



OIL, COOL WATER TYPE*

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878
Issue date: 11/1/2019 Revision date: 4/11/2024 Supersedes version of: 10/24/2022 Version: 1.4

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Mixture
Product name : OIL, COOL WATER TYPE*
CAS-No. : N/A
Product code : 94-4000-39
Product group : Trade product

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

1.2.1. Relevant identified uses

No additional information available

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

The Lebermuth Company
4004 Technology Drive
46628 South Bend, IN
United States
T 574-259-7000, F 574-258-7450
info@lebermuth.com, www.lebermuth.com

1.4. Emergency telephone number

Emergency number : CHEMTREC - USA: 800-424-9300 International: +1 703-527-3887 / 1-800-424-9300
CCN 13010

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Skin corrosion/irritation, Category 2 H315
Serious eye damage/eye irritation, Category 2 H319
Skin sensitisation, Category 1 H317
Hazardous to the aquatic environment – Acute Hazard, Category 1 H400
Hazardous to the aquatic environment – Chronic Hazard, Category 2 H411
Full text of H- and EUH-statements: see section 16

Adverse physicochemical, human health and environmental effects

Causes skin irritation. May cause an allergic skin reaction. Causes serious eye irritation. Very toxic to aquatic life. Toxic to aquatic life with long lasting effects.

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :



GHS07

GHS09

Signal word (CLP) :

Warning

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Contains	: D-limonene; alpha-pinene; TRIPLAL, PURE; CARYOPHYLLENE B; eucalyptol; COUMARIN CRYSTALS; MOUSSE DE METRE; DAMASCONE ALPHA; beta-pinene; citral; GERANYL ACETATE PRIME; ISO CYCLOCITRAL PURE; Linalyl acetate; METHYL GAMMA-IONONE EXTRA; Neryl Acetate; 1-(2,3,8,8-Tetramethyl-1,2,3,4,5,6,7,8-octahydronaphthalen-2-yl)ethanone
Hazard statements (CLP)	: H315 - Causes skin irritation. H317 - May cause an allergic skin reaction. H319 - Causes serious eye irritation. H410 - Very toxic to aquatic life with long lasting effects.
Precautionary statements (CLP)	: P261 - Avoid breathing dust/fume/gas/mist/vapours/spray. P264 - Wash hands, forearms and face thoroughly after handling. 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/hearing protection. P302+P352 - IF ON SKIN: Wash with plenty of water. P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P321 - Specific treatment (see supplemental first aid instruction on this label). P332+P313 - If skin irritation occurs: Get medical advice/attention. P333+P313 - If skin irritation or rash occurs: Get medical advice/attention. P337+P313 - If eye irritation persists: Get medical advice/attention. P362+P364 - Take off contaminated clothing and wash it before reuse. P391 - Collect spillage. P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

2.3. Other hazards

Contains no PBT and/or vPvB substances $\geq 0.1\%$ assessed in accordance with REACH Annex XIII

Component	
Substance(s) not meeting the PBT criteria of REACH regulation, in accordance with Annex XIII	D-LIMONENE (5989-27-5), PINENE (80-56-8), 2,4-Dimethyl-3-cyclohexen-1-carboxaldehyde (27939-60-2), EUCALYPTOL (470-82-6), BENZYL BENZOATE (120-51-4), BETA-PINENE (127-91-3), DIOCTYL ADIPATE (103-23-1), GERANYL ACETATE (105-87-3)
Substance(s) not meeting the vPvB criteria of REACH regulation, in accordance with Annex XIII	D-LIMONENE (5989-27-5), PINENE (80-56-8), 2,4-Dimethyl-3-cyclohexen-1-carboxaldehyde (27939-60-2), EUCALYPTOL (470-82-6), BENZYL BENZOATE (120-51-4), BETA-PINENE (127-91-3), DIOCTYL ADIPATE (103-23-1), GERANYL ACETATE (105-87-3)

The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or substance(s) are not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0,1 %

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
DIOCTYL ADIPATE	CAS-No.: 103-23-1 EC-No.: 203-090-1	25 – 50	Aquatic Acute 1, H400

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Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
DIHYDROMYRCENOL	CAS-No.: 18479-58-8 EC-No.: 242-362-4	10 – 25	Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H336
D-LIMONENE substance with national workplace exposure limit(s) (DE, ES)	CAS-No.: 5989-27-5 EC-No.: 227-813-5 EC Index-No.: 601-096-00-2	5 – 10	Flam. Liq. 3, H226 Skin Irrit. 2, H315 Skin Sens. 1B, H317 Asp. Tox. 1, H304 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
LINALYL ACETATE	CAS-No.: 115-95-7 EC-No.: 204-116-4	5 – 10	Skin Irrit. 2, H315 Eye Irrit. 2, H319 Skin Sens. 1B, H317
TETRAMETHYL ACETYLOCTAHYDRONAPHTHALENES	CAS-No.: 54464-57-2 EC-No.: 259-174-3	1 – 5	Aquatic Chronic 1, H410 Skin Irrit. 2, H315 Skin Sens. 1B, H317
1,3,4,6,7,8-HEXAHYDRO-4,6,6,7,8,8- HEXAMETHYLCYCLOPENTA- γ -2-BENZOPYRAN	CAS-No.: 1222-05-5 EC-No.: 214-946-9 EC Index-No.: 603-212-00-7	1 – 5	Aquatic Acute 1, H400 Aquatic Chronic 1, H410
BETA-PINENE substance with national workplace exposure limit(s) (BE, ES)	CAS-No.: 127-91-3 EC-No.: 204-872-5	1 – 5	Flam. Liq. 3, H226 Skin Irrit. 2, H315 Skin Sens. 1B, H317 Asp. Tox. 1, H304 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
7-acetyl-1,1,3,4,4,6-hexamethyltetralin	CAS-No.: 1506-02-1 EC-No.: 216-133-4	1 – 5	Acute Tox. 4 (Oral), H302 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Butylated hydroxytoluene substance with national workplace exposure limit(s) (BE, DE, ES, FR, GB)	CAS-No.: 128-37-0 EC-No.: 204-881-4	1 – 5	Aquatic Acute 1, H400 Aquatic Chronic 1, H410
BENZYL BENZOATE	CAS-No.: 120-51-4 EC-No.: 204-402-9 EC Index-No.: 607-085-00-9	1 – 5	Acute Tox. 4 (Oral), H302 Aquatic Acute 1, H400 Aquatic Chronic 2, H411
EUCALYPTOL	CAS-No.: 470-82-6 EC-No.: 207-431-5	0.1 – 1	Flam. Liq. 3, H226 Skin Sens. 1B, H317
METHYL GAMMA-IONONE	CAS-No.: 127-51-5 EC-No.: 204-846-3	0.1 – 1	Skin Sens. 1B, H317 STOT RE 2, H373 Aquatic Chronic 2, H411
GAMMA-TERPINENE	CAS-No.: 99-85-4 EC-No.: 202-794-6	0.1 – 1	Flam. Liq. 3, H226 Repr. 2, H361 Asp. Tox. 1, H304 Aquatic Chronic 2, H411
COUMARIN	CAS-No.: 91-64-5 EC-No.: 202-086-7	0.1 – 1	Acute Tox. 3 (Oral), H301 Acute Tox. 3 (Dermal), H311 Skin Sens. 1B, H317 Aquatic Acute 1, H400 Aquatic Chronic 3, H412
Methyl atrarate	CAS-No.: 4707-47-5 EC-No.: 225-193-0	0.1 – 1	Skin Sens. 1B, H317

