

Safety data sheet Safety data sheet

acc. to Regulation (EC) No. 1907/2006 (REACH)



Oil of lemon-grass , all-natural

article number: **6606**
Version: **2.0 en**
Replaces version of: 2021-03-30
Version: (1)

date of compilation: 2021-03-30
Revision: 2024-03-04

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

1.1 Product identifier

| | |
|---------------------------------|---|
| Identification of the substance | Oil of lemon-grass , all-natural |
| Article number | 6606 |
| EC number | 616-903-3 |
| CAS number | 8007-02-1 |
| Alternative name(s) | Cochin, Oleum Lemongras |

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

| | |
|---------------------------|---|
| Relevant identified uses: | Laboratory chemical Laboratory and analytical use |
| Uses advised against: | Do not use for private purposes (household). Food, drink and animal feedingstuffs. |

1.3 Details of the supplier of the safety data sheet

Carl Roth GmbH + Co. KG
Schoemperlenstr. 3-5
D-76185 Karlsruhe
Germany

Telephone: +49 (0) 721 - 56 06 0

Telefax: +49 (0) 721 - 56 06 149

e-mail: sicherheit@carlroth.de

Website: www.carlroth.de

Competent person responsible for the safety data sheet: Department Health, Safety and Environment

e-mail (competent person): sicherheit@carlroth.de

1.4 Emergency telephone number

| Name | Street | Postal code/city | Telephone | Website |
|---|-----------|----------------------|--------------|---------|
| National Poisons Information Service City Hospital | Dudley Rd | B187QH Birmingham | 844 892 0111 | |

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification acc. to GHS

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| Section | Hazard class | Cat-egory | Hazard class and category | Hazard statement |
|---------|---|-----------|---------------------------|------------------|
| 3.2 | Skin corrosion/irritation | 2 | Skin Irrit. 2 | H315 |
| 3.3 | Serious eye damage/eye irritation | 1 | Eye Dam. 1 | H318 |
| 3.4S | Skin sensitisation | 1 | Skin Sens. 1 | H317 |
| 4.1C | Hazardous to the aquatic environment - chronic hazard | 2 | Aquatic Chronic 2 | H411 |

For full text of abbreviations: see SECTION 16

The most important adverse physicochemical, human health and environmental effects

Spillage and fire water can cause pollution of watercourses.

2.2 Label elements

Labelling

Signal word

Danger

Pictograms

GHS05, GHS07,
GHS09



Hazard statements

H315 Causes skin irritation
H317 May cause an allergic skin reaction
H318 Causes serious eye damage
H411 Toxic to aquatic life with long lasting effects

Precautionary statements

Precautionary statements - prevention

P273 Avoid release to the environment
P280 Wear protective gloves/eye protection

Precautionary statements - response

P302+P352 IF ON SKIN: Wash with plenty of soap and water

Hazardous ingredients for labelling:

Isoeugenol, Geraniol, Geranial, Neral, Geranyl acetate, β -Caryophyllene, Linalool, L-(-)-Limonene, DL- α -Pinene

2.3 Other hazards

This material is combustible, but will not ignite readily.

Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of $\geq 0,1\%$.

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SECTION 3: Composition/information on ingredients

3.1 Substances

Name of substance Oil of lemon-grass
CAS No 8007-02-1
EC No 616-903-3

Impurities/additives/constituents:

| Name of substance | Identifier | Wt% |
|------------------------|---|-----------|
| Geranial | CAS No 141-27-5 EC No 205-476-5 | 25 - < 50 |
| Neral | CAS No 106-26-3 EC No 203-379-2 | 25 - < 50 |
| Geraniol | CAS No 106-24-1 EC No 203-377-1 Index No 603-241-00-5 | 5 - < 10 |
| Geranyl acetate | CAS No 105-87-3 EC No 203-341-5 | 1 - < 5 |
| Linalool | CAS No 78-70-6 EC No 201-134-4 Index No 603-235-00-2 | 1 - < 5 |
| Camphene | CAS No 79-92-5 EC No 201-234-8 | 1 - < 5 |
| β -Caryophyllene | CAS No 87-44-5 EC No 201-746-1 | 1 - < 5 |
| L-(-)-Limonene | CAS No 5989-54-8 EC No 227-815-6 Index No 601-029-00-7 | < 1 |

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| Name of substance | Identifier | Wt% |
|----------------------|---|-----|
| DL- α -Pinene | CAS No 80-56-8 EC No 201-291-9 | < 1 |
| Isoeugenol | CAS No 97-54-1 EC No 202-590-7 Index No 604-094-00-X | < 1 |

Remarks

For full text of abbreviations: see SECTION 16

SECTION 4: First aid measures

4.1 Description of first aid measures



General notes

Take off contaminated clothing.

Following inhalation

Provide fresh air. In all cases of doubt, or when symptoms persist, seek medical advice.

Following skin contact

Rinse skin with water/shower. After contact with skin, wash immediately with plenty of water. In case of skin reactions, consult a physician. In case of skin irritation, consult a physician.

Following eye contact

In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist.

Following ingestion

Rinse mouth. Call a doctor if you feel unwell.

4.2 Most important symptoms and effects, both acute and delayed

Vomiting, Risk of blindness, Risk of serious damage to eyes, Irritation, Allergic reactions

4.3 Indication of any immediate medical attention and special treatment needed

none

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SECTION 5: Firefighting measures

5.1 Extinguishing media



Suitable extinguishing media

co-ordinate firefighting measures to the fire surroundings!
water spray, dry extinguishing powder, BC-powder, carbon dioxide (CO₂)

Unsuitable extinguishing media

water jet

5.2 Special hazards arising from the substance or mixture

Combustible.

