

**Permethrin (65%) Formulation**

Version 2.1      Revision Date: 30.09.2023      SDS Number: 7766182-00008      Date of last issue: 04.04.2023  
Date of first issue: 05.02.2021

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**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier**

Trade name : Permethrin (65%) Formulation

**1.2 Relevant identified uses of the substance or mixture and uses advised against**

Use of the Sub-stance/Mixture : Veterinary product

Recommended restrictions on use : Not applicable

**1.3 Details of the supplier of the safety data sheet**

Company : MSD  
20 Spartan Road  
1619 Spartan, South Africa

Telephone : +27119239300

E-mail address of person responsible for the SDS : EHSDATASTEWARD@msd.com

**1.4 Emergency telephone number**

+1-908-423-6000

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**SECTION 2: Hazards identification****2.1 Classification of the substance or mixture****Classification (REGULATION (EC) No 1272/2008)**

Flammable liquids, Category 3	H226: Flammable liquid and vapour.
Acute toxicity, Category 4	H302: Harmful if swallowed.
Acute toxicity, Category 4	H332: Harmful if inhaled.
Skin sensitisation, Category 1	H317: May cause an allergic skin reaction.
Specific target organ toxicity - single exposure, Category 3	H336: May cause drowsiness or dizziness.
Short-term (acute) aquatic hazard, Category 1	H400: Very toxic to aquatic life.
Long-term (chronic) aquatic hazard, Category 1	H410: Very toxic to aquatic life with long lasting effects.

**2.2 Label elements****Labelling (REGULATION (EC) No 1272/2008)**

Hazard pictograms :



## Permethrin (65%) Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04.04.2023
2.1	30.09.2023	7766182-00008	Date of first issue: 05.02.2021

Signal word : Warning

Hazard statements : H226 Flammable liquid and vapour.  
H302 + H332 Harmful if swallowed or if inhaled.  
H317 May cause an allergic skin reaction.  
H336 May cause drowsiness or dizziness.  
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**  
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P273 Avoid release to the environment.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

**Response:**  
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.  
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.  
P391 Collect spillage.

Hazardous components which must be listed on the label:

Permethrin (ISO)  
1-Methoxy-2-propanol

### 2.3 Other hazards

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

Cutaneous sensations may occur, such as burning or stinging on the face and mucosae. However, these sensations cause no lesions and are of a transitory nature (max. 24 hours).

Vapours may form explosive mixture with air.

## SECTION 3: Composition/information on ingredients

### 3.2 Mixtures

#### Components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
Permethrin (ISO)	52645-53-1 258-067-9 613-058-00-2	Acute Tox. 4; H302 Acute Tox. 4; H332 Skin Sens. 1; H317 Aquatic Acute 1; H400 Aquatic Chronic 1; H410  M-Factor (Acute)	>= 50 - < 70

## Permethrin (65%) Formulation

Version 2.1      Revision Date: 30.09.2023      SDS Number: 7766182-00008      Date of last issue: 04.04.2023  
 Date of first issue: 05.02.2021

		aquatic toxicity): 10.000 M-Factor (Chronic aquatic toxicity): 10.000	
1-Methoxy-2-propanol	107-98-2 203-539-1 603-064-00-3	Flam. Liq. 3; H226 STOT SE 3; H336	>= 30 - < 50
2-Methoxypropanol	1589-47-5 216-455-5 603-106-00-0	Flam. Liq. 3; H226 Skin Irrit. 2; H315 Eye Dam. 1; H318 Repr. 1B; H360D STOT SE 3; H335	>= 0,1 - < 0,3

For explanation of abbreviations see section 16.

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

- General advice : In the case of accident or if you feel unwell, seek medical advice immediately.  
When symptoms persist or in all cases of doubt seek medical advice.
- Protection of first-aiders : First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists (see section 8).
- If inhaled : If inhaled, remove to fresh air.  
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 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.

### 4.2 Most important symptoms and effects, both acute and delayed

- Risks : Harmful if swallowed or if inhaled.  
May cause an allergic skin reaction.  
May cause drowsiness or dizziness.

## Permethrin (65%) Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04.04.2023
2.1	30.09.2023	7766182-00008	Date of first issue: 05.02.2021

---

This product contains a pyrethroid.  
Pyrethroid poisoning should not be confused with carbamate or organophosphate poisoning.

