

**Permethrin (1%) Formulation**

Version	Revision Date:	SDS Number:	Date of last issue: 14.04.2025
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**Section 1: Identification**

Product name : Permethrin (1%) Formulation

**Manufacturer or supplier's details**

Company : MSD

Address : 33 Whakatiki Street - Private Bag 908  
Upper Hutt - New Zealand

Telephone : 0800 800 543

Emergency telephone number : 0800 764 766 (0800 POISON) 0800 243 622 (0800  
CHEMCALL)

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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**Section 2: Hazard identification****GHS Classification**

Serious eye damage/eye irritation : Category 1

Respiratory sensitisation : Category 1

Skin sensitisation : Category 1

Carcinogenicity : Category 1

Specific target organ toxicity - single exposure : Category 2

Specific target organ toxicity - repeated exposure : Category 2

Hazardous to the aquatic environment - acute hazard : Category 1




Hazardous to the aquatic environment - chronic hazard : Category 1

**GHS label elements**

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- Hazard pictograms :   
- Signal word : Danger
- Hazard statements : H317 May cause an allergic skin reaction.  
H318 Causes serious eye damage.  
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
H350 May cause cancer.  
H371 May cause damage to organs.  
H373 May cause damage to organs 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.  
P272 Contaminated work clothing should not be allowed out of the workplace.  
P273 Avoid release to the environment.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.  
P284 Wear respiratory protection.  
**Response:**  
P302 + P352 IF ON SKIN: Wash with plenty of water.  
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.  
P308 + P311 IF exposed or concerned: Call a POISON CENTER/ doctor.  
P333 + P313 If skin irritation or rash occurs: 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.

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### Other hazards which do not result in classification

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).

### Section 3: Composition/information on ingredients

Substance / Mixture : Mixture

#### Components

Chemical name	CAS-No.	Concentration (% w/w)
Sulfuric acid, mono-C16-18-alkyl esters, sodium salts	68955-20-4	$\geq 10$ -< 20
Coconut oil diethanolamide	68603-42-9	$\geq 3$ -< 10
Ethanol#	64-17-5	$\geq 1$ -< 10
Permethrin (ISO)	52645-53-1	$\geq 1$ -< 2.5
Formaldehyde	50-00-0	$\geq 0.1$ -< 1

# Voluntarily-disclosed substance

### Section 4: First-aid measures

General advice	: In the case of accident or if you feel unwell, seek medical advice immediately. When symptoms persist or in all cases of doubt seek medical advice.
If inhaled	: If inhaled, remove to fresh air. Get medical attention.
In case of skin contact	: In case of contact, immediately flush skin with 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	: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lens, if worn. Get medical attention immediately.
If swallowed	: If swallowed, DO NOT induce vomiting. Get medical attention. Rinse mouth thoroughly with water.
Most important symptoms and effects, both acute and delayed	: This product contains a pyrethroid. Pyrethroid poisoning should not be confused with carbamate or organophosphate poisoning. May cause an allergic skin reaction. Causes serious eye damage. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause cancer. May cause damage to organs. May cause damage to organs through prolonged or repeated exposure.
Protection of first-aiders	: First Aid responders should pay attention to self-protection,

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Notes to physician : and use the recommended personal protective equipment when the potential for exposure exists (see section 8).  
: Treat symptomatically and supportively.

**Section 5: Fire-fighting 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 : Chlorine compounds  
Carbon oxides  
Nitrogen oxides (NO<sub>x</sub>)  
Sulphur oxides  
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.

Hazchem Code : 3Z

**Section 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 contain-

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ment 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.

