility : Test Type: Fertility/early embryonic development  
Species: Rat  
Application Route: Ingestion  
Result: negative  
Remarks: Based on data from similar materials

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

**Citric acid:**

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

**Sodium selenate:**

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

Effects on foetal development : Test Type: Embryo-foetal development  
Species: Mouse  
Application Route: Ingestion  
Result: negative  
Remarks: Based on data from similar materials

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

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

## Abamectin / Levamisole Hydrochloride / Cobalt EDTA / Sodium Selenate Formulation

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Effects on foetal development	<p>Test Type: Two-generation reproduction toxicity study          Species: Rat          Application Route: Oral          Early Embryonic Development: NOAEL: 0.12 mg/kg body weight          Result: Fetotoxicity</p> <p>: Test Type: Embryo-foetal development          Species: Mouse          Application Route: Oral          General Toxicity Maternal: NOAEL: 0.05 mg/kg body weight          Developmental Toxicity: NOAEL: 0.2 mg/kg body weight          Result: Cleft palate          Remarks: Adverse developmental effects were observed</p> <p>Test Type: Embryo-foetal development          Species: Rabbit          Application Route: Oral          Developmental Toxicity: LOAEL: 2 mg/kg body weight          Result: Cleft palate, Teratogenic effects, Reduced embryonic survival          Remarks: Adverse developmental effects were observed</p> <p>Test Type: Development          Species: Rat          Application Route: Oral          Developmental Toxicity: LOAEL: 1.6 mg/kg body weight          Result: Teratogenic effects</p>
Reproductive toxicity - Assessment	<p>: 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.</p>

### STOT - single exposure

Not classified based on available information.

### Components:

#### Citric acid:

Assessment : May cause respiratory irritation.

### STOT - repeated exposure

May cause damage to organs (Respiratory Tract, Thyroid, Heart, Blood) through prolonged or repeated exposure.

## Abamectin / Levamisole Hydrochloride / Cobalt EDTA / Sodium Selenate Formulation

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### Components:

#### **levamisole hydrochloride:**

Target Organs : Blood, Testis  
 Assessment : May cause damage to organs through prolonged or repeated exposure.

#### **Cobalt disodium ethylenediaminetetraacetate:**

Exposure routes : inhalation (dust/mist/fume)  
 Target Organs : Respiratory Tract  
 Assessment : Shown to produce significant health effects in animals at concentrations of 0.02 mg/l/6h/d or less.  
 Remarks : Based on data from similar materials

Exposure routes : Ingestion  
 Target Organs : Thyroid, Heart, Blood  
 Assessment : Shown to produce significant health effects in animals at concentrations of >10 to 100 mg/kg bw.  
 Remarks : Based on data from similar materials

#### **Sodium selenate:**

Exposure routes : Ingestion  
 Assessment : Shown to produce significant health effects in animals at concentrations of 10 mg/kg bw or less.

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

Exposure routes : Ingestion  
 Target Organs : Central nervous system  
 Assessment : Causes damage to organs through prolonged or repeated exposure.

### **Repeated dose toxicity**

#### Components:

#### **levamisole hydrochloride:**

Species : Rat  
 NOAEL : 2.5 mg/kg  
 Application Route : Oral  
 Exposure time : 18 Months  
 Target Organs : Testis

Species : Dog  
 LOAEL : 20 mg/kg  
 Application Route : Oral  
 Exposure time : 18 Months  
 Target Organs : Blood

**Abamectin / Levamisole Hydrochloride / Cobalt EDTA / Sodium Selenate Formulation**

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Species : Dog  
LOAEL : 40 mg/kg  
Application Route : Oral  
Exposure time : 3 Months

**Cobalt disodium ethylenediaminetetraacetate:**

Species : Rat  
LOAEL : > 10 mg/kg  
Application Route : Ingestion  
Exposure time : 90 Days  
Remarks : Based on data from similar materials