Hazardous combustion products

Carbon monoxide (CO), Carbon dioxide (CO₂), May produce toxic fumes of carbon monoxide if burning.

5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Do not allow firefighting water to enter drains or water courses. Fight fire with normal precautions from a reasonable distance. Wear self-contained breathing apparatus.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures



For non-emergency personnel

Use personal protective equipment as required. Avoid contact with skin, eyes and clothes. Do not breathe vapour/spray.

6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it. If substance has entered a water course or sewer, inform the responsible authority.

6.3 Methods and material for containment and cleaning up

Advice on how to contain a spill

Covering of drains.

Advice on how to clean up a spill

Absorb with liquid-binding material (sand, diatomaceous earth, acid- or universal binding agents).

Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

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SECTION 7: Handling and storage

7.1 Precautions for safe handling

Provision of sufficient ventilation.

Measures to prevent fire as well as aerosol and dust generation



Keep away from sources of ignition - No smoking.

Measures to protect the environment

Avoid release to the environment.

Advice on general occupational hygiene

Wash hands before breaks and after work. Keep away from food, drink and animal feedingstuffs.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed.

Incompatible substances or mixtures

Observe hints for combined storage.

Consideration of other advice:

Specific designs for storage rooms or vessels

Recommended storage temperature: 15 – 25 °C

7.3 Specific end use(s)

No information available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

National limit values

Occupational exposure limit values (Workplace Exposure Limits)

| Country | Name of agent | CAS No | Identifier | TWA [ppm] | TWA [mg/m ³] | STEL [ppm] | STEL [mg/m ³] | Ceiling-C [ppm] | Ceiling-C [mg/m ³] | Notation | Source |
|---------|--------------------|---------|------------|-----------|--------------------------|------------|---------------------------|-----------------|--------------------------------|----------|-----------|
| GB | cycloalkanes (>C7) | 80-56-8 | WEL | | 800 | | | | | | EH40/2005 |

Notation

Ceiling-C
STEL

Ceiling value is a limit value above which exposure should not occur
Short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period (unless otherwise specified)

TWA

Time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average (unless otherwise specified)

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| Relevant DNELs of components | | | | | | |
|------------------------------|-----------|-----------|---------------------------|------------------------------------|-------------------|----------------------------|
| Name of substance | CAS No | End-point | Threshold level | Protection goal, route of exposure | Used in | Exposure time |
| Neral | 106-26-3 | DNEL | 9 mg/m ³ | human, inhalatory | worker (industry) | chronic - systemic effects |
| Neral | 106-26-3 | DNEL | 1,7 mg/kg bw/day | human, dermal | worker (industry) | chronic - systemic effects |
| Neral | 106-26-3 | DNEL | 140 µg/cm ² | human, dermal | worker (industry) | chronic - local effects |
| Geraniol | 106-24-1 | DNEL | 161,6 mg/m ³ | human, inhalatory | worker (industry) | chronic - systemic effects |
| Geraniol | 106-24-1 | DNEL | 12,5 mg/kg bw/day | human, dermal | worker (industry) | chronic - systemic effects |
| Geraniol | 106-24-1 | DNEL | 11.800 µg/cm ² | human, dermal | worker (industry) | chronic - local effects |
| Geranyl acetate | 105-87-3 | DNEL | 62,59 mg/m ³ | human, inhalatory | worker (industry) | chronic - systemic effects |
| Geranyl acetate | 105-87-3 | DNEL | 35,5 mg/kg bw/day | human, dermal | worker (industry) | chronic - systemic effects |
| Camphene | 79-92-5 | DNEL | 110,2 mg/m ³ | human, inhalatory | worker (industry) | chronic - systemic effects |
| Camphene | 79-92-5 | DNEL | 110,2 mg/m ³ | human, inhalatory | worker (industry) | acute - systemic effects |
| Camphene | 79-92-5 | DNEL | 0,21 mg/kg bw/day | human, dermal | worker (industry) | chronic - systemic effects |
| Camphene | 79-92-5 | DNEL | 1,25 mg/kg bw/day | human, dermal | worker (industry) | acute - systemic effects |
| Linalool | 78-70-6 | DNEL | 2,8 mg/m ³ | human, inhalatory | worker (industry) | chronic - systemic effects |
| Linalool | 78-70-6 | DNEL | 16,5 mg/m ³ | human, inhalatory | worker (industry) | acute - systemic effects |
| Linalool | 78-70-6 | DNEL | 2,5 mg/kg bw/day | human, dermal | worker (industry) | chronic - systemic effects |
| Linalool | 78-70-6 | DNEL | 5 mg/kg bw/day | human, dermal | worker (industry) | acute - systemic effects |
| L-(-)-Limonene | 5989-54-8 | DNEL | 33,3 mg/m ³ | human, inhalatory | worker (industry) | chronic - systemic effects |
| L-(-)-Limonene | 5989-54-8 | DNEL | 222 µg/cm ² | human, dermal | worker (industry) | acute - local effects |
| DL-α-Pinene | 80-56-8 | DNEL | 3,8 mg/m ³ | human, inhalatory | worker (industry) | chronic - systemic effects |
| DL-α-Pinene | 80-56-8 | DNEL | 0,542 mg/kg bw/day | human, dermal | worker (industry) | chronic - systemic effects |