### Section 7: Handling and storage

- |                             |   |  |
|-----------------------------|---|--|
| Technical measures          | : | See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.  |
| Local/Total ventilation     | : | If sufficient ventilation is unavailable, use with local exhaust ventilation.  |
| Advice on safe handling     | : | Do not get on skin or clothing.<br>Avoid breathing mist or vapours.<br>Do not swallow.<br>Do not get in eyes.<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>Take care to prevent spills, waste and minimize release to the environment.   |
| Hygiene measures            | : | If exposure to chemical is likely during typical use, provide eye flushing systems and safety showers close to the working place.<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. |
| 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:<br>Strong oxidizing agents  |

### Section 8: Exposure controls/personal protection

#### Components with workplace control parameters

Components	CAS-No.	Value type	Control parame-	Basis
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		(Form of exposure)	ters / Permissible concentration	
Ethanol	64-17-5	WES-TWA	200 ppm 380 mg/m <sup>3</sup>	NZ OEL
	Further information: Ototoxin			
		WES-STEL	800 ppm 1,520 mg/m <sup>3</sup>	NZ OEL
	Further information: Ototoxin			
		STEL	1,000 ppm	ACGIH
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
Formaldehyde	50-00-0	WES-STEL	0.6 ppm	NZ OEL
	Further information: Skin sensitizer, Known or presumed human carcinogen			
		TWA	0.1 ppm	ACGIH
		STEL	0.3 ppm	ACGIH

**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.

### 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.

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**Section 9: Physical and chemical properties**

Appearance	: liquid
Colour	: amber
Odour	: No data available
Odour Threshold	: No data available
pH	: 7.3 - 7.7
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	: No data available
Density	: 1.025 - 1.035 g/cm <sup>3</sup>
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	: No data available
Explosive properties	: Not explosive

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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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**Section 10: Stability and reactivity**

Reactivity	:	Not classified as a reactivity hazard.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	Can react with strong oxidizing agents.
Conditions to avoid	:	None known.
Incompatible materials	:	Oxidizing agents
Hazardous decomposition products	:	No hazardous decomposition products are known.

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**Section 11: Toxicological information**

Exposure routes	:	Inhalation Skin contact Ingestion Eye contact
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**Acute toxicity**

Not classified based on available information.

**Product:**

Acute oral toxicity	:	Acute toxicity estimate: > 2,000 mg/kg Method: Calculation method
Acute inhalation toxicity	:	Acute toxicity estimate: > 20 mg/l Exposure time: 4 h Test atmosphere: vapour Method: Calculation method
Acute dermal toxicity	:	Acute toxicity estimate: > 2,000 mg/kg Method: Calculation method

**Components:****Sulfuric acid, mono-C16-18-alkyl esters, sodium salts:**

Acute oral toxicity	:	LD50 (Rat): 4,010 mg/kg Remarks: Based on data from similar materials
Acute dermal toxicity	:	LD50 (Rat): > 2,000 mg/kg Method: OECD Test Guideline 402 Remarks: Based on data from similar materials



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**Coconut oil diethanolamide:**

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg  
Method: OECD Test Guideline 401  
Assessment: The substance or mixture has no acute oral toxicity

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg  
Assessment: The substance or mixture has no acute dermal toxicity

**Ethanol:**

Acute oral toxicity : LD50 (Rat): 10,470 mg/kg  
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat, male): 116.9 mg/l  
Exposure time: 4 h  
Test atmosphere: vapour

Acute dermal toxicity : LD50 (Rabbit): > 15,800 mg/kg

**Permethrin (ISO):**

Acute oral toxicity : Acute toxicity estimate: 100 mg/kg  
Method: Expert judgement  
Remarks: Based on national or regional regulation.

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

**Formaldehyde:**

Acute oral toxicity : Acute toxicity estimate: 100 mg/kg  
Method: Expert judgement  
Remarks: Based on national or regional regulation.

Acute inhalation toxicity : Acute toxicity estimate (Rat): 100 ppm  
Exposure time: 4 h  
Test atmosphere: gas  
Method: Expert judgement

Acute dermal toxicity : LD50 (Rabbit): 270 mg/kg

**Skin corrosion/irritation**

Not classified based on available information.

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**Components:****Sulfuric acid, mono-C16-18-alkyl esters, sodium salts:**

Species	:	Rabbit
Method	:	OECD Test Guideline 404
Result	:	Skin irritation
Remarks	:	Based on data from similar materials

**Coconut oil diethanolamide:**

Species	:	Rabbit
Method	:	OECD Test Guideline 404
Result	:	Skin irritation
Remarks	:	Based on data from similar materials

**Ethanol:**

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

**Permethrin (ISO):**

Species	:	Rabbit
Result	:	No skin irritation

**Formaldehyde:**

Result	:	Corrosive after 3 minutes to 1 hour of exposure
Remarks	:	Based on national or regional regulation.