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Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Allyl (3-methylbutoxy)acetate	CAS-No.: 67634-00-8 EC-No.: 266-803-5	0.1 – 1	Acute Tox. 4 (Oral), H302 Acute Tox. 2 (Inhalation), H330 Skin Irrit. 2, H315 Aquatic Acute 1, H400
CITRAL substance with national workplace exposure limit(s) (BE, ES)	CAS-No.: 5392-40-5 EC-No.: 226-394-6 EC Index-No.: 605-019-00-3	0.1 – 1	Skin Irrit. 2, H315 Eye Irrit. 2, H319 Skin Sens. 1, H317
BETA-MYRCENE	CAS-No.: 123-35-3 EC-No.: 204-622-5	0.1 – 1	Flam. Liq. 3, H226 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Asp. Tox. 1, H304 Aquatic Acute 1, H400 Aquatic Chronic 2, H411
ALPHA TERPINEOL	CAS-No.: 98-55-5 EC-No.: 202-680-6	0.1 – 1	Skin Irrit. 2, H315 Aquatic Acute 1, H400
2,4-Dimethyl-3-cyclohexen-1-carboxaldehyde	CAS-No.: 27939-60-2 EC-No.: 248-742-6	0.1 – 1	Skin Irrit. 2, H315 Eye Irrit. 2, H319 Skin Sens. 1B, H317 Aquatic Chronic 2, H411
PINENE substance with national workplace exposure limit(s) (BE, ES)	CAS-No.: 80-56-8 EC-No.: 201-291-9	0.1 – 1	Flam. Liq. 3, H226 Acute Tox. 4 (Oral), H302 Skin Irrit. 2, H315 Skin Sens. 1B, H317 Asp. Tox. 1, H304 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
β-Caryophyllene	CAS-No.: 87-44-5 EC-No.: 201-746-1	0.1 – 1	Skin Sens. 1B, H317 Asp. Tox. 1, H304 Aquatic Acute 1, H400
(E)-1-(2,6,6-TRIMETHYL-2-CYCLOHEXEN-1-YL)-2-BUTEN-1-ONE	CAS-No.: 24720-09-0 EC-No.: 246-430-4	0.1 – 1	Acute Tox. 4 (Oral), H302 Skin Sens. 1B, H317 Aquatic Chronic 2, H411
GERANYL ACETATE	CAS-No.: 105-87-3 EC-No.: 203-341-5	0.1 – 1	Skin Irrit. 2, H315 Skin Sens. 1B, H317 Aquatic Acute 1, H400 Aquatic Chronic 3, H412
ISOCYCLOCITRAL	CAS-No.: 1335-66-6 EC-No.: 215-638-7	0.1 – 1	Skin Irrit. 2, H315 Skin Sens. 1B, H317 Aquatic Chronic 3, H412
NERYL ACETATE	CAS-No.: 141-12-8 EC-No.: 205-459-2	0.1 – 1	Skin Sens. 1B, H317
ALPHA-CEDRENE	CAS-No.: 469-61-4 EC-No.: 207-418-4	< 0.1	Asp. Tox. 1, H304 Aquatic Acute 1, H400 (M=10) Aquatic Chronic 1, H410 (M=10) Skin Irrit. 2, H315

Full text of H- and EUH-statements: see section 16

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SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	: If you feel unwell, seek medical advice.
First-aid measures after inhalation	: Remove person to fresh air and keep comfortable for breathing.
First-aid measures after skin contact	: Wash skin with plenty of water. Take off contaminated clothing. If skin irritation or rash occurs: Get medical advice/attention.
First-aid measures after eye contact	: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
First-aid measures after ingestion	: Call a poison center or a doctor if you feel unwell.

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

Symptoms/effects after inhalation	: Although no appropriate human or animal health effects data are known to exist, this material is expected to be an inhalation hazard.
Symptoms/effects after skin contact	: Irritation. May cause an allergic skin reaction.
Symptoms/effects after eye contact	: Eye irritation.
Symptoms/effects after ingestion	: None under normal conditions.

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Water spray. Dry powder. Foam. Carbon dioxide.
Unsuitable extinguishing media	: Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

Fire hazard	: No fire hazard.
Explosion hazard	: No direct explosion hazard.
Hazardous decomposition products in case of fire	: Toxic fumes may be released.

5.3. Advice for firefighters

Firefighting instructions	: Fight fire from safe distance and protected location. Do not enter fire area without proper protective equipment, including respiratory protection.
Protection during firefighting	: Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures	: Stop leak if safe to do so. Notify authorities if product enters sewers or public waters. Absorb spillage to prevent material damage.
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6.1.1. For non-emergency personnel

Protective equipment	: Wear recommended personal protective equipment.
Emergency procedures	: Ventilate spillage area. Avoid contact with skin and eyes. Avoid breathing dust/fume/gas/mist/vapours/spray.

6.1.2. For emergency responders

Protective equipment	: Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
Emergency procedures	: Evacuate unnecessary personnel. Stop leak if safe to do so.

6.2. Environmental precautions

Avoid release to the environment.

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6.3. Methods and material for containment and cleaning up

For containment	: Collect spillage. Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. Stop leak without risks if possible.
Methods for cleaning up	: Take up liquid spill into absorbent material.
Other information	: Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed	: Not expected to present a significant hazard under anticipated conditions of normal use.
Precautions for safe handling	: Ensure good ventilation of the work station. Avoid contact with skin and eyes. Wear personal protective equipment. Avoid breathing dust/fume/gas/mist/vapours/spray.
Hygiene measures	: Wash contaminated clothing before reuse. Contaminated work clothing should not be allowed out of the workplace. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	: Keep in a cool, well-ventilated place away from heat.
Storage conditions	: Keep cool. Protect from sunlight.
Packaging materials	: Store always product in container of same material as original container.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 National occupational exposure and biological limit values

D-LIMONENE (5989-27-5)	
Germany - Occupational Exposure Limits (TRGS 900)	
Local name	(R)-p-Mentha-1,8-dien (D-Limonen)
AGW (OEL TWA)	28 mg/m ³ 5 ppm
Peak exposure limitation factor	4(II)
Remark	DFG,H,Sh,Y
Regulatory reference	TRGS900
Spain - Occupational Exposure Limits	
Local name	d-Limoneno
VLA-ED (OEL TWA)	168 mg/m ³ d-Limoneno 30 ppm d-Limoneno
Remark	Entrada en vigor en 2018. Sen (Sensibilizante. Véase Apartado 6), Vía dérmica (Indica que, en las exposiciones a esta sustancia, la aportación por la vía cutánea puede resultar significativa para el contenido corporal total si no se adoptan medidas para prevenir la absorción. En estas situaciones, es aconsejable la utilización del control biológico para poder cuantificar la cantidad global absorbida del contaminante. Para más información véase el Apartado 5 de este documento).

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D-LIMONENE (5989-27-5)	
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT
PINENE (80-56-8)	
Belgium - Occupational Exposure Limits	
Local name	Essence de térébenthine et monoterpènes sélectionnés # Terpentijn en geselecteerde monoteren
OEL TWA	20 ppm
Regulatory reference	Koninklijk besluit/Arrêté royal 16/11/2023
Spain - Occupational Exposure Limits	
Local name	α -pineno (monoterpeno)
VLA-ED (OEL TWA)	113 mg/m ³ 20 ppm
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT
Butylated hydroxytoluene (128-37-0)	
Belgium - Occupational Exposure Limits	
Local name	2,6-Di-tert-butyl-p-crésol (vapeur et aérosol) # Di-tert-butyl-4-méthylfenol (damp en aérosol)
OEL TWA	2 mg/m ³
Regulatory reference	Koninklijk besluit/Arrêté royal 16/11/2023
France - Occupational Exposure Limits	
Local name	2,6-Di-tert-butyl-p-crésol
VME (OEL TWA)	10 mg/m ³
Remark	Valeurs recommandées/admises
Regulatory reference	Circulaire du Ministère du travail (réf.: INRS ED 6443, 2022; Outil65)
Germany - Occupational Exposure Limits (TRGS 900)	
Local name	2,6-Di-tert-butyl-p-kresol
AGW (OEL TWA)	10 mg/m ³ E (mg/m ³)
Peak exposure limitation factor	4(II)
Remark	DFG,Y,11
Regulatory reference	TRGS900
Spain - Occupational Exposure Limits	
Local name	2,6-Di-tert-butyl-p-cresol
VLA-ED (OEL TWA)	10 mg/m ³
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT
United Kingdom - Occupational Exposure Limits	
Local name	2,6-Di-tert-butyl-p-cresol
WEL TWA (OEL TWA)	10 mg/m ³
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
USA - ACGIH - Occupational Exposure Limits	
Local name	Butylated hydroxytoluene