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| Relevant PNECs of components | | | | | | |
|------------------------------|----------|-----------|-----------------|-----------------------|------------------------------|------------------------------|
| Name of substance | CAS No | End-point | Threshold level | Organism | Environmental compartment | Exposure time |
| Neral | 106-26-3 | PNEC | 0,007 mg/l | aquatic organisms | freshwater | short-term (single instance) |
| Neral | 106-26-3 | PNEC | 0,001 mg/l | aquatic organisms | marine water | short-term (single instance) |
| Neral | 106-26-3 | PNEC | 1,6 mg/l | aquatic organisms | sewage treatment plant (STP) | short-term (single instance) |
| Neral | 106-26-3 | PNEC | 0,125 mg/kg | aquatic organisms | freshwater sediment | short-term (single instance) |
| Neral | 106-26-3 | PNEC | 0,013 mg/kg | aquatic organisms | marine sediment | short-term (single instance) |
| Neral | 106-26-3 | PNEC | 0,021 mg/kg | terrestrial organisms | soil | short-term (single instance) |
| Geraniol | 106-24-1 | PNEC | 0,011 mg/l | aquatic organisms | freshwater | short-term (single instance) |
| Geraniol | 106-24-1 | PNEC | 0,001 mg/l | aquatic organisms | marine water | short-term (single instance) |
| Geraniol | 106-24-1 | PNEC | 0,7 mg/l | aquatic organisms | sewage treatment plant (STP) | short-term (single instance) |
| Geraniol | 106-24-1 | PNEC | 0,115 mg/kg | aquatic organisms | freshwater sediment | short-term (single instance) |
| Geraniol | 106-24-1 | PNEC | 0,011 mg/kg | aquatic organisms | marine sediment | short-term (single instance) |
| Geraniol | 106-24-1 | PNEC | 0,017 mg/kg | terrestrial organisms | soil | short-term (single instance) |
| Geranyl acetate | 105-87-3 | PNEC | 3,72 µg/l | aquatic organisms | freshwater | short-term (single instance) |
| Geranyl acetate | 105-87-3 | PNEC | 0,372 µg/l | aquatic organisms | marine water | short-term (single instance) |
| Geranyl acetate | 105-87-3 | PNEC | 8 mg/l | aquatic organisms | sewage treatment plant (STP) | short-term (single instance) |
| Geranyl acetate | 105-87-3 | PNEC | 0,442 mg/kg | aquatic organisms | freshwater sediment | short-term (single instance) |
| Geranyl acetate | 105-87-3 | PNEC | 0,044 mg/kg | aquatic organisms | marine sediment | short-term (single instance) |
| Geranyl acetate | 105-87-3 | PNEC | 0,086 mg/kg | terrestrial organisms | soil | short-term (single instance) |
| Camphene | 79-92-5 | PNEC | 0,001 mg/l | aquatic organisms | freshwater | short-term (single instance) |
| Camphene | 79-92-5 | PNEC | 0 mg/l | aquatic organisms | marine water | short-term (single instance) |
| Camphene | 79-92-5 | PNEC | 10 mg/l | aquatic organisms | sewage treatment plant (STP) | short-term (single instance) |
| Camphene | 79-92-5 | PNEC | 0,026 mg/kg | aquatic organisms | freshwater sediment | short-term (single instance) |

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| Relevant PNECs of components | | | | | | |
|------------------------------|-----------|-----------|-----------------|-----------------------|------------------------------|------------------------------|
| Name of substance | CAS No | End-point | Threshold level | Organism | Environmental compartment | Exposure time |
| Camphene | 79-92-5 | PNEC | 0,003 mg/kg | aquatic organisms | marine sediment | short-term (single instance) |
| Camphene | 79-92-5 | PNEC | 0,021 mg/kg | terrestrial organisms | soil | short-term (single instance) |
| Linalool | 78-70-6 | PNEC | 0,2 mg/l | aquatic organisms | freshwater | short-term (single instance) |
| Linalool | 78-70-6 | PNEC | 0,02 mg/l | aquatic organisms | marine water | short-term (single instance) |
| Linalool | 78-70-6 | PNEC | 10 mg/l | aquatic organisms | sewage treatment plant (STP) | short-term (single instance) |
| Linalool | 78-70-6 | PNEC | 2,22 mg/kg | aquatic organisms | freshwater sediment | short-term (single instance) |
| Linalool | 78-70-6 | PNEC | 0,222 mg/kg | aquatic organisms | marine sediment | short-term (single instance) |
| Linalool | 78-70-6 | PNEC | 0,327 mg/kg | terrestrial organisms | soil | short-term (single instance) |
| L-(-)-Limonene | 5989-54-8 | PNEC | 5,4 µg/l | aquatic organisms | freshwater | short-term (single instance) |
| L-(-)-Limonene | 5989-54-8 | PNEC | 0,54 µg/l | aquatic organisms | marine water | short-term (single instance) |
| L-(-)-Limonene | 5989-54-8 | PNEC | 0,2 mg/l | aquatic organisms | sewage treatment plant (STP) | short-term (single instance) |
| L-(-)-Limonene | 5989-54-8 | PNEC | 1,322 mg/kg | aquatic organisms | freshwater sediment | short-term (single instance) |
| L-(-)-Limonene | 5989-54-8 | PNEC | 0,132 mg/kg | aquatic organisms | marine sediment | short-term (single instance) |
| L-(-)-Limonene | 5989-54-8 | PNEC | 0,262 mg/kg | terrestrial organisms | soil | short-term (single instance) |
| DL-α-Pinene | 80-56-8 | PNEC | 0,606 µg/l | aquatic organisms | freshwater | short-term (single instance) |
| DL-α-Pinene | 80-56-8 | PNEC | 0,061 µg/l | aquatic organisms | marine water | short-term (single instance) |
| DL-α-Pinene | 80-56-8 | PNEC | 0,2 mg/l | aquatic organisms | sewage treatment plant (STP) | short-term (single instance) |
| DL-α-Pinene | 80-56-8 | PNEC | 157 µg/kg | aquatic organisms | freshwater sediment | short-term (single instance) |
| DL-α-Pinene | 80-56-8 | PNEC | 15,7 µg/kg | aquatic organisms | marine sediment | short-term (single instance) |
| DL-α-Pinene | 80-56-8 | PNEC | 31,7 µg/kg | terrestrial organisms | soil | short-term (single instance) |

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8.2 Exposure controls

Individual protection measures (personal protective equipment)

Eye/face protection



Use safety goggle with side protection.

