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

1.1 Product identifier

Identification of the substance
n-Hexane

Article number
7567

Registration number (REACH)
01-2119480412-44-xxxx

Index No
601-037-00-0

EC number
203-777-6

CAS number
110-54-3

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

Identified uses:
laboratory chemical
laboratory and analytical use

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

1.4 Emergency telephone number

<table>
<thead>
<tr>
<th>Name</th>
<th>Street</th>
<th>Postal code/city</th>
<th>Telephone</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloemfontein Poison Control</td>
<td>205 Nelson Mandela Drive</td>
<td>9300 Bloemfontein</td>
<td>+27 824 910 160</td>
<td></td>
</tr>
<tr>
<td>and Medicine Information</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Centre University of the Free</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification acc. to GHS

<table>
<thead>
<tr>
<th>Classification acc. to GHS</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Section</th>
<th>Hazard class</th>
<th>Hazard class and category</th>
<th>Hazard statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.6</td>
<td>flammable liquid</td>
<td>(Flam. Liq. 2)</td>
<td>H225</td>
</tr>
</tbody>
</table>

South Africa (en)
Classification acc. to GHS

<table>
<thead>
<tr>
<th>Section</th>
<th>Hazard class</th>
<th>Hazard class and category</th>
<th>Hazard statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1D</td>
<td>acute toxicity (dermal)</td>
<td>(Acute Tox. 5)</td>
<td>H313</td>
</tr>
<tr>
<td>3.2</td>
<td>skin corrosion/irritation</td>
<td>(Skin Irrit. 2)</td>
<td>H315</td>
</tr>
<tr>
<td>3.7</td>
<td>reproductive toxicity</td>
<td>(Repr. 2)</td>
<td>H361f</td>
</tr>
<tr>
<td>3.8D</td>
<td>specific target organ toxicity - single exposure (narcotic effects, drowsiness)</td>
<td>(STOT SE 3)</td>
<td>H336</td>
</tr>
<tr>
<td>3.9</td>
<td>specific target organ toxicity - repeated exposure</td>
<td>(STOT RE 2)</td>
<td>H373</td>
</tr>
<tr>
<td>3.10</td>
<td>aspiration hazard</td>
<td>(Asp. Tox. 1)</td>
<td>H304</td>
</tr>
<tr>
<td>4.1A</td>
<td>hazardous to the aquatic environment - acute hazard</td>
<td>(Aquatic Acute 3)</td>
<td>H402</td>
</tr>
<tr>
<td>4.1C</td>
<td>hazardous to the aquatic environment - chronic hazard</td>
<td>(Aquatic Chronic 3)</td>
<td>H412</td>
</tr>
</tbody>
</table>

The most important adverse physicochemical, human health and environmental effects
Narcotic effects.

2.2 Label elements

Labelling GHS

Signal word Danger

Pictograms

GHS02, GHS07, GHS08

Hazard statements

H225 Highly flammable liquid and vapour
H304 May be fatal if swallowed and enters airways
H313 May be harmful in contact with skin
H315 Causes skin irritation
H336 May cause drowsiness or dizziness
H361f Suspected of damaging fertility
H373 May cause damage to organs (nervous system) through prolonged or repeated exposure (if inhaled)
H412 Harmful to aquatic life with long lasting effects

Precautionary statements

Precautionary statements - prevention
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Use explosion-proof [electrical/ventilating/lighting/...] equipment. Use non-sparking tools. Take action to prevent static discharges. Do not breathe dust/fume/gas/mist/vapours/spray. Avoid breathing dust/fume/gas/mist/vapours/spray. Wash ... thoroughly after handling. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection. IF SWALLOWED: Immediately call a POISON CENTER/doctor. IF ON SKIN: Wash with plenty of water. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF exposed or concerned: Get medical advice/attention. IF INHALED: Call a POISON CENTER/doctor if you feel unwell. Get medical advice/attention if you feel unwell. Specific treatment (see ... on this label). Do NOT induce vomiting. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse. In case of fire: Use carbon dioxide, powder extinguisher or water spray to extinguish. Collect spillage.


Dispose of contents/container in accordance with local/regional/national/international regulations.
2.3 Other hazards
There is no additional information.