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Butylated hydroxytoluene (128-37-0)	
ACGIH OEL TWA	2 mg/m ³
Remark (ACGIH)	URT irr
Regulatory reference	ACGIH 2024
BETA-PINENE (127-91-3)	
Belgium - Occupational Exposure Limits	
Local name	Essence de térébenthine et monoterpènes sélectionnés # Terpentijn en geselecteerde monoteren
OEL TWA	20 ppm
Regulatory reference	Koninklijk besluit/Arrêté royal 16/11/2023
Spain - Occupational Exposure Limits	
Local name	β-pineno (monoterpeno)
VLA-ED (OEL TWA)	113 mg/m ³ 20 ppm
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT
CITRAL (5392-40-5)	
Belgium - Occupational Exposure Limits	
Local name	Citral (vapeur et aérosol) # Citral (damp en aérosol)
OEL TWA	32 mg/m ³ 5 ppm
Remark	D: la mention "D" signifie que la résorption de l'agent, via la peau, les muqueuses ou les yeux, constitue une partie importante de l'exposition totale. Cette résorption peut se faire tant par contact direct que par présence de l'agent dans l'air. # D: de vermelding "D" betekent dat de opname van het agens via de huid, de slijmvliezen of de ogen een belangrijk deel van de totale blootstelling vormt. Deze opname kan het gevolg zijn van zowel direct contact als zijn aanwezigheid in de lucht.
Regulatory reference	Koninklijk besluit/Arrêté royal 16/11/2023
Spain - Occupational Exposure Limits	
Local name	Citral
VLA-ED (OEL TWA)	5 ppm
Remark	Vía dérmica (Indica que, en las exposiciones a esta sustancia, la aportación por la vía cutánea puede resultar significativa para el contenido corporal total si no se adoptan medidas para prevenir la absorción. En estas situaciones, es aconsejable la utilización del control biológico para poder cuantificar la cantidad global absorbida del contaminante), Sen (Sensibilizante), FIV (Fracción inhalable y vapor. La notación FIV señala a aquellos agentes químicos que se pueden presentar en el ambiente de trabajo, tanto en forma de materia particulada como vapor, por lo que las dos fases pueden coexistir, contribuyendo ambas a la exposición. Esta situación se puede dar, principalmente, en los siguientes casos: • Cuando el agente en cuestión tiene un valor "intermedio" de presión de vapor (en estos casos se tiene en cuenta la relación entre su concentración en el aire saturado de vapor y el valor del VLA-ED® y la nota se asigna, generalmente, cuando el cociente entre ambas cantidades se encuentra entre 0.1 y 10). • Por razón de la forma de uso del agente químico (por ejemplo, pulverización). • En los procesos que conlleven cambios importantes de temperatura que puedan afectar al estado físico del agente químico. • En los procesos en los que una fracción significativa del vapor puede disolverse o adsorberse en las partículas de otra sustancia, a semejanza de lo que ocurre con los agentes solubles en agua en ambientes con humedad elevada).

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CITRAL (5392-40-5)	
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT
USA - ACGIH - Occupational Exposure Limits	
Local name	Citral
ACGIH OEL TWA	5 ppm (IFV - Inhalable fraction and vapor)
Remark (ACGIH)	TLV® Basis: Body weight eff; URT irr; eye dam. Notations: Skin; DSEN; A4 (Not classifiable as a Human Carcinogen)
Regulatory reference	ACGIH 2024

8.1.2. Recommended monitoring procedures

No additional information available

8.1.3. Air contaminants formed

No additional information available

8.1.4. DNEL and PNEC

No additional information available

8.1.5. Control banding

No additional information available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Appropriate engineering controls:

Ensure good ventilation of the work station.

8.2.2. Personal protection equipment

Personal protective equipment:

Wear recommended personal protective equipment.

Personal protective equipment symbol(s):



8.2.2.1. Eye and face protection

Eye protection:

Safety glasses

8.2.2.2. Skin protection

Skin and body protection:

Wear suitable protective clothing

Hand protection:

Protective gloves

8.2.2.3. Respiratory protection

Respiratory protection:

In case of insufficient ventilation, wear suitable respiratory equipment

8.2.2.4. Thermal hazards

No additional information available

8.2.3. Environmental exposure controls

Environmental exposure controls:

Avoid release to the environment.

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SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Colour	: Not available
Odour	: Not available
Odour threshold	: Not available
Melting point	: Not applicable
Freezing point	: Not available
Boiling point	: Not available
Flammability	: Non flammable.
Lower explosion limit	: Not available
Upper explosion limit	: Not available
Flash point	: 75 °C
Auto-ignition temperature	: Not available
Decomposition temperature	: Not available
pH	: Not available
Viscosity, kinematic	: Not available
Solubility	: Insoluble.
Partition coefficient n-octanol/water (Log Kow)	: Not available
Vapour pressure	: Not available
Vapour pressure at 50°C	: Not available
Density	: Not available
Relative density	: 0.91 (0.9 – 0.92)
Relative vapour density at 20°C	: Not available
Particle characteristics	: Not applicable

9.2. Other information

9.2.1. Information with regard to physical hazard classes

No additional information available

9.2.2. Other safety characteristics

Refractive index : 1.461 (1.451 – 1.471)

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

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SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity (oral) : Not classified

Acute toxicity (dermal) : Not classified

Acute toxicity (inhalation) : Not classified

D-LIMONENE (5989-27-5)	
LD50 oral rat	> 2000 mg/kg bodyweight (OECD 423: Acute Oral Toxicity – Acute Toxic Class Method, Rat, Female, Experimental value, Oral, 14 day(s))
LD50 dermal rabbit	> 5000 mg/kg bodyweight (Equivalent or similar to OECD 402, 24 h, Rabbit, Read-across, Dermal, 7 day(s))

BETA-MYRCENE (123-35-3)	
LD50 oral rat	> 11390 mg/kg bodyweight Animal: rat
LD50 oral	> 3380 mg/kg bodyweight Animal: mouse
LD50 dermal rabbit	> 5000 mg/kg bodyweight Animal: rabbit, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)

PINENE (80-56-8)	
LD50 oral rat	> 500 mg/kg bodyweight (OECD 423: Acute Oral Toxicity – Acute Toxic Class Method, Rat, Female, Experimental value, Oral, 01 day(s))
LD50 dermal rat	> 2000 mg/kg bodyweight (OECD 402: Acute Dermal Toxicity, 24 h, Rat, Male / female, Experimental value, Skin, 14 day(s))

2,4-Dimethyl-3-cyclohexen-1-carboxaldehyde (27939-60-2)	
LD50 oral rat	3900 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 401 (Acute Oral Toxicity), 95% CL: 2900 - 5100
LD50 oral	3900 mg/kg bodyweight
LD50 dermal rabbit	> 5000 mg/kg bodyweight Animal: rabbit, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)

β-Caryophyllene (87-44-5)	
LD50 oral	> 5000 mg/kg bodyweight Animal: mouse, Animal sex: male, Remarks on results: not determinable due to absence of adverse toxic effects

EUCALYPTOL (470-82-6)	
LD50 oral rat	4500 mg/kg bodyweight (OECD 401: Acute Oral Toxicity, Rat, Male / female, Experimental value, Oral, 14 day(s))
LD50 oral	2480 mg/kg bodyweight
LD50 dermal rat	> 2000 mg/kg bodyweight (OECD 402: Acute Dermal Toxicity, 24 h, Rat, Male / female, Experimental value, Dermal, 15 day(s))