### 4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically and supportively.

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## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

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

Unsuitable extinguishing media : High volume water jet

### 5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-fighting : Do not use a solid water stream as it may scatter and spread fire.  
Flash back possible over considerable distance.  
Vapours may form explosive mixtures with air.  
Exposure to combustion products may be a hazard to health.

Hazardous combustion products : Chlorine compounds  
Carbon oxides

### 5.3 Advice for firefighters

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

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

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## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Remove all sources of ignition.  
Use personal protective equipment.  
Follow safe handling advice (see section 7) and personal protective equipment recommendations (see section 8).

### 6.2 Environmental precautions

Environmental precautions : Avoid release to the environment.  
Prevent further leakage or spillage if safe to do so.

---

## Permethrin (65%) Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04.04.2023
2.1	30.09.2023	7766182-00008	Date of first issue: 05.02.2021

---

Prevent spreading over a wide area (e.g. by containment or oil barriers).  
 Retain and dispose of contaminated wash water.  
 Local authorities should be advised if significant spillages cannot be contained.

### 6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Non-sparking tools should be used.  
 Soak up with inert absorbent material.  
 Suppress (knock down) gases/vapours/mists with a water spray jet.  
 For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked material can be pumped, store recovered material in appropriate container.  
 Clean up remaining materials from spill with suitable absorbent.  
 Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.  
 Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

### 6.4 Reference to other sections

See sections: 7, 8, 11, 12 and 13.

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## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Technical measures : See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.

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

Advice on safe handling : Do not get on skin or clothing.  
 Avoid breathing 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  
 Non-sparking tools should be used.  
 Keep container tightly closed.  
 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
 Take precautionary measures against static discharges.  
 Do not eat, drink or smoke when using this product.  
 Take care to prevent spills, waste and minimize release to the environment.

Hygiene measures : If exposure to chemical is likely during typical use, provide eye flushing systems and safety showers close to the working

## Permethrin (65%) Formulation

Version 2.1      Revision Date: 30.09.2023      SDS Number: 7766182-00008      Date of last issue: 04.04.2023  
 Date of first issue: 05.02.2021

place. When using do not eat, drink or smoke. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before re-use. The effective operation of a facility should include review of engineering controls, proper personal protective equipment, appropriate degowning and decontamination procedures, industrial hygiene monitoring, medical surveillance and the use of administrative controls.

### 7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Keep in properly labelled containers. Store locked up. Keep tightly closed. Keep in a cool, well-ventilated place. Store in accordance with the particular national regulations. Keep away from heat and sources of ignition.

Advice on common storage : Do not store with the following product types:  
 Strong oxidizing agents  
 Self-reactive substances and mixtures  
 Organic peroxides  
 Flammable solids  
 Pyrophoric liquids  
 Pyrophoric solids  
 Self-heating substances and mixtures  
 Substances and mixtures, which in contact with water, emit flammable gases  
 Explosives  
 Gases  
 Very acutely toxic substances and mixtures

### 7.3 Specific end use(s)

Specific use(s) : No data available

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
Permethrin (ISO)	52645-53-1	TWA	80 µg/m <sup>3</sup> (OEB 3)	Internal
		Wipe limit	800 µg/100 cm <sup>2</sup>	Internal
1-Methoxy-2-propanol	107-98-2	OEL-RL	100 ppm	ZA OEL
	Further information: danger of cutaneous absorption, Occupational Exposure Limits - Restricted Limits For Hazardous Chemical Agents			
		OEL- RL STEL/C	200 ppm	ZA OEL
	Further information: danger of cutaneous absorption, Occupational Exposure Limits - Restricted Limits For Hazardous Chemical Agents			
		STEL	150 ppm 568 mg/m <sup>3</sup>	2000/39/EC
		TWA	100 ppm 375 mg/m <sup>3</sup>	2000/39/EC

## Permethrin (65%) Formulation

Version 2.1      Revision Date: 30.09.2023      SDS Number: 7766182-00008      Date of last issue: 04.04.2023  
 Date of first issue: 05.02.2021

**Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:**

Substance name	End Use	Exposure routes	Potential health effects	Value
1-Methoxy-2-propanol	Workers	Inhalation	Long-term systemic effects	369 mg/m <sup>3</sup>
	Workers	Inhalation	Acute systemic effects	553,5 mg/m <sup>3</sup>
	Workers	Inhalation	Acute local effects	553,5 mg/m <sup>3</sup>
	Workers	Skin contact	Long-term systemic effects	183 mg/kg bw/day
	Consumers	Inhalation	Long-term systemic effects	43,9 mg/m <sup>3</sup>
	Consumers	Skin contact	Long-term systemic effects	78 mg/kg bw/day
	Consumers	Ingestion	Long-term systemic effects	33 mg/kg bw/day

**Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:**

Substance name	Environmental Compartment	Value
1-Methoxy-2-propanol	Fresh water	10 mg/l
	Marine water	1 mg/l
	Freshwater - intermittent	100 mg/l
	Sewage treatment plant	100 mg/l
	Fresh water sediment	52,3 mg/kg dry weight (d.w.)
	Marine sediment	5,2 mg/kg dry weight (d.w.)
	Soil	4,59 mg/kg dry weight (d.w.)

**8.2 Exposure controls****Engineering measures**

Use appropriate engineering controls and manufacturing technologies to control airborne concentrations (e.g., drip-less quick connections).

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

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

Minimize open handling.

Use explosion-proof electrical, ventilating and lighting equipment.

**Personal protective equipment**

Eye/face protection : Wear safety glasses with side shields or goggles.  
 If the work environment or activity involves dusty conditions, mists or aerosols, wear the appropriate goggles.  
 Wear a faceshield or other full face protection if there is a potential for direct contact to the face with dusts, mists, or aerosols.

Hand protection

Material : Chemical-resistant gloves

## Permethrin (65%) Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04.04.2023
2.1	30.09.2023	7766182-00008	Date of first issue: 05.02.2021

---

Remarks	:	Consider double gloving. Take note that the product is flammable, which may impact the selection of hand protection.
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.
Respiratory protection	:	If adequate local exhaust ventilation is not available or exposure assessment demonstrates exposures outside the recommended guidelines, use respiratory protection.
Filter type	:	Organic vapour type (A)

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### SECTION 9: Physical and chemical properties

#### 9.1 Information on basic physical and chemical properties

Appearance	:	liquid
Colour	:	dark amber
Odour	:	strong
Odour 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	:	37,8 - 40 °C
Evaporation rate	:	No data available
Flammability (solid, gas)	:	Not applicable
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	:	No data available
Density	:	No data available
Solubility(ies)		
Water solubility	:	immiscible
Partition coefficient: n-octanol/water	:	Not applicable
Auto-ignition temperature	:	No data available



**Permethrin (65%) Formulation**

Version	Revision Date:	SDS Number:	Date of last issue: 04.04.2023
2.1	30.09.2023	7766182-00008	Date of first issue: 05.02.2021

---

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.

**9.2 Other information**

Flammability (liquids) : Not applicable

Molecular weight : No data available

Particle size : Not applicable

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**SECTION 10: Stability and reactivity****10.1 Reactivity**

Not classified as a reactivity hazard.

**10.2 Chemical stability**

Stable under normal conditions.

**10.3 Possibility of hazardous reactions**

Hazardous reactions : Flammable liquid and vapour.  
Vapours may form explosive mixture with air.  
Can react with strong oxidizing agents.

**10.4 Conditions to avoid**

Conditions to avoid : Heat, flames and sparks.

**10.5 Incompatible materials**

Materials to avoid : Oxidizing agents

**10.6 Hazardous decomposition products**

No hazardous decomposition products are known.

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**SECTION 11: Toxicological information****11.1 Information on toxicological effects**

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

**Acute toxicity**

Harmful if swallowed or if inhaled.

**Product:**

**Permethrin (65%) Formulation**

Version 2.1      Revision Date: 30.09.2023      SDS Number: 7766182-00008      Date of last issue: 04.04.2023  
Date of first issue: 05.02.2021

---

Acute oral toxicity : Acute toxicity estimate: 769,23 mg/kg  
Method: Calculation method

Acute inhalation toxicity : Acute toxicity estimate: 3,54 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: Calculation method

**Components:****Permethrin (ISO):**

Acute oral toxicity : LD50 (Rat): 480 - 554 mg/kg

Acute inhalation toxicity : LC50 (Rat): 2,3 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): > 2.000 mg/kg

**1-Methoxy-2-propanol:**

Acute oral toxicity : LD50 (Rat): 4.016 mg/kg

Acute inhalation toxicity : LC50 (Mouse): < 22,2 mg/l  
Exposure time: 6 h  
Test atmosphere: vapour

Acute dermal toxicity : LD50 (Rat): > 2.000 mg/kg  
Assessment: The substance or mixture has no acute dermal toxicity

**2-Methoxypropanol:**

Acute oral toxicity : LD50 (Rat): > 5.000 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 6 mg/l  
Exposure time: 4 h  
Test atmosphere: vapour

**Skin corrosion/irritation**

Not classified based on available information.