Species : Rat  
LOAEL : < 0.01 mg/l  
Application Route : inhalation (dust/mist/fume)  
Exposure time : 13 Weeks  
Method : OECD Test Guideline 413  
Remarks : Based on data from similar materials

Species : Mouse  
LOAEL : < 0.01 mg/l  
Application Route : inhalation (dust/mist/fume)  
Exposure time : 13 Weeks  
Method : OECD Test Guideline 413  
Remarks : Based on data from similar materials

**Benzyl alcohol:**

Species : Rat  
NOAEL : 1.072 mg/l  
Application Route : inhalation (dust/mist/fume)  
Exposure time : 28 Days  
Method : OECD Test Guideline 412

**Citric acid:**

Species : Rat  
NOAEL : 4,000 mg/kg  
LOAEL : 8,000 mg/kg  
Application Route : Ingestion  
Exposure time : 10 Days

**Sodium selenate:**

Species : Rat  
NOAEL : 0.4 mg/kg  
Application Route : Ingestion  
Exposure time : 13 Weeks

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

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Species : Rat  
 NOAEL : 1.5 mg/kg  
 Application Route : Oral  
 Exposure time : 24 Months  
 Target Organs : Central nervous system  
 Symptoms : Tremors, ataxia

Species : Mouse  
 NOAEL : 4.0 mg/kg  
 Application Route : Oral  
 Exposure time : 24 Months  
 Target Organs : Central nervous system  
 Symptoms : Tremors, ataxia

Species : Dog  
 NOAEL : 0.25 mg/kg  
 LOAEL : 0.5 mg/kg  
 Application Route : Oral  
 Exposure time : 53 Weeks  
 Target Organs : Central nervous system  
 Symptoms : Tremors, weight loss  
 Remarks : mortality observed

Species : Monkey  
 NOAEL : 1.0 mg/kg  
 Application Route : Oral  
 Exposure time : 14 Weeks  
 Target Organs : Central nervous system

### Aspiration toxicity

Not classified based on available information.

### Experience with human exposure

#### Components:

#### **levamisole hydrochloride:**

Ingestion : Symptoms: Nausea, Vomiting, Headache, Dizziness, hypotension

#### **Cobalt disodium ethylenediaminetetraacetate:**

Inhalation : Target Organs: Respiratory system  
 Remarks: Based on data from similar materials

Ingestion : Target Organs: Blood  
 Remarks: Based on data from similar materials

Target Organs: Heart

Target Organs: Thyroid

# Abamectin / Levamisole Hydrochloride / Cobalt EDTA / Sodium Selenate Formulation

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

|| Ingestion : Symptoms: May cause, Tremors, Diarrhoea, central nervous system effects, Salivation, tearing

## 12. ECOLOGICAL INFORMATION

### Ecotoxicity

#### Components:

#### levamisole hydrochloride:

|| Toxicity to fish : LC50 (*Oryzias latipes* (Japanese medaka)): 37.3 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203

|| Toxicity to daphnia and other aquatic invertebrates : EC50 (*Daphnia magna* (Water flea)): 64 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202

#### Cobalt disodium ethylenediaminetetraacetate:

|| Toxicity to daphnia and other aquatic invertebrates : EC50 (*Daphnia magna* (Water flea)): > 100 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202  
Remarks: Based on data from similar materials

|| Toxicity to algae/aquatic plants : ErC50 (*Raphidocelis subcapitata* (freshwater green alga)): > 100 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201  
Remarks: Based on data from similar materials

|| Toxicity to fish (Chronic toxicity) : EC10 (*Danio rerio* (zebra fish)): > 1 mg/l  
Exposure time: 34 d  
Remarks: Based on data from similar materials

|| Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : EC10 (*Hyalella azteca* (Amphipod)): > 0.01 - 0.1 mg/l  
Exposure time: 28 d  
Method: OECD Test Guideline 211  
Remarks: Based on data from similar materials

|| M-Factor (Chronic aquatic toxicity) : 1

#### Benzyl alcohol:

|| Toxicity to fish : LC50 (*Pimephales promelas* (fathead minnow)): 460 mg/l  
Exposure time: 96 h