Skin protection



• hand protection

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves. The times are approximate values from measurements at 22 ° C and permanent contact. Increased temperatures due to heated substances, body heat etc. and a reduction of the effective layer thickness by stretching can lead to a considerable reduction of the breakthrough time. If in doubt, contact manufacturer. At an approx. 1.5 times larger / smaller layer thickness, the respective breakthrough time is doubled / halved. The data apply only to the pure substance. When transferred to substance mixtures, they may only be considered as a guide.

• type of material

Butyl caoutchouc (butyl rubber)

• material thickness

0,7mm

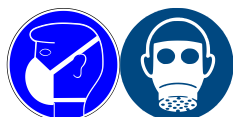
• breakthrough times of the glove material

>480 minutes (permeation: level 6)

• other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended.

Respiratory protection



Respiratory protection necessary at: Aerosol or mist formation.

Environmental exposure controls

Keep away from drains, surface and ground water.

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SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

| | |
|--|---|
| Physical state | liquid |
| Colour | clear - light yellow - light brown |
| Odour | characteristic |
| Melting point/freezing point | not determined |
| Boiling point or initial boiling point and boiling range | not determined |
| Flammability | this material is combustible, but will not ignite readily |
| Lower and upper explosion limit | not determined |
| Flash point | 88 °C |
| Auto-ignition temperature | >240 °C |
| Decomposition temperature | not relevant |
| pH (value) | not determined |
| Kinematic viscosity | not determined |

Solubility(ies)

Water solubility 0,4 g/l at 25 °C

Partition coefficient

Partition coefficient n-octanol/water (log value): 2,06 – 6,64

Vapour pressure not determined

Density and/or relative density

Density 0,9 g/cm³ at 20 °C

Relative vapour density Information on this property is not available.

Particle characteristics not relevant (liquid)

Other safety parameters

Oxidising properties none

9.2 Other information

Information with regard to physical hazard classes: hazard classes acc. to GHS (physical hazards): not relevant

Other safety characteristics:

Refractive index 1,48 – 1,49 (20 °C)

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SECTION 10: Stability and reactivity

10.1 Reactivity

This material is not reactive under normal ambient conditions.

If heated

Vapours may form explosive mixtures with air.

10.2 Chemical stability

The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

10.3 Possibility of hazardous reactions

Violent reaction with: strong oxidiser

10.4 Conditions to avoid

There are no specific conditions known which have to be avoided.

10.5 Incompatible materials

There is no additional information.

10.6 Hazardous decomposition products

Hazardous combustion products: see section 5.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Classification acc. to GHS

Acute toxicity

Shall not be classified as acutely toxic.

GHS of the United Nations, annex 4. May be harmful in contact with skin.

| Acute toxicity estimate (ATE) of components | | | |
|---|---------|----------------|-------------|
| Name of substance | CAS No | Exposure route | ATE |
| Isoeugenol | 97-54-1 | oral | 1.560 mg/kg |
| DL- α -Pinene | 80-56-8 | oral | 1.000 mg/kg |

| Acute toxicity of components | | | | | |
|------------------------------|----------|----------------|----------|--------------|---------|
| Name of substance | CAS No | Exposure route | Endpoint | Value | Species |
| Geranial | 141-27-5 | oral | LD50 | 6.800 mg/kg | rat |
| Geranial | 141-27-5 | dermal | LD50 | >2.000 mg/kg | rat |
| Neral | 106-26-3 | oral | LD50 | 6.800 mg/kg | rat |
| Neral | 106-26-3 | dermal | LD50 | >2.000 mg/kg | rat |
| Geraniol | 106-24-1 | oral | LD50 | 3.600 mg/kg | rat |
| Geraniol | 106-24-1 | dermal | LD50 | >5.000 mg/kg | rabbit |

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| Acute toxicity of components | | | | | |
|------------------------------|----------|----------------|----------|--------------|---------|
| Name of substance | CAS No | Exposure route | Endpoint | Value | Species |
| Geranyl acetate | 105-87-3 | oral | LD50 | 6.330 mg/kg | rat |
| β -Caryophyllene | 87-44-5 | oral | LD50 | >5.000 mg/kg | mouse |
| Linalool | 78-70-6 | oral | LD50 | 2.790 mg/kg | rat |
| Linalool | 78-70-6 | dermal | LD50 | 5.610 mg/kg | rabbit |
| Isoeugenol | 97-54-1 | oral | LD50 | 1.560 mg/kg | rat |
| DL- α -Pinene | 80-56-8 | dermal | LD50 | >2.000 mg/kg | rat |
| DL- α -Pinene | 80-56-8 | oral | LD50 | 3.700 mg/kg | rat |

Skin corrosion/irritation

Causes skin irritation.

Serious eye damage/eye irritation

Causes serious eye damage.

Respiratory or skin sensitisation

May cause an allergic skin reaction.

Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

Carcinogenicity

Shall not be classified as carcinogenic.

Reproductive toxicity

Shall not be classified as a reproductive toxicant.

Specific target organ toxicity - single exposure

Shall not be classified as a specific target organ toxicant (single exposure).

Specific target organ toxicity - repeated exposure

Shall not be classified as a specific target organ toxicant (repeated exposure).

Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

Symptoms related to the physical, chemical and toxicological characteristics

• If swallowed

Data are not available.

• If in eyes

Causes serious eye damage, risk of blindness

• If inhaled

cough, Dyspnoea

• If on skin

causes skin irritation, May produce an allergic reaction, pruritis, localised redness

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• Other information

none

11.2 Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of $\geq 0,1\%$.