**Serious eye damage/eye irritation**

Causes serious eye damage.

**Components:****Sulfuric acid, mono-C16-18-alkyl esters, sodium salts:**

Species	:	Rabbit
Result	:	Irreversible effects on the eye
Method	:	OECD Test Guideline 405
Remarks	:	Based on data from similar materials

**Coconut oil diethanolamide:**

Species	:	Rabbit
Result	:	Irreversible effects on the eye
Method	:	OECD Test Guideline 405
Remarks	:	Based on data from similar materials

**Ethanol:**

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

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Method : OECD Test Guideline 405

**Permethrin (ISO):**

Result : Irritation to eyes, reversing within 21 days  
Remarks : Based on national or regional regulation.

**Formaldehyde:**

Result : Irreversible effects on the eye  
Remarks : Based on skin corrosivity.

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

May cause an allergic skin reaction.

**Respiratory sensitisation**

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

**Components:****Sulfuric acid, mono-C16-18-alkyl esters, sodium salts:**

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

**Coconut oil diethanolamide:**

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

**Ethanol:**

Test Type : Mouse ear swelling test (MEST)  
Exposure routes : Skin contact  
Species : Mouse  
Result : negative

**Permethrin (ISO):**

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

Assessment : Probability or evidence of skin sensitisation in humans

Assessment : May cause sensitisation by inhalation.

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Remarks : Based on national or regional regulation.

**Formaldehyde:**

Test Type : Human repeat insult patch test (HRIPT)  
Exposure routes : Skin contact  
Species : Humans  
Result : positive

Assessment : Probability or evidence of high skin sensitisation rate in humans

**Chronic toxicity****Germ cell mutagenicity**

Not classified based on available information.

**Components:****Sulfuric acid, mono-C16-18-alkyl esters, sodium salts:**

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)  
Method: OECD Test Guideline 471  
Result: negative

**Coconut oil diethanolamide:**

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

**Ethanol:**

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  
Method: OECD Test Guideline 476  
Result: negative

Test Type: Chromosome aberration test in vitro  
Result: negative

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)  
Species: Rat  
Application Route: Ingestion

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Result: negative

**Permethrin (ISO):**

Genotoxicity in vitro

: Test Type: Bacterial reverse mutation assay (AMES)  
Result: negativeTest Type: In vitro mammalian cell gene mutation test  
Result: negativeTest Type: Chromosome aberration test in vitro  
Result: negativeTest Type: DNA damage and repair, unscheduled DNA synthesis in mammalian cells (in vitro)  
Result: negativeTest Type: Chromosome aberration test in vitro  
Result: positive

Genotoxicity in vivo

: Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)  
Species: Mouse  
Result: negativeTest Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)  
Species: Mouse  
Result: negativeTest Type: Rodent dominant lethal test (germ cell) (in vivo)  
Species: Mouse  
Result: negativeTest Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)  
Species: Rat  
Application Route: Intraperitoneal injection  
Result: negativeTest Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)  
Species: Mouse  
Application Route: Ingestion  
Result: positive

Germ cell mutagenicity - Assessment

: Weight of evidence does not support classification as a germ cell mutagen.

**Formaldehyde:**

Genotoxicity in vitro

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

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

Test Type: Chromosome aberration test in vitro  
Result: positive

Genotoxicity in vivo : Test Type: In vivo mammalian alkaline comet assay  
Species: Mouse  
Application Route: Inhalation  
Result: positive

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

**Carcinogenicity**

May cause cancer.

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

Species : Rat  
Result : negative

Species : Mouse  
Result : negative

**Formaldehyde:**

Species : Rat  
Application Route : inhalation (gas)  
Exposure time : 28 Months  
Result : positive

Carcinogenicity - Assessment : Sufficient evidence of carcinogenicity in animal experiments

**Reproductive toxicity**

Not classified based on available information.