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Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 230 mg/l Exposure time: 48 h Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	EC50 (Pseudokirchneriella subcapitata (green algae)): 770 mg/l Exposure time: 72 h Method: OECD Test Guideline 201
		NOEC (Pseudokirchneriella subcapitata (green algae)): 310 mg/l Exposure time: 72 h Method: OECD Test Guideline 201
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Daphnia magna (Water flea)): 51 mg/l Exposure time: 21 d Method: OECD Test Guideline 211

### Citric acid:

Toxicity to fish	:	LC50 (Pimephales promelas (fathead minnow)): > 100 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 1,535 mg/l Exposure time: 24 h

### Sodium selenate:

Toxicity to fish	:	LC50 (Pimephales promelas (fathead minnow)): > 1 - 10 mg/l Exposure time: 96 h Remarks: Based on data from similar materials
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 1 - 10 mg/l Exposure time: 48 h Remarks: Based on data from similar materials
Toxicity to algae/aquatic plants	:	ErC50 (Chlamydomonas reinhardtii (green algae)): 245 µg/l Exposure time: 96 h
		NOEC (Chlamydomonas reinhardtii (green algae)): 197 µg/l Exposure time: 96 h
M-Factor (Acute aquatic toxicity)	:	1
Toxicity to fish (Chronic toxicity)	:	NOEC (Lepomis macrochirus (Bluegill sunfish)): > 0.01 - 0.1 mg/l Exposure time: 258 d Remarks: Based on data from similar materials
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC: > 0.1 - 1 mg/l Exposure time: 28 d

## Abamectin / Levamisole Hydrochloride / Cobalt EDTA / Sodium Selenate Formulation

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ic toxicity)      Remarks: Based on data from similar materials

M-Factor (Chronic aquatic toxicity) : 1

Toxicity to microorganisms : EC10 (activated sludge): 590 mg/l  
 Exposure time: 3 h  
 Method: OECD Test Guideline 209

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

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

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

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

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

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

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

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

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

M-Factor (Acute aquatic toxicity) : 10,000

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

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

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

M-Factor (Chronic aquatic toxicity) : 10,000

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



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## Persistence and degradability

### Components:

#### **Benzyl alcohol:**

|| Biodegradability : Result: Readily biodegradable.  
 Biodegradation: 92 - 96 %  
 Exposure time: 14 d

#### **Citric acid:**

|| Biodegradability : Result: Readily biodegradable.  
 Biodegradation: 97 %  
 Exposure time: 28 d  
 Method: OECD Test Guideline 301B

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

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

## Bioaccumulative potential

### Components:

#### **Cobalt disodium ethylenediaminetetraacetate:**

|| Partition coefficient: n-octanol/water : log Pow: -3.86  
 Remarks: Calculation

#### **Benzyl alcohol:**

|| Partition coefficient: n-octanol/water : log Pow: 1.05

#### **Citric acid:**

|| Partition coefficient: n-octanol/water : log Pow: -1.72

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

|| Bioaccumulation : Bioconcentration factor (BCF): 52

|| Partition coefficient: n-octanol/water : log Pow: 4

## Mobility in soil

### Components:

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

|| Distribution among environmental compartments : log Koc: > 3.6

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### Hazardous to the ozone layer

Not applicable

### Other adverse effects

No data available

## 13. DISPOSAL CONSIDERATIONS

### Disposal methods

Waste from residues	:	Dispose of in accordance with local regulations. Do not dispose of waste into sewer.
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

#### UNRTDG

UN number	:	UN 3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (abamectin (combination of avermectin B1a and avermectin B1b) (ISO), Cobalt disodium ethylenediaminetetraacetate)
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. (abamectin (combination of avermectin B1a and avermectin B1b) (ISO), Cobalt disodium ethylenediaminetetraacetate)
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. (abamectin (combination of avermectin B1a and avermectin B1b) (ISO), Cobalt disodium ethylenediaminetetraacetate)
Class	:	9

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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.