COUMARIN (91-64-5)	
LD50 oral rat	293 mg/kg bodyweight Animal: rat, Guideline: other:
LD50 dermal rat	293 mg/kg bodyweight Animal: rat, Guideline: other:

Butylated hydroxytoluene (128-37-0)	
LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)

7-acetyl-1,1,3,4,4,6-hexamethyltetralin (1506-02-1)	
LD50 oral	1000 mg/kg bodyweight

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Methyl atrarate (4707-47-5)	
LD50 oral rat	> 5000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 401 (Acute Oral Toxicity)
LD50 dermal rat	> 5000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)
Allyl (3-methylbutoxy)acetate (67634-00-8)	
LD50 oral	500 mg/kg bodyweight
LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat, Animal sex: female, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)
LC50 Inhalation - Rat (Dust/Mist)	0.5 mg/l/4h
(E)-1-(2,6,6-TRIMETHYL-2-CYCLOHEXEN-1-YL)-2-BUTEN-1-ONE (24720-09-0)	
LD50 oral	1670 mg/kg bodyweight
LD50 dermal	2900 mg/kg bodyweight
ALPHA TERPINEOL (98-55-5)	
LD50 oral rat	4300 mg/kg bodyweight Animal: rat, Animal sex: male, Guideline: OECD Guideline 401 (Acute Oral Toxicity), 95% CL: 2900 - 5700
LD50 oral	4300 mg/kg bodyweight
LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)
BENZYL BENZOATE (120-51-4)	
LD50 oral rat	> 2000 mg/kg bodyweight (OECD 401: Acute Oral Toxicity, Rat, Male / female, Experimental value, Oral, 14 day(s))
LD50 oral	1160 mg/kg bodyweight
LD50 dermal rabbit	> 2000 mg/kg bw/day (Modification of Draize 1959 method, 4 h, Rabbit, Experimental value, Dermal)
BETA-PINENE (127-91-3)	
LD50 oral rat	4700 mg/kg (Rat, Oral)
CITRAL (5392-40-5)	
LD50 oral rat	≈ 6800 mg/kg bodyweight Animal: rat
LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat, Remarks on results: other:
DIHYDROMYRCENOL (18479-58-8)	
LD50 oral	3020 mg/kg
DIOCTYL ADIPATE (103-23-1)	
LD50 oral rat	> 20000 mg/kg bodyweight (Equivalent or similar to OECD 401, Rat, Male / female, Experimental value, Oral, 14 day(s))
LD50 dermal rabbit	16300 mg/kg bodyweight (Rabbit, Male, Experimental value, Dermal)
LC50 Inhalation - Rat	> 5.7 mg/l air (OECD 403: Acute Inhalation Toxicity, 4 h, Rat, Male / female, Experimental value, Inhalation (aerosol), 14 day(s))
1,3,4,6,7,8-HEXAHYDRO-4,6,6,7,8,8-HEXAMETHYLCYCLOPENTA-γ-2-BENZOPYRAN (1222-05-5)	
LD50 oral rat	> 4640 mg/kg bodyweight Animal: rat, Animal sex: female, Guideline: OECD Guideline 401 (Acute Oral Toxicity), Remarks on results: other:

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1,3,4,6,7,8-HEXAHYDRO-4,6,6,7,8,8-HEXAMETHYLCYCLOPENTA-γ-2-BENZOPYRAN (1222-05-5)	
LD50 dermal rat	> 10000 mg/kg bodyweight Animal: rat, Animal sex: female, Guideline: OECD Guideline 402 (Acute Dermal Toxicity), Remarks on results: other:
GAMMA-TERPINENE (99-85-4)	
LD50 oral	3650 mg/kg bodyweight
GERANYL ACETATE (105-87-3)	
LD50 oral rat	6300 mg/kg (Rat, Oral)
ISOCYCLOCITRAL (1335-66-6)	
LD50 oral	3220 mg/kg bodyweight
METHYL GAMMA-IONONE (127-51-5)	
LD50 oral rat	> 2000 mg/kg bodyweight Animal: rat, Animal sex: female, Guideline: OECD Guideline 423 (Acute Oral toxicity - Acute Toxic Class Method), Remarks on results: other:
LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity), Remarks on results: other:
Skin corrosion/irritation	: Causes skin irritation.
BENZYL BENZOATE (120-51-4)	
pH	4.5 (1.5 %, 20 °C)
DIOCTYL ADIPATE (103-23-1)	
pH	No data available in the literature
METHYL GAMMA-IONONE (127-51-5)	
pH	5.44 Temp.: 30 °C Concentration: 1 other: Remarks on result: 'other:'
Serious eye damage/irritation	: Causes serious eye irritation.
BENZYL BENZOATE (120-51-4)	
pH	4.5 (1.5 %, 20 °C)
DIOCTYL ADIPATE (103-23-1)	
pH	No data available in the literature
METHYL GAMMA-IONONE (127-51-5)	
pH	5.44 Temp.: 30 °C Concentration: 1 other: Remarks on result: 'other:'
Respiratory or skin sensitisation	: May cause an allergic skin reaction.
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
BETA-MYRCENE (123-35-3)	
IARC group	2B - Possibly carcinogenic to humans
COUMARIN (91-64-5)	
IARC group	3 - Not classifiable
Butylated hydroxytoluene (128-37-0)	
IARC group	3 - Not classifiable
DIOCTYL ADIPATE (103-23-1)	
IARC group	3 - Not classifiable

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Butylated hydroxytoluene (128-37-0)	
NOAEL (chronic, oral, animal/male, 2 years)	25 mg/kg bodyweight Animal: rat, Animal sex: male, Remarks on results: other:
CITRAL (5392-40-5)	
NOAEL (chronic, oral, animal/male, 2 years)	60 mg/kg bodyweight Animal: mouse, Animal sex: male, Guideline: OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies), Remarks on results: other:
Reproductive toxicity	: Not classified
1,3,4,6,7,8-HEXAHYDRO-4,6,6,7,8,8-HEXAMETHYLCYCLOPENTA-γ-2-BENZOPYRAN (1222-05-5)	
NOAEL (animal/female, F1)	20 mg/kg bodyweight Animal: rat, Animal sex: female, Guideline: OECD Guideline 426 (Developmental Neurotoxicity Study), Guideline: other:
STOT-single exposure	: Not classified
DIHYDROMYRCENOL (18479-58-8)	
STOT-single exposure	May cause drowsiness or dizziness.
STOT-repeated exposure	: Not classified
BETA-MYRCENE (123-35-3)	
LOAEL (oral, rat, 90 days)	250 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity Study in Rodents)
NOAEL (subchronic, oral, animal/male, 90 days)	500 mg/kg bodyweight Animal: mouse, Animal sex: male, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity Study in Rodents)
NOAEL (subchronic, oral, animal/female, 90 days)	250 mg/kg bodyweight Animal: mouse, Animal sex: female, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity Study in Rodents)
EUCALYPTOL (470-82-6)	
NOAEL (oral, rat, 90 days)	600 mg/kg bodyweight Animal: rat, Animal sex: female, Guideline: other:, Guideline: OECD Guideline 407 (Repeated Dose 28-Day Oral Toxicity Study in Rodents), Guideline: EPA OPPTS 870.3150 (90-Day Oral Toxicity in Non-rodents)
COUMARIN (91-64-5)	
NOAEL (subchronic, oral, animal/female, 90 days)	> 138.3 mg/kg bodyweight Animal: mouse, Animal sex: female
ALPHA TERPINEOL (98-55-5)	
NOAEL (oral, rat, 90 days)	≥ 314 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity Study in Rodents)
CITRAL (5392-40-5)	
LOAEC (inhalation, rat, gas, 90 days)	68 ppm Animal: rat, Animal sex: female
NOAEL (oral, rat, 90 days)	100 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)
NOAEC (inhalation, rat, gas, 90 days)	34 ppm Animal: rat, Animal sex: female
NOAEL (subchronic, oral, animal/male, 90 days)	60 mg/kg bodyweight Animal: mouse, Animal sex: male, Guideline: OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)
DIOCTYL ADIPATE (103-23-1)	
NOAEL (oral, rat, 90 days)	200 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 407 (Repeated Dose 28-Day Oral Toxicity Study in Rodents)
GERANYL ACETATE (105-87-3)	
NOAEL (oral, rat, 90 days)	2000 mg/kg bodyweight Animal: rat, Guideline: other:

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METHYL GAMMA-IONONE (127-51-5)	
NOAEL (oral, rat, 90 days)	30 mg/kg bodyweight Animal: rat, Animal sex: male, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity Study in Rodents)
NOAEL (dermal, rat/rabbit, 90 days)	50 mg/kg bodyweight Animal: rat, Guideline: other., Remarks on results: other:
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard : Not classified

D-LIMONENE (5989-27-5)	
Viscosity, kinematic	No data available in the literature

PINENE (80-56-8)	
Viscosity, kinematic	No data available in the literature

EUCALYPTOL (470-82-6)	
Viscosity, kinematic	2.1 mm ² /s (40 °C, OECD 114: Viscosity of Liquids)

BENZYL BENZOATE (120-51-4)	
Viscosity, kinematic	No data available in the literature

BETA-PINENE (127-91-3)	
Viscosity, kinematic	2.5 mm ² /s (20 °C, Calculated)

DIHYDROMYRCENOL (18479-58-8)	
Viscosity, kinematic	12.2 mm ² /s (20 °C, OECD 114: Viscosity of Liquids)

DIOCTYL ADIPATE (103-23-1)	
Viscosity, kinematic	No data available in the literature

GERANYL ACETATE (105-87-3)	
Viscosity, kinematic	2.71 mm ² /s (20 °C, OECD 114: Viscosity of Liquids)

11.2. Information on other hazards

No additional information available

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Very toxic to aquatic life. Toxic to aquatic life with long lasting effects.
Hazardous to the aquatic environment, short-term (acute) : Very toxic to aquatic life.
Hazardous to the aquatic environment, long-term (chronic) : Toxic to aquatic life with long lasting effects.

D-LIMONENE (5989-27-5)	
LC50 - Fish [1]	720 µg/l (Equivalent or similar to OECD 203, 96 h, Pimephales promelas, Flow-through system, Fresh water, Experimental value)
LC50 - Fish [2]	702 µg/l Test organisms (species): Pimephales promelas
EC50 - Crustacea [1]	0.307 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Semi-static system, Fresh water, Experimental value, GLP)
EC50 - Crustacea [2]	0.51 mg/l Test organisms (species): Daphnia magna
EC50 72h - Algae [1]	0.32 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)

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D-LIMONENE (5989-27-5)	
EC50 72h - Algae [2]	0.214 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
BETA-MYRCENE (123-35-3)	
EC50 - Crustacea [1]	1.47 mg/l Test organisms (species): Daphnia magna
EC50 72h - Algae [1]	0.342 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
EC50 72h - Algae [2]	0.31 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
PINENE (80-56-8)	
LC50 - Fish [1]	0.303 mg/l (OECD 203: Fish, Acute Toxicity Test, 96 h, Danio rerio, Semi-static system, Fresh water, Experimental value, GLP)
EC50 - Crustacea [1]	0.475 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Semi-static system, Fresh water, Experimental value, Locomotor effect)
2,4-Dimethyl-3-cyclohexen-1-carboxaldehyde (27939-60-2)	
LC50 - Fish [1]	15 mg/l (OECD 203: Fish, Acute Toxicity Test, 96 h, Oryzias latipes, Semi-static system, Fresh water, Experimental value, GLP)
EC50 - Crustacea [1]	7.74 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Semi-static system, Fresh water, Experimental value, GLP)
EC50 72h - Algae [1]	22.8 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
ErC50 algae	22.8 mg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Pseudokirchneriella subcapitata, Static system, Fresh water, Experimental value, GLP)
β-Caryophyllene (87-44-5)	
EC50 - Crustacea [1]	> 0.17 mg/l Test organisms (species): Daphnia magna
EC50 72h - Algae [1]	> 0.033 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
EUCALYPTOL (470-82-6)	
LC50 - Fish [1]	57 mg/l (OECD 203: Fish, Acute Toxicity Test, 96 h, Oncorhynchus mykiss, Semi-static system, Fresh water, Experimental value, Nominal concentration)
EC50 - Crustacea [1]	> 100 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Experimental value, Locomotor effect)
EC50 72h - Algae [1]	> 74 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
EC50 96h - Algae [1]	> 74 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
ErC50 algae	> 100 mg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Pseudokirchneriella subcapitata, Static system, Fresh water, Experimental value, Nominal concentration)
COUMARIN (91-64-5)	
LC50 - Fish [1]	2.94 mg/l Test organisms (species):
LC50 - Fish [2]	1324 mg/l Test organisms (species):
EC50 - Crustacea [1]	8012 mg/l Test organisms (species): Daphnia sp.
EC50 96h - Algae [1]	1452 mg/l Test organisms (species):
NOEC (chronic)	0.5 mg/l Test organisms (species): Duration: '21 d'

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COUMARIN (91-64-5)	
NOEC chronic fish	0.191 mg/l Test organisms (species): Duration: '30 d'
Butylated hydroxytoluene (128-37-0)	
LC50 - Fish [1]	> 0.57 mg/l Test organisms (species): Danio rerio (previous name: Brachydanio rerio)
EC50 - Crustacea [1]	0.48 mg/l Test organisms (species): Daphnia magna
EC50 72h - Algae [1]	> 0.4 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
LOEC (chronic)	1 mg/l Test organisms (species): Daphnia magna Duration: '21 d'
NOEC (chronic)	0.023 mg/l Test organisms (species): Daphnia magna Duration: '21 d'
Methyl atrarate (4707-47-5)	
LC50 - Fish [1]	5.2 mg/l Test organisms (species): not specified
EC50 - Crustacea [1]	9.3 mg/l Test organisms (species): Daphnia sp.
EC50 96h - Algae [1]	3.3 mg/l Test organisms (species): other:
Allyl (3-methylbutoxy)acetate (67634-00-8)	
LC50 - Fish [1]	≈ 0.768 mg/l Test organisms (species):
EC50 96h - Algae [1]	≈ 2.06 mg/l Test organisms (species):
ALPHA TERPINEOL (98-55-5)	
LC50 - Fish [1]	70 mg/l Test organisms (species): Danio rerio (previous name: Brachydanio rerio)
EC50 - Crustacea [1]	73 mg/l Test organisms (species): Daphnia magna
EC50 72h - Algae [1]	≈ 68 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
EC50 72h - Algae [2]	≈ 17 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
BENZYL BENZOATE (120-51-4)	
LC50 - Fish [1]	2.32 mg/l (EU Method C.1, 96 h, Danio rerio, Semi-static system, Fresh water, Experimental value, GLP)
EC50 - Crustacea [1]	3.09 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Experimental value, GLP)
BETA-PINENE (127-91-3)	
LC50 - Fish [1]	0.557 mg/l (OECD 203: Fish, Acute Toxicity Test, 96 h, Cyprinus carpio, Semi-static system, Fresh water, Weight of evidence, Other isomer)
ErC50 algae	0.826 mg/l (OECD 201: Alga, Growth Inhibition Test, 48 h, Pseudokirchneriella subcapitata, Static system, Fresh water, Weight of evidence, Other isomer)
CITRAL (5392-40-5)	
LC50 - Fish [1]	6.78 mg/l Test organisms (species): Leuciscus idus
EC50 - Crustacea [1]	6.8 mg/l Test organisms (species): Daphnia magna
EC50 72h - Algae [1]	103.8 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
DIOCTYL ADIPATE (103-23-1)	
LC50 - Fish [1]	> 0.78 mg/l (EPA 660/3 - 75/009, 96 h, Oncorhynchus mykiss, Static system, Fresh water, Experimental value, Nominal concentration)