**Components:****Permethrin (ISO):**

Species : Rabbit  
Result : No skin irritation

**1-Methoxy-2-propanol:**

Species : Rabbit  
Result : No skin irritation

**2-Methoxypropanol:**

**Permethrin (65%) Formulation**

Version	Revision Date:	SDS Number:	Date of last issue: 04.04.2023
2.1	30.09.2023	7766182-00008	Date of first issue: 05.02.2021

---

Result : Skin irritation  
Remarks : Based on national or regional regulation.

**Serious eye damage/eye irritation**

Not classified based on available information.

**Components:****Permethrin (ISO):**

Species : Rabbit  
Result : No eye irritation

**1-Methoxy-2-propanol:**

Species : Rabbit  
Result : No eye irritation

**2-Methoxypropanol:**

Result : Irreversible effects on the eye  
Remarks : Based on national or regional regulation.

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

May cause an allergic skin reaction.

**Respiratory sensitisation**

Not classified based on available information.

**Components:****Permethrin (ISO):**

Test Type : Buehler Test  
Exposure routes : Skin contact  
Species : Guinea pig  
Result : positive

Assessment : Probability or evidence of skin sensitisation in humans

**1-Methoxy-2-propanol:**

Test Type : Maximisation Test  
Exposure routes : Skin contact  
Species : Guinea pig  
Result : negative

**2-Methoxypropanol:**

Test Type : Maximisation Test  
Exposure routes : Skin contact  
Species : Guinea pig  
Result : negative  
Remarks : Based on data from similar materials

## Permethrin (65%) Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04.04.2023
2.1	30.09.2023	7766182-00008	Date of first issue: 05.02.2021

---

### Germ cell mutagenicity

Not classified based on available information.

### Components:

#### Permethrin (ISO):

- |                                    |   |   |
|------------------------------------|---|---|
| Genotoxicity in vitro              | : | <p>Test Type: Bacterial reverse mutation assay (AMES)<br/>Result: negative</p> <p>Test Type: In vitro mammalian cell gene mutation test<br/>Result: negative</p> <p>Test Type: Chromosome aberration test in vitro<br/>Result: negative</p> <p>Test Type: DNA damage and repair, unscheduled DNA synthesis in mammalian cells (in vitro)<br/>Result: negative</p> <p>Test Type: Chromosome aberration test in vitro<br/>Result: positive</p>  |
| Genotoxicity in vivo               | : | <p>Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)<br/>Species: Mouse<br/>Result: negative</p> <p>Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)<br/>Species: Mouse<br/>Result: negative</p> <p>Test Type: Rodent dominant lethal test (germ cell) (in vivo)<br/>Species: Mouse<br/>Result: negative</p> <p>Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)<br/>Species: Rat<br/>Application Route: Intraperitoneal injection<br/>Result: negative</p> <p>Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)<br/>Species: Mouse<br/>Application Route: Ingestion<br/>Result: positive</p> |
| Germ cell mutagenicity- Assessment | : | Weight of evidence does not support classification as a germ cell mutagen.  |

#### 1-Methoxy-2-propanol:

- |                       |   |  |
|-----------------------|---|--|
| Genotoxicity in vitro | : | <p>Test Type: Bacterial reverse mutation assay (AMES)<br/>Result: negative</p> |
|-----------------------|---|--|

## Permethrin (65%) Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04.04.2023
2.1	30.09.2023	7766182-00008	Date of first issue: 05.02.2021

---

Test Type: Chromosome aberration test in vitro

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Result: negative

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

Result: equivocal

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

Method: OECD Test Guideline 482

Result: negative

Genotoxicity in vivo

: Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)

Species: Mouse

Application Route: Intraperitoneal injection

Result: negative

### 2-Methoxypropanol:

Genotoxicity in vitro

: Test Type: Bacterial reverse mutation assay (AMES)