### National Regulations

Refer to section 15 for specific national regulation.

### 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.

ERG Code : 171

## 15. REGULATORY INFORMATION

### Related Regulations

#### Fire Service Law

Not applicable to dangerous materials / designated flammables.

#### Chemical Substance Control Law

Not applicable for Specified Chemical Substance, Monitoring Chemical Substance and Priority Assessment Chemical Substance.

#### Industrial Safety and Health Law

#### Harmful Substances Prohibited from Manufacture

Not applicable

#### Harmful Substances Required Permission for Manufacture

Not applicable

#### Substances Prevented From Impairment of Health

Not applicable

#### Circular concerning Information on Chemicals having Mutagenicity - Annex 2: Information on Existing Chemicals having Mutagenicity

Not applicable

#### Circular concerning Information on Chemicals having Mutagenicity - Annex 1: Information on Notified Substances having Mutagenicity

Not applicable

#### Substances Subject to be Notified Names

Article 57-2 (Enforcement Order Table 9)

Chemical name	Concentration (%)	Remarks
levamisole hydrochloride	>0 - <10	From April 1st, 2025

# SAFETY DATA SHEET



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Cobalt and its compounds	>0 - <10	-
Benzyl alcohol	>0 - <10	-
Selenium and its compounds	>0 - <10	-

### Substances Subject to be Indicated Names

Article 57 (Enforcement Order Article 18)

Chemical name	Remarks
levamisole hydrochloride	From April 1st, 2025
Cobalt and its compounds	-
benzyl alcohol	-

### Carcinogenic Substances (Article 577-2 of the Occupational Health and Safety Regulations)

Not applicable

### Ordinance on Prevention of Hazards Due to Specified Chemical Substances

Not applicable

### Ordinance on Prevention of Lead Poisoning

Not applicable

### Ordinance on Prevention of Tetraalkyl Lead Poisoning

Not applicable

### Ordinance on Prevention of Organic Solvent Poisoning

Not applicable

### Enforcement Order of the Industrial Safety and Health Law - Attached table 1 (Dangerous Substances)

Not applicable

### Poisonous and Deleterious Substances Control Law

Poisonous substance

Chemical name	Cabinet Order Number
Sodium selenate and preparations containing it	18

Deleterious substance

Chemical name	Cabinet Order Number
(S)-2,3,5,6-Tetrahydro-6-phenylimidazo[2,1-b]thiazole, its salts and preparations containing some of them	71.3
Abamectin and preparations containing it	4.2

### Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof

Not applicable

### High Pressure Gas Safety Act

Not applicable

### Explosive Control Law

Not applicable

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### Vessel Safety Law

Miscellaneous dangerous substances and articles (Article 2 and 3 of rules on shipping and storage of dangerous goods and its Attached Table 1)

### Aviation Law

Miscellaneous dangerous substances and articles (Article 194 of The Enforcement Rules of Aviation Law and its Attached Table 1)

### Marine Pollution and Sea Disaster Prevention etc Law

Bulk transportation : Noxious liquid substance(Category Z)

Pack transportation : Classified as marine pollutant

### Narcotics and Psychotropics Control Act

Narcotic or Psychotropic Raw Material (Export / Import Permission)

Not applicable

Specific Narcotic or Psychotropic Raw Material (Export / Import permission)

Not applicable

### Waste Disposal and Public Cleansing Law

Industrial waste

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

AICS : not determined

DSL : not determined

IECSC : not determined

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## 16. OTHER INFORMATION

### 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

ACGIH : USA. ACGIH Threshold Limit Values (TLV)

JP OEL JSOH : Japan. The Japan Society for Occupational Health. Recommendation of Occupational Exposure Limits

ACGIH / TWA : 8-hour, time-weighted average

JP OEL JSOH / OEL-M : Occupational Exposure Limit-Mean

JP OEL JSOH / OEL-C : Occupational Exposure Limit-Ceiling

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AIIIC - 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; TECl - 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.

JP / EN