11.3 Information on other hazards

There is no additional information.

SECTION 12: Ecological information

12.1 Toxicity

Toxic to aquatic life with long lasting effects.

| Aquatic toxicity (acute) of components | | | | | |
|--|----------|----------|-------------|-----------------------|---------------|
| Name of substance | CAS No | Endpoint | Value | Species | Exposure time |
| Geranial | 141-27-5 | LC50 | 6,78 mg/l | fish | 96 h |
| Geranial | 141-27-5 | EC50 | 6,8 mg/l | aquatic invertebrates | 48 h |
| Geranial | 141-27-5 | ErC50 | 103,8 mg/l | algae | 72 h |
| Neral | 106-26-3 | LC50 | 6,78 mg/l | fish | 96 h |
| Neral | 106-26-3 | EC50 | 6,8 mg/l | aquatic invertebrates | 48 h |
| Neral | 106-26-3 | ErC50 | 103,8 mg/l | algae | 72 h |
| Geraniol | 106-24-1 | LC50 | 22 mg/l | fish | 96 h |
| Geraniol | 106-24-1 | EC50 | 10,8 mg/l | aquatic invertebrates | 48 h |
| Geraniol | 106-24-1 | ErC50 | 13,1 mg/l | algae | 72 h |
| Geranyl acetate | 105-87-3 | LC50 | 68,12 mg/l | fish | 96 h |
| Geranyl acetate | 105-87-3 | EC50 | 14,1 mg/l | aquatic invertebrates | 48 h |
| Geranyl acetate | 105-87-3 | ErC50 | 3,72 mg/l | algae | 72 h |
| β -Caryophyllene | 87-44-5 | EC50 | >0,17 mg/l | daphnia magna | 48 h |
| β -Caryophyllene | 87-44-5 | ErC50 | >0,033 mg/l | algae | 72 h |
| Camphene | 79-92-5 | LC50 | 0,72 mg/l | fish | 96 h |
| Camphene | 79-92-5 | EC50 | 0,72 mg/l | aquatic invertebrates | 48 h |
| Camphene | 79-92-5 | ErC50 | >1.000 mg/l | algae | 72 h |
| Linalool | 78-70-6 | LC50 | 27,8 mg/l | fish | 96 h |
| Linalool | 78-70-6 | EC50 | 59 mg/l | aquatic invertebrates | 48 h |
| Linalool | 78-70-6 | ErC50 | 156,7 mg/l | algae | 96 h |
| DL- α -Pinene | 80-56-8 | LC50 | 0,303 mg/l | fish | 96 h |
| DL- α -Pinene | 80-56-8 | EC50 | 0,475 mg/l | aquatic invertebrates | 48 h |

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| Aquatic toxicity (chronic) of components | | | | | |
|--|----------|----------|-------------|----------------|---------------|
| Name of substance | CAS No | Endpoint | Value | Species | Exposure time |
| Geranial | 141-27-5 | EC50 | 160 mg/l | microorganisms | 30 min |
| Neral | 106-26-3 | EC50 | 160 mg/l | microorganisms | 30 min |
| Geraniol | 106-24-1 | EC50 | 70 mg/l | microorganisms | 30 min |
| Camphene | 79-92-5 | EC50 | >1.000 mg/l | microorganisms | 3 h |
| Linalool | 78-70-6 | EC50 | >100 mg/l | microorganisms | 30 min |

12.2 Persistence and degradability

2,868 mg/mg

Biodegradation

The substance is readily biodegradable.

| Degradability of components | | | | | | |
|-----------------------------|-----------|------------------|------------------|------|--------|--------|
| Name of substance | CAS No | Process | Degradation rate | Time | Method | Source |
| Geranial | 141-27-5 | oxygen depletion | >90 % | 28 d | | ECHA |
| Neral | 106-26-3 | oxygen depletion | >90 % | 28 d | | ECHA |
| Geraniol | 106-24-1 | DOC removal | 90 – 100 % | 3 d | | ECHA |
| Geranyl acetate | 105-87-3 | oxygen depletion | >70 % | 28 d | | ECHA |
| β-Caryophyllene | 87-44-5 | oxygen depletion | 10 % | 28 d | | ECHA |
| Linalool | 78-70-6 | oxygen depletion | 40,9 % | 5 d | | ECHA |
| L(-)-Limonene | 5989-54-8 | oxygen depletion | 85 % | 28 d | | ECHA |
| DL-α-Pinene | 80-56-8 | oxygen depletion | 68 % | 28 d | | ECHA |

12.3 Bioaccumulative potential

The substance fulfils the very bioaccumulative criterion.

| | |
|---------------------------|-------------|
| n-octanol/water (log KOW) | 2,06 – 6,64 |
|---------------------------|-------------|

| Bioaccumulative potential of components | | | | |
|---|----------|-------|---------------------------|----------|
| Name of substance | CAS No | BCF | Log KOW | BOD5/COD |
| Neral | 106-26-3 | 89,72 | | |
| Geraniol | 106-24-1 | | 2,6 (25 °C) | |
| Geranyl acetate | 105-87-3 | | 4,04 | |
| β-Caryophyllene | 87-44-5 | | 6,23 (pH value: 7, 25 °C) | |

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| Bioaccumulative potential of components | | | | |
|---|-----------|-------|-----------------------------|----------|
| Name of substance | CAS No | BCF | Log KOW | BOD5/COD |
| Camphene | 79-92-5 | | 4,22 (pH value: 7,2, 37 °C) | |
| Linalool | 78-70-6 | | 2,9 (pH value: 7, 20 °C) | |
| Isoeugenol | 97-54-1 | | 2,1 | |
| L-(-)-Limonene | 5989-54-8 | 864,8 | 4,38 (pH value: 7,2, 37 °C) | |
| DL- α -Pinene | 80-56-8 | | 4,83 | |

12.4 Mobility in soil

Data are not available.