**Components:****Sulfuric acid, mono-C16-18-alkyl esters, sodium salts:**

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

**Coconut oil diethanolamide:**

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

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Method: OECD Test Guideline 414  
Result: negative  
Remarks: Based on data from similar materials

**Ethanol:**

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

**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

**Formaldehyde:**

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

**STOT - single exposure**

May cause damage to organs.

**Components:****Sulfuric acid, mono-C16-18-alkyl esters, sodium salts:**

Assessment : May cause respiratory irritation.

**Permethrin (ISO):**

Assessment : May cause damage to organs.  
Remarks : Based on national or regional regulation.

**Formaldehyde:**

Assessment : May cause respiratory irritation.

**STOT - repeated exposure**

May cause damage to organs through prolonged or repeated exposure.

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

Assessment	:	May cause damage to organs through prolonged or repeated exposure.
Remarks	:	Based on national or regional regulation.

**Formaldehyde:**

Assessment	:	May cause damage to organs through prolonged or repeated exposure.
Remarks	:	Based on national or regional regulation.

**Repeated dose toxicity****Components:****Sulfuric acid, mono-C16-18-alkyl esters, sodium salts:**

Species	:	Rat
NOAEL	:	428 mg/kg
LOAEL	:	970 mg/kg
Application Route	:	Ingestion
Exposure time	:	90 Days

**Coconut oil diethanolamide:**

Species	:	Rat
NOAEL	:	> 300 mg/kg
Application Route	:	Ingestion
Exposure time	:	28 Days
Remarks	:	Based on data from similar materials

Species	:	Rat
NOAEL	:	50 mg/kg
Application Route	:	Skin contact
Exposure time	:	2 yr

**Ethanol:**

Species	:	Rat
NOAEL	:	1,730 mg/kg
LOAEL	:	3,200 mg/kg
Application Route	:	Ingestion
Exposure time	:	90 Days

**Permethrin (ISO):**

Species	:	Rat
NOAEL	:	0.2201 mg/l
Application Route	:	Inhalation
Exposure time	:	90 Days



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

**Aspiration toxicity**

Not classified based on available information.

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**Section 12: Ecological information****Ecotoxicity****Components:****Sulfuric acid, mono-C16-18-alkyl esters, sodium salts:**

Toxicity to fish	: LC50 (Danio rerio (zebra fish)): 5.2 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)): 2.8 mg/l Exposure time: 48 h Method: OECD Test Guideline 202 Remarks: Based on data from similar materials
Toxicity to algae/aquatic plants	: ErC50 (Desmodesmus subspicatus (green algae)): 34 mg/l Exposure time: 72 h
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	: NOEC (Ceriodaphnia dubia (water flea)): 0.204 mg/l Exposure time: 7 d Remarks: Based on data from similar materials
Toxicity to microorganisms	: NOEC (Pseudomonas putida): 550 mg/l Exposure time: 18 h

**Coconut oil diethanolamide:**

Toxicity to fish	: LC50 (Oncorhynchus mykiss (rainbow trout)): 2.4 mg/l Exposure time: 96 h Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)): 3.2 mg/l Exposure time: 48 h Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	: ErC50 (Desmodesmus subspicatus (green algae)): > 1 - 10 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 Remarks: Based on data from similar materials  EC10 (Desmodesmus subspicatus (green algae)): > 1 - 10 mg/l Exposure time: 72 h

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Method: OECD Test Guideline 201

Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): > 0.01 - 0.1 mg/l  
Exposure time: 21 d  
Method: OECD Test Guideline 211  
Remarks: Based on data from similar materials

Toxicity to microorganisms : EC10 (Pseudomonas putida): 830 mg/l  
Exposure time: 16 h  
Method: DIN 38 412 Part 8

### Ethanol:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 14,200 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Ceriodaphnia dubia (water flea)): 5,012 mg/l  
Exposure time: 48 h

Toxicity to algae/aquatic plants : ErC50 (Chlorella vulgaris (Fresh water algae)): 275 mg/l  
Exposure time: 72 h

EC10 (Chlorella vulgaris (Fresh water algae)): 11.5 mg/l  
Exposure time: 72 h

Toxicity to fish (Chronic toxicity) : NOEC (Oryzias latipes (Japanese medaka)): >= 79 mg/l  
Exposure time: 100 d