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DIOCTYL ADIPATE (103-23-1)	
EC50 - Crustacea [1]	> 500 mg/l (EU Method C.2, 48 h, Daphnia magna, Static system, Fresh water, Experimental value, Locomotor effect)
LOEC (chronic)	> 0.77 mg/l Test organisms (species): Daphnia magna Duration: '21 d'
NOEC (chronic)	≥ 0.77 mg/l Test organisms (species): Daphnia magna Duration: '21 d'
1,3,4,6,7,8-HEXAHYDRO-4,6,6,7,8,8-HEXAMETHYLCYCLOPENTA-γ-2-BENZOPYRAN (1222-05-5)	
EC50 - Crustacea [1]	0.3 mg/l Test organisms (species): Daphnia magna
EC50 72h - Algae [1]	0.723 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
EC50 72h - Algae [2]	> 0.854 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
LOEC (chronic)	0.075 mg/l Test organisms (species): other aquatic crustacea: Duration: '5,5 d'
NOEC chronic fish	0.068 mg/l Test organisms (species): Pimephales promelas Duration: '36 d'
GERANYL ACETATE (105-87-3)	
LC50 - Fish [1]	68.12 mg/l (DIN 38412: German standard methods for the examination of water, waste water and sludge, 96 h, Leuciscus idus, Static system, Fresh water, Read-across)
EC50 - Crustacea [1]	14.1 mg/l (EU Method C.2, 48 h, Daphnia magna, Static system, Fresh water, Experimental value, GLP)
EC50 72h - Algae [1]	3.72 mg/l (OECD 201: Alga, Growth Inhibition Test, Desmodesmus subspicatus, Static system, Fresh water, Experimental value, GLP)
METHYL GAMMA-IONONE (127-51-5)	
LC50 - Fish [1]	10.9 mg/l Test organisms (species): Oncorhynchus mykiss (previous name: Salmo gairdneri)
EC50 - Crustacea [1]	9 mg/l Test organisms (species): Daphnia magna
EC50 72h - Algae [1]	> 20 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
12.2. Persistence and degradability	
OIL, COOL WATER TYPE* (N/A)	
Persistence and degradability	Rapidly degradable
D-LIMONENE (5989-27-5)	
Persistence and degradability	Readily biodegradable in water.
ThOD	3.29 g O ₂ /g substance
BETA-MYRCENE (123-35-3)	
Persistence and degradability	Readily biodegradable in water.
PINENE (80-56-8)	
Persistence and degradability	Readily biodegradable in water.
2,4-Dimethyl-3-cyclohexen-1-carboxaldehyde (27939-60-2)	
Persistence and degradability	Not readily biodegradable in water.
β-Caryophyllene (87-44-5)	
Persistence and degradability	Rapidly degradable

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ALPHA-CEDRENE (469-61-4)	
Persistence and degradability	Rapidly degradable
EUCALYPTOL (470-82-6)	
Persistence and degradability	Readily biodegradable in water.
COUMARIN (91-64-5)	
Persistence and degradability	Rapidly degradable
Butylated hydroxytoluene (128-37-0)	
Persistence and degradability	Rapidly degradable
7-acetyl-1,1,3,4,4,6-hexamethyltetralin (1506-02-1)	
Persistence and degradability	Rapidly degradable
Methyl atrarate (4707-47-5)	
Persistence and degradability	Rapidly degradable
Allyl (3-methylbutoxy)acetate (67634-00-8)	
Persistence and degradability	Rapidly degradable
(E)-1-(2,6,6-TRIMETHYL-2-CYCLOHEXEN-1-YL)-2-BUTEN-1-ONE (24720-09-0)	
Persistence and degradability	Rapidly degradable
ALPHA TERPINEOL (98-55-5)	
Persistence and degradability	Rapidly degradable
BENZYL BENZOATE (120-51-4)	
Persistence and degradability	Readily biodegradable in water.
BETA-PINENE (127-91-3)	
Persistence and degradability	Readily biodegradable in water.
CITRAL (5392-40-5)	
Persistence and degradability	Rapidly degradable
DIHYDROMYRCENOL (18479-58-8)	
Persistence and degradability	Biodegradability in water: no data available.
DIOCTYL ADIPATE (103-23-1)	
Persistence and degradability	Readily biodegradable in water.
1,3,4,6,7,8-HEXAHYDRO-4,6,6,7,8,8-HEXAMETHYLCYCLOPENTA-γ-2-BENZOPYRAN (1222-05-5)	
Persistence and degradability	Rapidly degradable
GAMMA-TERPINENE (99-85-4)	
Persistence and degradability	Rapidly degradable
GERANYL ACETATE (105-87-3)	
Persistence and degradability	Readily biodegradable in water.
ThOD	2.6 g O ₂ /g substance
ISOCYCLOCITRAL (1335-66-6)	
Persistence and degradability	Rapidly degradable

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LINALYL ACETATE (115-95-7)	
Persistence and degradability	Rapidly degradable
METHYL GAMMA-IONONE (127-51-5)	
Persistence and degradability	Rapidly degradable
NERYL ACETATE (141-12-8)	
Persistence and degradability	Rapidly degradable
TETRAMETHYL ACETYLOCTAHYDRONAPHTHALENES (54464-57-2)	
Persistence and degradability	Rapidly degradable
12.3. Bioaccumulative potential	
D-LIMONENE (5989-27-5)	
BCF - Fish [1]	864.8 l/kg (BCFBAF v3.01, Pisces, QSAR, Fresh weight)
Partition coefficient n-octanol/water (Log Pow)	4.38 (Experimental value, Equivalent or similar to OECD 117, 37 °C)
Bioaccumulative potential	Potential for bioaccumulation ($4 \leq \text{Log Kow} \leq 5$).
BETA-MYRCENE (123-35-3)	
Partition coefficient n-octanol/water (Log Pow)	5.285 (Literature, 25 °C)
Bioaccumulative potential	High potential for bioaccumulation ($\text{Log Kow} > 5$).
PINENE (80-56-8)	
BCF - Other aquatic organisms [1]	1233.1 – 1248 l/kg (BCFBAF v3.01, Read-across, Fresh weight)
Partition coefficient n-octanol/water (Log Pow)	4.487 (Experimental value, Equivalent or similar to OECD 107, 25 °C)
Bioaccumulative potential	Potential for bioaccumulation ($500 \leq \text{BCF} \leq 5000$).
2,4-Dimethyl-3-cyclohexen-1-carboxaldehyde (27939-60-2)	
BCF - Other aquatic organisms [1]	86.1 l/kg (Calculated value)
Partition coefficient n-octanol/water (Log Pow)	3.1 (Experimental value, Equivalent or similar to OECD 117, 25 °C)
Bioaccumulative potential	Low potential for bioaccumulation ($\text{Log Kow} < 4$).
EUCALYPTOL (470-82-6)	
BCF - Other aquatic organisms [1]	112 l/kg (Literature study, Fresh weight)
Partition coefficient n-octanol/water (Log Pow)	3.4 (Experimental value, OECD 117: Partition Coefficient (n-octanol/water), HPLC method)
Bioaccumulative potential	Low potential for bioaccumulation ($\text{Log Kow} < 4$).
BENZYL BENZOATE (120-51-4)	
BCF - Fish [1]	193.4 l/kg (BCFBAF v3.01, Pisces, Calculated value)
Partition coefficient n-octanol/water (Log Pow)	3.97 (Experimental value, 25 °C)
Bioaccumulative potential	Low potential for bioaccumulation ($\text{Log Kow} < 4$).
BETA-PINENE (127-91-3)	
BCF - Fish [1]	1125 l/kg (BCFBAF v3.01, Pisces, Fresh water, QSAR, Other isomer)
Partition coefficient n-octanol/water (Log Pow)	4.425 (Similar product, Read-across, Equivalent or similar to OECD 107, 25 °C)
Bioaccumulative potential	Potential for bioaccumulation ($4 \leq \text{Log Kow} \leq 5$).