12.5 Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

12.6 Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of $\geq 0,1\%$.

12.7 Other adverse effects

Data are not available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods



This material and its container must be disposed of as hazardous waste. Dispose of contents/container in accordance with local/regional/national/international regulations.

Sewage disposal-relevant information

Do not empty into drains. Avoid release to the environment. Refer to special instructions/safety data sheets.

Waste treatment of containers/packagings

It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used. Handle contaminated packages in the same way as the substance itself. Completely emptied packages can be recycled.

13.2 Relevant provisions relating to waste

The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process.

Properties of waste which render it hazardous

HP 4 irritant - skin irritation and eye damage
HP 13 sensitising
HP 14 ecotoxic

13.3 Remarks

Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities. Please consider the relevant national or regional provisions. Non-contaminated packages may be recycled.

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SECTION 14: Transport information

14.1 UN number or ID number

| | |
|-----------|---------|
| ADRRID | UN 3082 |
| IMDG-Code | UN 3082 |
| ICAO-TI | UN 3082 |

14.2 UN proper shipping name

| | |
|----------------|---|
| ADRRID | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. |
| IMDG-Code | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. |
| ICAO-TI | Environmentally hazardous substance, liquid, n.o.s. |
| Technical name | Camphene, L-(-)-Limonene |

14.3 Transport hazard class(es)

| | |
|-----------|---|
| ADRRID | 9 |
| IMDG-Code | 9 |
| ICAO-TI | 9 |

14.4 Packing group

| | |
|-----------|-----|
| ADRRID | III |
| IMDG-Code | III |
| ICAO-TI | III |

14.5 Environmental hazards

hazardous to the aquatic environment

14.6 Special precautions for user

Provisions for dangerous goods (ADR) should be complied within the premises.

14.7 Maritime transport in bulk according to IMO instruments

The cargo is not intended to be carried in bulk.

14.8 Information for each of the UN Model Regulations

Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) Additional information

| | |
|---------------------------------------|--|
| Proper shipping name | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. |
| Particulars in the transport document | UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (Camphene, L-(-)-Limonene, solution), 9, III, (-) |
| Classification code | M6 |
| Danger label(s) | 9, "Fish and tree" |



| | |
|-----------------------|--|
| Environmental hazards | YES (hazardous to the aquatic environment) |
|-----------------------|--|

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| | |
|-------------------------------|--------------------|
| Special provisions (SP) | 274, 335, 375, 601 |
| Excepted quantities (EQ) | E1 |
| Limited quantities (LQ) | 5 L |
| Transport category (TC) | 3 |
| Tunnel restriction code (TRC) | - |
| Hazard identification No | 90 |
| Emergency Action Code | 3Z |

Regulations concerning the International Carriage of Dangerous Goods by Rail (RID) Additional information

| | |
|----------------------------|--------------------|
| Classification code | M6 |
| Danger label(s) | 9, "Fish and tree" |



| | |
|------------------------------|---------------------------|
| Environmental hazards | Yes Hazardous to water |
|------------------------------|---------------------------|

| | |
|---------------------------------|--------------------|
| Special provisions (SP) | 274, 335, 375, 601 |
| Excepted quantities (EQ) | E1 |
| Limited quantities (LQ) | 5 L |
| Transport category (TC) | 3 |
| Hazard identification No | 90 |

International Maritime Dangerous Goods Code (IMDG) - Additional information

| | |
|--|---|
| Proper shipping name | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. |
| Particulars in the shipper's declaration | UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (Camphene, L-(-)-Limonene, solution), 9, III |
| Marine pollutant | YES (hazardous to the aquatic environment), (Camphene) |
| Danger label(s) | 9, "Fish and tree" |



| | |
|--------------------------|---------------|
| Special provisions (SP) | 274, 335, 969 |
| Excepted quantities (EQ) | E1 |
| Limited quantities (LQ) | 5 L |
| EmS | F-A, S-F |
| Stowage category | A |

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International Civil Aviation Organization (ICAO-IATA/DGR) - Additional information

| | |
|--|---|
| Proper shipping name | Environmentally hazardous substance, liquid, n.o.s. |
| Particulars in the shipper's declaration | UN3082, Environmentally hazardous substance, liquid, n.o.s., (Camphene, L-(-)-Limonene, solution), 9, III |
| Environmental hazards | yes (hazardous to the aquatic environment) |
| Danger label(s) | 9, "Fish and tree" |
| | |
| Special provisions (SP) | A97, A158, A197, A215 |
| Excepted quantities (EQ) | E1 |
| Limited quantities (LQ) | 30 kg |

SECTION 15: Regulatory information

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

Relevant provisions of the European Union (EU)

Seveso Directive

| 2012/18/EU (Seveso III) | | | |
|-------------------------|--|---|-------|
| No | Dangerous substance/hazard categories | Qualifying quantity (tonnes) for the application of lower and upper-tier requirements | Notes |
| E2 | environmental hazards (hazardous to the aquatic environment, cat. 2) | 200 500 | 57) |

Notation

57) Hazardous to the Aquatic Environment in category Chronic 2

Deco-Paint Directive

| | |
|-------------|-----------|
| VOC content | 96,1 % |
| VOC content | 864,9 g/l |

Industrial Emissions Directive (IED)

| | |
|-------------|-----------|
| VOC content | 55,7 % |
| VOC content | 501,3 g/l |

Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

not listed

Regulation concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)

not listed

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Water Framework Directive (WFD)

| List of pollutants (WFD) | | | | |
|--------------------------|---|--------|-----------|---------|
| Name of substance | Name acc. to inventory | CAS No | Listed in | Remarks |
| Linalool | Substances and preparations, or the breakdown products of such, which have been proved to possess carcinogenic or mutagenic properties or properties which may affect steroidogenic, thyroid, reproduction or other endocrine-related functions in or via the aquatic environment | | a) | |
| Isoeugenol | Substances and preparations, or the breakdown products of such, which have been proved to possess carcinogenic or mutagenic properties or properties which may affect steroidogenic, thyroid, reproduction or other endocrine-related functions in or via the aquatic environment | | a) | |

Legend

a) Indicative list of the main pollutants

Regulation on the marketing and use of explosives precursors

not listed

Regulation on drug precursors

not listed

Regulation on substances that deplete the ozone layer (ODS)

not listed

Regulation concerning the export and import of hazardous chemicals (PIC)

not listed

Regulation on persistent organic pollutants (POP)

not listed

National regulations(GB)

List of substances subject to authorisation (GB REACH, Annex 14) / SVHC - candidate list

not listed

Restrictions according to GB REACH, Annex 17

| Dangerous substances with restrictions (GB REACH, Annex 17) | | | |
|---|--|--------|----|
| Name of substance | Name acc. to inventory | CAS No | No |
| Oil of lemon-grass | this product meets the criteria for classification in accordance with Regulation No 1272/2008/EC | | 3 |
| L-(-)-Limonene | flammable / pyrophoric | | 40 |
| Camphene | flammable / pyrophoric | | 40 |
| DL- α -Pinene | flammable / pyrophoric | | 40 |

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Other information

Directive 94/33/EC on the protection of young people at work. Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.

National inventories

| Country | Inventory | Status |
|---------|------------|-------------------------------------|
| AU | AIIC | all ingredients are listed |
| CA | DSL | all ingredients are listed |
| CN | IECSC | all ingredients are listed |
| EU | ECSI | all ingredients are listed |
| EU | REACH Reg. | not all ingredients are listed |
| JP | CSCL-ENCS | all ingredients are listed |
| JP | ISHA-ENCS | not all ingredients are listed |
| KR | KECI | not all ingredients are listed |
| MX | INSQ | not all ingredients are listed |
| NZ | NZIoC | all ingredients are listed |
| PH | PICCS | all ingredients are listed |
| TR | CICR | not all ingredients are listed |
| TW | TCSI | not all ingredients are listed |
| US | TSCA | all ingredients are listed (ACTIVE) |
| VN | NCI | all ingredients are listed |

Legend

| | |
|------------|---|
| AIIC | Australian Inventory of Industrial Chemicals |
| CICR | Chemical Inventory and Control Regulation |
| CSCL-ENCS | List of Existing and New Chemical Substances (CSCL-ENCS) |
| DSL | Domestic Substances List (DSL) |
| ECSI | EC Substance Inventory (EINECS, ELINCS, NLP) |
| IECSC | Inventory of Existing Chemical Substances Produced or Imported in China |
| INSQ | National Inventory of Chemical Substances |
| ISHA-ENCS | Inventory of Existing and New Chemical Substances (ISHA-ENCS) |
| KECI | Korea Existing Chemicals Inventory |
| NCI | National Chemical Inventory |
| NZIoC | New Zealand Inventory of Chemicals |
| PICCS | Philippine Inventory of Chemicals and Chemical Substances (PICCS) |
| REACH Reg. | REACH registered substances |
| TCSI | Taiwan Chemical Substance Inventory |
| TSCA | Toxic Substance Control Act |

15.2 Chemical safety assessment

No Chemical Safety Assessment has been carried out for this substance.

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SECTION 16: Other information

Indication of changes (revised safety data sheet)

| Section | Former entry (text/value) | Actual entry (text/value) | Safety-relevant |
|---------|---|--|-----------------|
| 1.1 | EC number: 295-161-9 943-552-6 | EC number: 616-903-3 | yes |
| 1.1 | CAS number: 8007-02-1 91844-92-7 | CAS number: 8007-02-1 | yes |
| 2.2 | Labelling of packages where the contents do not exceed 125 ml: Signal word: Danger | | yes |
| 2.2 | | Labelling of packages where the contents do not exceed 125 ml: change in the listing (table) | yes |
| 2.2 | | Labelling of packages where the contents do not exceed 125 ml: change in the listing (table) | yes |
| 2.2 | | Labelling of packages where the contents do not exceed 125 ml: change in the listing (table) | yes |
| 2.2 | contains: Isoeugenol, Geraniol, Geranial, Neral, Geranyl acetate, β -Caryophyllene, Linalool, L-Limonene, DL- α -Pinene | | yes |
| 2.3 | | Endocrine disrupting properties: Does not contain an endocrine disruptor (ED) at a concentration of $\geq 0,1\%$. | yes |
| 14.2 | Technical name: Geranyl acetate, Camphene | Technical name: Camphene, L-(-)-Limonene | yes |
| 14.8 | | Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. | yes |
| 14.8 | | Particulars in the transport document: UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (Camphene, L-(-)-Limonene, solution), 9, III, (-) | yes |
| 14.8 | | Regulations concerning the International Carriage of Dangerous Goods by Rail (RID)Additional information | yes |
| 14.8 | | Classification code: M6 | yes |
| 14.8 | | Danger label(s): 9, "Fish and tree" | yes |
| 14.8 | | Danger label(s): change in the listing (table) | yes |
| 14.8 | | Environmental hazards: Yes Hazardous to water | yes |
| 14.8 | | Special provisions (SP): 274, 335, 375, 601 | yes |