Result: negative

Test Type: Chromosome aberration test in vitro

Result: negative

Remarks: Based on data from similar materials

Test Type: In vitro mammalian cell gene mutation test

Result: negative

Remarks: Based on data from similar materials

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

Result: equivocal

Remarks: Based on data from similar materials

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

Method: OECD Test Guideline 482

Result: negative

Remarks: Based on data from similar materials

Genotoxicity in vivo

: Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)

Species: Mouse

Application Route: Intraperitoneal injection

Result: negative

Remarks: Based on data from similar materials

Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)

Species: Mouse

**Permethrin (65%) Formulation**

Version 2.1      Revision Date: 30.09.2023      SDS Number: 7766182-00008      Date of last issue: 04.04.2023  
Date of first issue: 05.02.2021

---

Application Route: Ingestion  
Result: negative  
Remarks: Based on data from similar materials

**Carcinogenicity**

Not classified based on available information.

**Components:****Permethrin (ISO):**

Species : Rat  
Result : negative

Species : Mouse  
Result : negative

**1-Methoxy-2-propanol:**

Species : Rat  
Application Route : inhalation (vapour)  
Exposure time : 2 Years  
Method : OECD Test Guideline 453  
Result : negative

**Reproductive toxicity**

Not classified based on available information.

**Components:****Permethrin (ISO):**

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

Effects on foetal development : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test  
Species: Rat  
Application Route: Ingestion  
Result: negative

**1-Methoxy-2-propanol:**

Effects on fertility : Test Type: Two-generation reproduction toxicity study  
Species: Rat  
Application Route: inhalation (vapour)  
Method: OECD Test Guideline 416  
Result: negative

Effects on foetal development : Test Type: Embryo-foetal development  
Species: Rat  
Application Route: inhalation (vapour)  
Result: negative

**Permethrin (65%) Formulation**

Version 2.1      Revision Date: 30.09.2023      SDS Number: 7766182-00008      Date of last issue: 04.04.2023  
Date of first issue: 05.02.2021

---

**2-Methoxypropanol:**

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

Reproductive toxicity - Assessment : Clear evidence of adverse effects on development, based on animal experiments.

**STOT - single exposure**

May cause drowsiness or dizziness.

**Components:****1-Methoxy-2-propanol:**

Assessment : May cause drowsiness or dizziness.

**2-Methoxypropanol:**

Assessment : May cause respiratory irritation.  
Remarks : Based on national or regional regulation.

**STOT - repeated exposure**

Not classified based on available information.

**Repeated dose toxicity****Components:****Permethrin (ISO):**

Species : Rat  
NOAEL : 0,2201 mg/l  
Application Route : Inhalation  
Exposure time : 90 Days

Species : Rat  
NOAEL : 175 mg/kg  
Application Route : Ingestion  
Exposure time : 90 Days

**1-Methoxy-2-propanol:**

Species : Rat  
NOAEL : 919 mg/kg  
Application Route : Ingestion  
Exposure time : 35 Days

Species : Rat  
NOAEL : 1,1 mg/l  
Application Route : inhalation (vapour)  
Exposure time : 2 yr  
Method : OECD Test Guideline 453

Species : Rabbit  
NOAEL : 1.838 mg/kg

## Permethrin (65%) Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04.04.2023
2.1	30.09.2023	7766182-00008	Date of first issue: 05.02.2021

---

Application Route : Skin contact  
Exposure time : 90 Days

### 2-Methoxypropanol:

Species : Rat  
NOAEL : 10,5 mg/l  
Application Route : inhalation (vapour)  
Exposure time : 28 Days

Species : Rat  
NOAEL : > 300 mg/l  
Application Route : Ingestion  
Number of exposures : 25 Days  
Remarks : Based on data from similar materials

Species : Rabbit  
NOAEL : > 200 mg/l  
Application Route : Skin contact  
Number of exposures : 90 Days  
Remarks : Based on data from similar materials

### Aspiration toxicity

Not classified based on available information.