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DIHYDROMYRCENOL (18479-58-8)	
Partition coefficient n-octanol/water (Log Pow)	3.47 (Estimated value)
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 4).
DIOCTYL ADIPATE (103-23-1)	
BCF - Fish [1]	27 (28 day(s), Lepomis macrochirus, Flow-through system, Fresh water, Experimental value, Fresh weight)
Partition coefficient n-octanol/water (Log Pow)	8.94 (Experimental value, OECD 117: Partition Coefficient (n-octanol/water), HPLC method, 25 °C)
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).
GERANYL ACETATE (105-87-3)	
BCF - Other aquatic organisms [1]	1500 (Estimated value)
Partition coefficient n-octanol/water (Log Pow)	4.04 (Experimental value, OECD 117: Partition Coefficient (n-octanol/water), HPLC method)
Bioaccumulative potential	Potential for bioaccumulation ($4 \leq \text{Log Kow} \leq 5$).
12.4. Mobility in soil	
D-LIMONENE (5989-27-5)	
Surface tension	No data available in the literature
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	3.049 – 3.801 (log Koc, SRC PCKOCWIN v2.0, Calculated value)
Ecology - soil	Low potential for mobility in soil.
BETA-MYRCENE (123-35-3)	
Ecology - soil	No (test) data on mobility of the substance available.
PINENE (80-56-8)	
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	3.009 – 3.853 (log Koc, SRC PCKOCWIN v2.0, Calculated value)
Ecology - soil	Low potential for mobility in soil. May be harmful to plant growth, blooming and fruit formation.
2,4-Dimethyl-3-cyclohexen-1-carboxaldehyde (27939-60-2)	
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	2.2 (log Koc, OECD 121: Estimation of the Adsorption Coefficient (Koc) on Soil and on Sewage Sludge using High Performance Liquid Chromatography (HPLC), Experimental value, GLP)
Ecology - soil	Low potential for adsorption in soil.
EUCALYPTOL (470-82-6)	
Surface tension	61.5 mN/m (20 °C, 1 g/l, EU Method A.5: Surface tension)
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	2.33 (log Koc, OECD 121: Estimation of the Adsorption Coefficient (Koc) on Soil and on Sewage Sludge using High Performance Liquid Chromatography (HPLC), Experimental value)
Ecology - soil	Low potential for adsorption in soil.
BENZYL BENZOATE (120-51-4)	
Surface tension	27 mN/m (210 °C)

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BENZYL BENZOATE (120-51-4)	
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	3.8 (log Koc, OECD 121: Estimation of the Adsorption Coefficient (Koc) on Soil and on Sewage Sludge using High Performance Liquid Chromatography (HPLC), Experimental value, GLP)
Ecology - soil	Low potential for mobility in soil.
BETA-PINENE (127-91-3)	
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	3.009 – 3.836 (log Koc, Calculated value, Other isomer)
Ecology - soil	Low potential for mobility in soil.
DIHYDROMYRCENOL (18479-58-8)	
Ecology - soil	No (test)data on mobility of the substance available.
DIOCTYL ADIPATE (103-23-1)	
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	4.56 (log Koc, SRC PCKOCWIN v2.0, QSAR)
Ecology - soil	Low potential for mobility in soil.
GERANYL ACETATE (105-87-3)	
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	3.06 (log Koc, SRC PCKOCWIN v2.0, Calculated value)
Ecology - soil	Low potential for mobility in soil.

12.5. Results of PBT and vPvB assessment

Component	
Substance(s) not meeting the PBT criteria of REACH regulation, in accordance with Annex XIII	D-LIMONENE (5989-27-5), PINENE (80-56-8), 2,4-Dimethyl-3-cyclohexen-1-carboxaldehyde (27939-60-2), EUCALYPTOL (470-82-6), BENZYL BENZOATE (120-51-4), BETA-PINENE (127-91-3), DIOCTYL ADIPATE (103-23-1), GERANYL ACETATE (105-87-3)
Substance(s) not meeting the vPvB criteria of REACH regulation, in accordance with Annex XIII	D-LIMONENE (5989-27-5), PINENE (80-56-8), 2,4-Dimethyl-3-cyclohexen-1-carboxaldehyde (27939-60-2), EUCALYPTOL (470-82-6), BENZYL BENZOATE (120-51-4), BETA-PINENE (127-91-3), DIOCTYL ADIPATE (103-23-1), GERANYL ACETATE (105-87-3)

12.6. Endocrine disrupting properties

No additional information available

12.7. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional waste regulation	: Disposal must be done according to official regulations.
Waste treatment methods	: Dispose of contents/container in accordance with licensed collector's sorting instructions.
Sewage disposal recommendations	: Disposal must be done according to official regulations.
Product/Packaging disposal recommendations	: Disposal must be done according to official regulations.
Additional information	: Do not re-use empty containers.

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SECTION 14: Transport information

In accordance with ADR / IMDG / IATA / ADN / RID

14.1. UN number or ID number

UN-No. (ADR)	: UN 3082
UN-No. (IMDG)	: UN 3082
UN-No. (IATA)	: UN 3082
UN-No. (ADN)	: UN 3082
UN-No. (RID)	: UN 3082

14.2. UN proper shipping name

Proper Shipping Name (ADR)	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Diocetyl Adipate, D-Limonene)
Proper Shipping Name (IMDG)	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Diocetyl Adipate, D-Limonene)
Proper Shipping Name (IATA)	: Environmentally hazardous substance, liquid, n.o.s. (Diocetyl Adipate, D-Limonene)
Proper Shipping Name (ADN)	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Diocetyl Adipate, D-Limonene)
Proper Shipping Name (RID)	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Diocetyl Adipate, D-Limonene)
Transport document description (ADR)	: UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Diocetyl Adipate, D-Limonene), 9, III, (-)
Transport document description (IMDG)	: UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Diocetyl Adipate, D-Limonene), 9, III, MARINE POLLUTANT
Transport document description (IATA)	: UN 3082 Environmentally hazardous substance, liquid, n.o.s. (Diocetyl Adipate, D-Limonene), 9, III
Transport document description (ADN)	: UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Diocetyl Adipate, D-Limonene), 9, III
Transport document description (RID)	: UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Diocetyl Adipate, D-Limonene), 9, III

14.3. Transport hazard class(es)

ADR

Transport hazard class(es) (ADR)	: 9
Danger labels (ADR)	: 9



IMDG

Transport hazard class(es) (IMDG)	: 9
Danger labels (IMDG)	: 9



IATA

Transport hazard class(es) (IATA)	: 9
Danger labels (IATA)	: 9



ADN

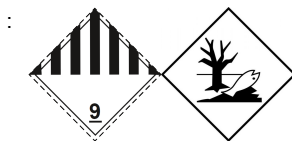
Transport hazard class(es) (ADN)	: 9
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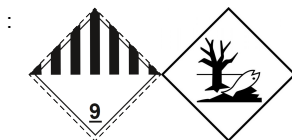
Danger labels (ADN) : 9