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| Section | Former entry (text/value) | Actual entry (text/value) | Safety-relevant |
|---------|---|--|-----------------|
| 14.8 | | Exempted quantities (EQ): E1 | yes |
| 14.8 | | Limited quantities (LQ): 5 L | yes |
| 14.8 | | Transport category (TC): 3 | yes |
| 14.8 | | Hazard identification No: 90 | yes |
| 14.8 | | Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. | yes |
| 14.8 | | Particulars in the shipper's declaration: UN3082, ENVIRONMENTALLY HAZARDOUS SUB- STANCE, LIQUID, N.O.S., (Camphene, L-(-)-Limonene, solution), 9, III | yes |
| 14.8 | Marine pollutant: yes (hazardous to the aquatic environment), (Geranyl acetate) | Marine pollutant: yes (hazardous to the aquatic environment), (Camphene) | yes |
| 14.8 | | Proper shipping name: Environmentally hazardous substance, liquid, n.o.s. | yes |
| 14.8 | | Particulars in the shipper's declaration: UN3082, Environmentally hazardous substance, liquid, n.o.s., (Camphene, L-(-)-Limonene, solu- tion), 9, III | yes |
| 14.8 | Special provisions (SP): A97, A158, A197 | Special provisions (SP): A97, A158, A197, A215 | yes |
| 15.1 | Restrictions according to REACH, Annex XVII | | yes |
| 15.1 | | Dangerous substances with restrictions (REACH, Annex XVII): change in the listing (table) | yes |
| 15.1 | List of substances subject to authorisation (REACH, Annex XIV)/SVHC - candidate list: Not listed. | | yes |
| 15.1 | VOC content: 96,1 % 864,9 g/l | VOC content: 96,1 % | yes |
| 15.1 | | VOC content: 864,9 g/l | yes |
| 15.1 | | List of pollutants (WFD): change in the listing (table) | yes |
| 15.1 | | Regulation on persistent organic pollutants (POP): not listed | yes |
| 15.1 | | National regulations(GB) | yes |
| 15.1 | | List of substances subject to authorisation (GB REACH, Annex 14) / SVHC - candidate list: not listed | yes |
| 15.1 | | Restrictions according to GB REACH, Annex 17 | yes |

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| Section | Former entry (text/value) | Actual entry (text/value) | Safety-relevant |
|---------|---------------------------|--|-----------------|
| 15.1 | | Dangerous substances with restrictions (GB REACH, Annex 17): change in the listing (table) | yes |
| 15.1 | | Other information: Directive 94/33/EC on the protection of young people at work. Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers. | yes |
| 15.1 | | National inventories: change in the listing (table) | yes |

Abbreviations and acronyms

| Abbr. | Descriptions of used abbreviations |
|-----------|---|
| ADR | Accord relatif au transport international des marchandises dangereuses par route (Agreement concerning the International Carriage of Dangerous Goods by Road) |
| ATE | Acute Toxicity Estimate |
| BCF | Bioconcentration factor |
| BOD | Biochemical Oxygen Demand |
| CAS | Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances) |
| Ceiling-C | Ceiling value |
| COD | Chemical oxygen demand |
| DGR | Dangerous Goods Regulations (see IATA/DGR) |
| DNEL | Derived No-Effect Level |
| EC50 | Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval |
| EC No | The EC Inventory (EINECS, ELINCS and the NLP-list) is the source for the seven-digit EC number, an identifier of substances commercially available within the EU (European Union) |
| ED | Endocrine disruptor |
| EH40/2005 | EH40/2005 Workplace exposure limits (http://www.nationalarchives.gov.uk/doc/open-government-licence/) |
| EINECS | European Inventory of Existing Commercial Chemical Substances |
| ELINCS | European List of Notified Chemical Substances |
| EmS | Emergency Schedule |
| ErC50 | ≡ EC50: in this method, that concentration of test substance which results in a 50 % reduction in either growth (EbC50) or growth rate (ErC50) relative to the control |
| GB REACH | The REACH etc. (Amendment etc.) (EU Exit) Regulations 2019, SI 2019/758 (as amended) |
| GHS | "Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations |
| IATA | International Air Transport Association |
| IATA/DGR | Dangerous Goods Regulations (DGR) for the air transport (IATA) |
| ICAO | International Civil Aviation Organization |

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| Abbr. | Descriptions of used abbreviations |
|-----------|---|
| ICAO-TI | Technical instructions for the safe transport of dangerous goods by air |
| IMDG | International Maritime Dangerous Goods Code |
| IMDG-Code | International Maritime Dangerous Goods Code |
| index No | The Index number is the identification code given to the substance in Part 3 of Annex VI to Regulation (EC) No 1272/2008 |
| LC50 | Lethal Concentration 50%: the LC50 corresponds to the concentration of a tested substance causing 50 % lethality during a specified time interval |
| LD50 | Lethal Dose 50 %: the LD50 corresponds to the dose of a tested substance causing 50 % lethality during a specified time interval |
| log KOW | n-Octanol/water |
| NLP | No-Longer Polymer |
| PBT | Persistent, Bioaccumulative and Toxic |
| PNEC | Predicted No-Effect Concentration |
| ppm | Parts per million |
| REACH | Registration, Evaluation, Authorisation and Restriction of Chemicals |
| RID | Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail) |
| STEL | Short-term exposure limit |
| TWA | Time-weighted average |
| VOC | Volatile Organic Compounds |
| vPvB | Very Persistent and very Bioaccumulative |
| WEL | Workplace exposure limit |

Key literature references and sources for data

Agreement concerning the International Carriage of Dangerous Goods by Road (ADR). Regulations concerning the International Carriage of Dangerous Goods by Rail (RID). International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

List of relevant phrases (code and full text as stated in section 2 and 3)

| Code | Text |
|------|--|
| H315 | Causes skin irritation. |
| H317 | May cause an allergic skin reaction. |
| H318 | Causes serious eye damage. |
| H411 | Toxic to aquatic life with long lasting effects. |

Disclaimer

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.