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## SECTION 12: Ecological information

### 12.1 Toxicity

#### Components:

#### Permethrin (ISO):

Toxicity to fish : LC50 (Lepomis macrochirus (Bluegill sunfish)): 0,00079 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0,0001 mg/l  
Exposure time: 48 h

Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): > 1,13 mg/l  
Exposure time: 72 h

EC10 (Pseudokirchneriella subcapitata (green algae)): 0,0023 mg/l  
Exposure time: 72 h

M-Factor (Acute aquatic toxicity) : 10.000

Toxicity to microorganisms : EC50 : > 1.000 mg/l  
Exposure time: 3 h

Toxicity to fish (Chronic toxicity) : NOEC: 0,00041 mg/l  
Exposure time: 35 d



## Permethrin (65%) Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04.04.2023
2.1	30.09.2023	7766182-00008	Date of first issue: 05.02.2021

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Species: Danio rerio (zebra fish)  
Method: OECD Test Guideline 210

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 0,0047 µg/l  
Exposure time: 21 d  
Species: Daphnia magna (Water flea)  
Method: OECD Test Guideline 211

M-Factor (Chronic aquatic toxicity) : 10.000

**1-Methoxy-2-propanol:**

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): 6.812 mg/l  
Exposure time: 96 h  
Method: DIN 38412

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 23.300 mg/l  
Exposure time: 48 h

Toxicity to algae/aquatic plants : ErC50 (Skeletonema costatum (marine diatom)): 6.745 mg/l  
Exposure time: 72 h  
Method: ISO 10253

Toxicity to microorganisms : IC50 : > 1.000 mg/l  
Exposure time: 3 h  
Method: OECD Test Guideline 209

**2-Methoxypropanol:**

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): > 100 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)): > 100 mg/l  
Exposure time: 48 h  
Remarks: Based on data from similar materials

Toxicity to algae/aquatic plants : ErC50 (Skeletonema costatum (marine diatom)): > 100 mg/l  
Exposure time: 72 h  
Method: ISO 10253  
Remarks: Based on data from similar materials

Toxicity to microorganisms : EC10 : > 1 mg/l  
Exposure time: 3 h  
Method: OECD Test Guideline 209  
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: > 1 mg/l  
Exposure time: 21 d  
Species: Daphnia magna (Water flea)  
Method: OECD Test Guideline 211  
Remarks: Based on data from similar materials

## Permethrin (65%) Formulation

Version 2.1      Revision Date: 30.09.2023      SDS Number: 7766182-00008      Date of last issue: 04.04.2023  
Date of first issue: 05.02.2021

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### 12.2 Persistence and degradability

#### Components:

##### **Permethrin (ISO):**

Biodegradability : Result: Not readily biodegradable.  
Method: OECD Test Guideline 301F

##### **1-Methoxy-2-propanol:**

Biodegradability : Result: Readily biodegradable.  
Biodegradation: 96 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301E

##### **2-Methoxypropanol:**

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

### 12.3 Bioaccumulative potential

#### Components:

##### **Permethrin (ISO):**

Bioaccumulation : Species: Lepomis macrochirus (Bluegill sunfish)  
Bioconcentration factor (BCF): 570

Partition coefficient: n-octanol/water : log Pow: 4,67

##### **1-Methoxy-2-propanol:**

Partition coefficient: n-octanol/water : log Pow: < 1

##### **2-Methoxypropanol:**

Partition coefficient: n-octanol/water : log Pow: -0,49  
Remarks: Calculation

### 12.4 Mobility in soil

No data available

### 12.5 Results of PBT and vPvB assessment

#### Product:

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

### 12.6 Other adverse effects

#### Product:

Endocrine disrupting potential : The substance/mixture does not contain components considered to have endocrine disrupting properties according to

## Permethrin (65%) Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04.04.2023
2.1	30.09.2023	7766182-00008	Date of first issue: 05.02.2021

REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

### SECTION 13: Disposal considerations

#### 13.1 Waste treatment methods

- Product : Dispose of in accordance with local regulations. According to the European Waste Catalogue, Waste Codes are not product specific, but application specific. Waste codes should be assigned by the user, preferably in discussion with the waste disposal authorities. Do not dispose of waste into sewer.
- Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal. Empty containers retain residue and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury and/or death. If not otherwise specified: Dispose of as unused product.