RID

Transport hazard class(es) (RID) : 9

Danger labels (RID) : 9



14.4. Packing group

Packing group (ADR) : III

Packing group (IMDG) : III

Packing group (IATA) : III

Packing group (ADN) : III

Packing group (RID) : III

14.5. Environmental hazards

Dangerous for the environment : Yes

Marine pollutant : Yes

Other information : No supplementary information available

14.6. Special precautions for user

Overland transport

Classification code (ADR) : M6

Special provisions (ADR) : 274, 335, 375, 601

Limited quantities (ADR) : 5I

Excepted quantities (ADR) : E1

Packing instructions (ADR) : P001, IBC03, LP01, R001

Special packing provisions (ADR) : PP1

Mixed packing provisions (ADR) : MP19

Portable tank and bulk container instructions (ADR) : T4

Portable tank and bulk container special provisions (ADR) : TP1, TP29

Tank code (ADR) : LGBV

Vehicle for tank carriage : AT

Transport category (ADR) : 3

Special provisions for carriage - Packages (ADR) : V12

Special provisions for carriage - Loading, unloading and handling (ADR) : CV13

Hazard identification number (Kemler No.) : 90

Orange plates :



Tunnel restriction code (ADR) : -

EAC code : •3Z

Transport by sea

Special provisions (IMDG) : 274, 335, 969

Limited quantities (IMDG) : 5 L

Excepted quantities (IMDG) : E1

Packing instructions (IMDG) : LP01, P001

Special packing provisions (IMDG) : PP1

IBC packing instructions (IMDG) : IBC03

Tank instructions (IMDG) : T4

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Tank special provisions (IMDG)	: TP1, TP29
EmS-No. (Fire)	: F-A
EmS-No. (Spillage)	: S-F
Stowage category (IMDG)	: A

Air transport

PCA Excepted quantities (IATA)	: E1
PCA Limited quantities (IATA)	: Y964
PCA limited quantity max net quantity (IATA)	: 30kgG
PCA packing instructions (IATA)	: 964
PCA max net quantity (IATA)	: 450L
CAO packing instructions (IATA)	: 964
CAO max net quantity (IATA)	: 450L
Special provisions (IATA)	: A97, A158, A197, A215
ERG code (IATA)	: 9L

Inland waterway transport

Classification code (ADN)	: M6
Special provisions (ADN)	: 274, 335, 375, 601
Limited quantities (ADN)	: 5 L
Excepted quantities (ADN)	: E1
Carriage permitted (ADN)	: T
Equipment required (ADN)	: PP
Number of blue cones/lights (ADN)	: 0

Rail transport

Classification code (RID)	: M6
Special provisions (RID)	: 274, 335, 375, 601
Limited quantities (RID)	: 5L
Excepted quantities (RID)	: E1
Packing instructions (RID)	: P001, IBC03, LP01, R001
Special packing provisions (RID)	: PP1
Mixed packing provisions (RID)	: MP19
Portable tank and bulk container instructions (RID)	: T4
Portable tank and bulk container special provisions (RID)	: TP1, TP29
Tank codes for RID tanks (RID)	: LGBV
Transport category (RID)	: 3
Special provisions for carriage – Packages (RID)	: W12
Special provisions for carriage - Loading, unloading and handling (RID)	: CW13, CW31
Colis express (express parcels) (RID)	: CE8
Hazard identification number (RID)	: 90

14.7. Maritime transport in bulk according to IMO instruments

Not applicable

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

REACH Annex XVII (Restriction List)

Contains no substance(s) listed on REACH Annex XVII (Restriction Conditions)

REACH Annex XIV (Authorisation List)

Contains no substance(s) listed on REACH Annex XIV (Authorisation List)

REACH Candidate List (SVHC)

Contains no substance(s) listed on the REACH Candidate List

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PIC Regulation (Prior Informed Consent)

Contains no substance(s) listed on the PIC list (Regulation EU 649/2012 concerning the export and import of hazardous chemicals)

POP Regulation (Persistent Organic Pollutants)

Contains no substance(s) listed on the POP list (Regulation EU 2019/1021 on persistent organic pollutants)

Ozone Regulation (1005/2009)

Contains no substance(s) listed on the Ozone Depletion list (Regulation EU 1005/2009 on substances that deplete the ozone layer)

Dual-Use Regulation (428/2009)

Contains no substance subject to the COUNCIL REGULATION (EC) No 428/2009 of 5 May 2009 setting up a Community regime for the control of exports, transfer, brokering and transit of dual-use items.

Explosives Precursors Regulation (2019/1148)

Contains no substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)

Drug Precursors Regulation (273/2004)

Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

15.1.2. National regulations

Germany

- Water hazard class (WGK) : Not classified according to Regulation Governing Systems for Handling Substances Hazardous to Waters (AwSV).
- Hazardous Incident Ordinance (12. BImSchV) : Is not subject to the Hazardous Incident Ordinance (12. BImSchV)

Netherlands

- SZW-lijst van kankerverwekkende stoffen : ALLYL AMYL GLYCOLATE PURE is listed
- SZW-lijst van mutagene stoffen : ALLYL AMYL GLYCOLATE PURE is listed
- SZW-lijst van reprotoxische stoffen – Borstvoeding : None of the components are listed
- SZW-lijst van reprotoxische stoffen – Vruchtbaarheid : None of the components are listed
- SZW-lijst van reprotoxische stoffen – Ontwikkeling : None of the components are listed

Denmark

- Class for fire hazard : Class III-1
- Store unit : 50 liter
- Classification remarks : Flammable according to the Danish Ministry of Justice; Emergency management guidelines for the storage of flammable liquids must be followed
- Danish National Regulations : Young people below the age of 18 years are not allowed to use the product
Pregnant/breastfeeding women working with the product must not be in direct contact with the product

15.2. Chemical safety assessment

No chemical safety assessment has been carried out

SECTION 16: Other information

Abbreviations and acronyms:

ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
BLV	Biological limit value
BOD	Biochemical oxygen demand (BOD)
COD	Chemical oxygen demand (COD)
DMEL	Derived Minimal Effect level

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Abbreviations and acronyms:	
DNEL	Derived-No Effect Level
EC-No.	European Community number
EC50	Median effective concentration
EN	European Standard
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
LOAEL	Lowest Observed Adverse Effect Level
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
OECD	Organisation for Economic Co-operation and Development
OEL	Occupational Exposure Limit
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
STP	Sewage treatment plant
ThOD	Theoretical oxygen demand (ThOD)
TLM	Median Tolerance Limit
VOC	Volatile Organic Compounds
CAS-No.	Chemical Abstract Service number
N.O.S.	Not Otherwise Specified
vPvB	Very Persistent and Very Bioaccumulative
ED	Endocrine disrupting properties

Full text of H- and EUH-statements:	
Acute Tox. 2 (Inhalation)	Acute toxicity (inhal.), Category 2
Acute Tox. 3 (Dermal)	Acute toxicity (dermal), Category 3
Acute Tox. 3 (Oral)	Acute toxicity (oral), Category 3
Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Aquatic Acute 1	Hazardous to the aquatic environment – Acute Hazard, Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment – Chronic Hazard, Category 1
Aquatic Chronic 2	Hazardous to the aquatic environment – Chronic Hazard, Category 2
Aquatic Chronic 3	Hazardous to the aquatic environment – Chronic Hazard, Category 3
Asp. Tox. 1	Aspiration hazard, Category 1
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2

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Full text of H- and EUH-statements:	
Flam. Liq. 3	Flammable liquids, Category 3
H226	Flammable liquid and vapour.
H301	Toxic if swallowed.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H311	Toxic in contact with skin.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H336	May cause drowsiness or dizziness.
H361	Suspected of damaging fertility or the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.
Repr. 2	Reproductive toxicity, Category 2
Skin Irrit. 2	Skin corrosion/irritation, Category 2
Skin Sens. 1	Skin sensitisation, Category 1
Skin Sens. 1B	Skin sensitisation, category 1B
STOT RE 2	Specific target organ toxicity – Repeated exposure, Category 2
STOT SE 3	Specific target organ toxicity – Single exposure, Category 3, Narcosis

Safety Data Sheet (SDS), EU

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.