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 9.6 mg/l  
Exposure time: 9 d

Toxicity to microorganisms : EC50 (Protozoa): 5,800 mg/l  
Exposure time: 4 h

### 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

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Toxicity to fish (Chronic toxicity) : NOEC (Danio rerio (zebra fish)): 0.00041 mg/l  
Exposure time: 35 d  
Method: OECD Test Guideline 210

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.0047 µg/l  
Exposure time: 21 d  
Method: OECD Test Guideline 211

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

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

**Formaldehyde:**

Toxicity to fish : LC50 (Morone saxatilis (striped bass)): 6.7 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia pulex (Water flea)): 5.8 mg/l  
Exposure time: 48 h

Toxicity to algae/aquatic plants : ErC50 (Desmodesmus subspicatus (green algae)): 4.89 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)): 1.04 mg/l  
Exposure time: 21 d  
Method: OECD Test Guideline 211

Toxicity to microorganisms : EC50 (activated sludge): 19 mg/l  
Exposure time: 3 h  
Method: OECD Test Guideline 209

**Persistence and degradability****Components:****Sulfuric acid, mono-C16-18-alkyl esters, sodium salts:**

Biodegradability : Result: Readily biodegradable.  
Biodegradation: 77 %  
Exposure time: 30 d  
Method: OECD Test Guideline 301D

**Coconut oil diethanolamide:**

Biodegradability : Result: Readily biodegradable.  
Biodegradation: 92.5 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301B

**Ethanol:**

Biodegradability : Result: Readily biodegradable.

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Biodegradation: 84 %  
Exposure time: 20 d

**Permethrin (ISO):**

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

**Formaldehyde:**

Biodegradability : Result: Readily biodegradable.  
Biodegradation: 99 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301A

**Bioaccumulative potential****Components:****Coconut oil diethanolamide:**

Partition coefficient: n-octanol/water : log Pow: 3.75  
Remarks: Calculation

**Ethanol:**

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

**Permethrin (ISO):**

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

Partition coefficient: n-octanol/water : log Pow: 4.67

**Formaldehyde:**

Partition coefficient: n-octanol/water : log Pow: 0.35  
Remarks: Calculation

**Mobility in soil****Components:****Ethanol:**

Distribution among environmental compartments : log Koc: 0.2

**Other adverse effects**

No data available

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**Section 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.

**Section 14: Transport information****International Regulations****UNRTDG**

UN number	:	UN 3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Permethrin (ISO))
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. (Permethrin (ISO))
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. (Permethrin (ISO))
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.

**National Regulations****NZS 5433**

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UN number : UN 3082  
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Permethrin (ISO))  
Class : 9  
Packing group : III  
Labels : 9  
Hazchem Code : 3Z  
Marine pollutant : no

**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.

**Section 15: Regulatory information****Safety, health and environmental regulations/legislation specific for the substance or mixture****HSNO Approval Number**

HSR100759 Veterinary Medicines Non dispersive Open System Application Group Standard

Tolerable Exposure Limits (TEL)

Not applicable

Environmental Exposure Limits (EEL)

Chemical name	Environmental compartment	Reference concentration
permethrin	Water	0.0001 mg/l

**HSW Controls**

Certified handler certificate not required.

Tracking hazardous substance not required.

Refer to the Health and Safety at Work (Hazardous Substances) Regulations 2017, for further information.

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

AICS : not determined

DSL : not determined

IECSC : not determined

**Section 16: Other information**

Revision Date : 20.06.2025

**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/>

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Date format : dd.mm.yyyy

**Full text of other abbreviations**

ACGIH	: USA. ACGIH Threshold Limit Values (TLV)
NZ OEL	: New Zealand. Workplace Exposure Standards for Atmospheric Contaminants
ACGIH / TWA	: 8-hour, time-weighted average
ACGIH / STEL	: Short-term exposure limit
NZ OEL / WES-TWA	: Workplace Exposure Standard - Time Weighted average
NZ OEL / WES-STEEL	: Workplace Exposure Standard - Short-Term Exposure Limit

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.

# SAFETY DATA SHEET



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