### SECTION 14: Transport information

#### 14.1 UN number

- ADN : UN 3092
- ADR : UN 3092
- RID : UN 3092
- IMDG : UN 3092
- IATA : UN 3092

#### 14.2 UN proper shipping name

- ADN : 1-METHOXY-2-PROPANOL, SOLUTION
- ADR : 1-METHOXY-2-PROPANOL, SOLUTION
- RID : 1-METHOXY-2-PROPANOL, SOLUTION
- IMDG : 1-METHOXY-2-PROPANOL, SOLUTION (Permethrin (ISO))
- IATA : 1-Methoxy-2-propanol, solution

#### 14.3 Transport hazard class(es)

- |      | Class | Subsidiary risks |
|------|-------|------------------|
| ADN  | : 3   |                  |
| ADR  | : 3   |                  |
| RID  | : 3   |                  |
| IMDG | : 3   |                  |
| IATA | : 3   |                  |

## Permethrin (65%) Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04.04.2023
2.1	30.09.2023	7766182-00008	Date of first issue: 05.02.2021

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### 14.4 Packing group

#### ADN

Packing group : III  
 Classification Code : F1  
 Hazard Identification Number : 30  
 Labels : 3

#### ADR

Packing group : III  
 Classification Code : F1  
 Hazard Identification Number : 30  
 Labels : 3  
 Tunnel restriction code : (D/E)

#### RID

Packing group : III  
 Classification Code : F1  
 Hazard Identification Number : 30  
 Labels : 3

#### IMDG

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

#### IATA (Cargo)

Packing instruction (cargo aircraft) : 366  
 Packing instruction (LQ) : Y344  
 Packing group : III  
 Labels : Flammable Liquids

#### IATA (Passenger)

Packing instruction (passenger aircraft) : 355  
 Packing instruction (LQ) : Y344  
 Packing group : III  
 Labels : Flammable Liquids

### 14.5 Environmental hazards

#### ADN

Environmentally hazardous : yes

#### ADR

Environmentally hazardous : yes

#### RID

Environmentally hazardous : yes

#### IMDG

Marine pollutant : yes

### 14.6 Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

### 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

## Permethrin (65%) Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04.04.2023
2.1	30.09.2023	7766182-00008	Date of first issue: 05.02.2021

Remarks : Not applicable for product as supplied.

### SECTION 15: Regulatory information

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

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

AICS : not determined

DSL : not determined

IECSC : not determined

#### 15.2 Chemical safety assessment

A Chemical Safety Assessment has not been carried out.

### SECTION 16: Other information

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

#### Full text of H-Statements

H226 : Flammable liquid and vapour.  
 H302 : Harmful if swallowed.  
 H315 : Causes skin irritation.  
 H317 : May cause an allergic skin reaction.  
 H318 : Causes serious eye damage.  
 H332 : Harmful if inhaled.  
 H335 : May cause respiratory irritation.  
 H336 : May cause drowsiness or dizziness.  
 H360D : May damage the unborn child.  
 H400 : Very toxic to aquatic life.  
 H410 : Very toxic to aquatic life with long lasting effects.

#### Full text of other abbreviations

Acute Tox. : Acute toxicity  
 Aquatic Acute : Short-term (acute) aquatic hazard  
 Aquatic Chronic : Long-term (chronic) aquatic hazard  
 Eye Dam. : Serious eye damage  
 Flam. Liq. : Flammable liquids  
 Repr. : Reproductive toxicity  
 Skin Irrit. : Skin irritation  
 Skin Sens. : Skin sensitisation  
 STOT SE : Specific target organ toxicity - single exposure  
 2000/39/EC : Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values  
 ZA OEL : South Africa. The Regulations for Hazardous Chemical Agents, Occupational Exposure Limits  
 2000/39/EC / TWA : Limit Value - eight hours  
 2000/39/EC / STEL : Short term exposure limit

## Permethrin (65%) Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04.04.2023
2.1	30.09.2023	7766182-00008	Date of first issue: 05.02.2021

ZA OEL / OEL-RL : Occupational Exposure Limit Restricted limit - 8- hour exposure or equivalent (12 hour shifts)

ZA OEL / OEL- RL STEL/C : Occupational Exposure Limit Restricted limit - Short term occupational exposure limits / ceiling limits

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (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; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of very high concern; TCSI - Taiwan Chemical Substance Inventory; 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

**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/>

**Classification of the mixture:**

Flam. Liq. 3	H226
Acute Tox. 4	H302
Acute Tox. 4	H332
Skin Sens. 1	H317
STOT SE 3	H336
Aquatic Acute 1	H400
Aquatic Chronic 1	H410

**Classification procedure:**

Based on product data or assessment

Calculation method

Calculation method

Calculation method

Calculation method

Calculation method

Calculation method

## Permethrin (65%) Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04.04.2023
2.1	30.09.2023	7766182-00008	Date of first issue: 05.02.2021

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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.

ZA / EN