SECTION 3: Composition/information on ingredients

3.1 Substances

<table>
<thead>
<tr>
<th>Name of substance</th>
<th>n-Hexane</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index No</td>
<td>601-037-00-0</td>
</tr>
<tr>
<td>Registration number (REACH)</td>
<td>01-2119480412-44-xxxx</td>
</tr>
<tr>
<td>EC number</td>
<td>203-777-6</td>
</tr>
<tr>
<td>CAS number</td>
<td>110-54-3</td>
</tr>
<tr>
<td>Molecular formula</td>
<td>C₆H₁₄</td>
</tr>
<tr>
<td>Molar mass</td>
<td>86.18 g/mol</td>
</tr>
</tbody>
</table>

SECTION 4: First aid measures

4.1 Description of first aid measures

General notes
Take off contaminated clothing.

Following inhalation
Remove person to fresh air and keep comfortable for breathing. In all cases of doubt, or when symptoms persist, seek medical advice.

Following skin contact
Rinse skin with water/shower. In case of skin irritation, consult a physician.

Following eye contact
Rinse cautiously with water for several minutes. Consult an ophthalmologist.

Following ingestion
Rinse mouth. Do not induce vomiting. Aspiration hazard. Call a physician immediately.

4.2 Most important symptoms and effects, both acute and delayed
Irritation, Dizziness, Drowsiness, Nausea, Vomiting, Corneal opacity, Narcosis, Aspiration hazard

4.3 Indication of any immediate medical attention and special treatment needed
none
SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Co-ordinate fire-fighting measures to the fire surroundings
water spray, foam, dry extinguishing powder, carbon dioxide (CO2)

Unsuitable extinguishing media
water jet

5.2 Special hazards arising from the substance or mixture
Combustible. Vapours can form explosive mixtures with air.

Hazardous combustion products
In case of fire may be liberated: carbon monoxide (CO), carbon dioxide (CO2)

5.3 Advice for firefighters
Vapours are heavier than air. Fight fire with normal precautions from a reasonable distance. Wear self-contained breathing apparatus. Do not allow firefighting water to enter drains or water courses.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel
Do not breathe vapour/spray. Avoid contact with skin and eyes. Use personal protective equipment as required. Avoidance of ignition sources.

6.2 Environmental precautions
Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it. Explosive properties.

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 (e.g. 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
n-Hexane ROTISOLV® ≥96 %, Pestilyse® plus

article number: 7567

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Provide adequate ventilation as well as local exhaustion at critical locations. When not in use, keep containers tightly closed.

**Measures to prevent fire as well as aerosol and dust generation**

Keep away from sources of ignition - No smoking.

Take precautionary measures against static discharge. Due to danger of explosion, prevent leakage of vapours into cellars, flues and ditches.

**Advice on general occupational hygiene**

Wash hands before breaks and after work. When using do not smoke.

7.2 Conditions for safe storage, including any incompatibilities

Store in a well-ventilated place. Keep container tightly closed.

**Incompatible substances or mixtures**

Observe hints for combined storage.

**Consideration of other advice**

Ground/bond container and receiving equipment.

**Ventilation requirements**

Use local and general ventilation.

**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)**

<table>
<thead>
<tr>
<th>Country</th>
<th>Name of agent</th>
<th>CAS No</th>
<th>Notation</th>
<th>Identifier</th>
<th>TWA [ppm]</th>
<th>TWA [mg/m³]</th>
<th>STEL [ppm]</th>
<th>STEL [mg/m³]</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZA</td>
<td>n-hexane</td>
<td>110-54-3</td>
<td>OEL (DME)</td>
<td>20</td>
<td>70</td>
<td></td>
<td></td>
<td></td>
<td>DME</td>
</tr>
<tr>
<td>ZA</td>
<td>n-hexane</td>
<td>110-54-3</td>
<td>OEL (DoL)</td>
<td>20</td>
<td>70</td>
<td></td>
<td></td>
<td></td>
<td>DoL-OEL</td>
</tr>
</tbody>
</table>

**Notation**

- STEL: 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)
Biological limit values

<table>
<thead>
<tr>
<th>Country</th>
<th>Name of agent</th>
<th>Parameter</th>
<th>Notation</th>
<th>Identifier</th>
<th>Value</th>
<th>Material</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZA</td>
<td>n-hexane</td>
<td>2,5-hexanedione</td>
<td>crea</td>
<td>BEI</td>
<td>5 mg/g</td>
<td>urine</td>
<td>DoL-BEI</td>
</tr>
</tbody>
</table>

Relevant DNELs/DMELs/PNECs and other threshold levels

• human health values

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Threshold level</th>
<th>Protection goal, route of exposure</th>
<th>Used in</th>
<th>Exposure time</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNEL</td>
<td>75 mg/m³</td>
<td>human, inhalatory</td>
<td>worker (industry)</td>
<td>chronic - systemic effects</td>
</tr>
<tr>
<td>DNEL</td>
<td>11 mg/kg bw/ day</td>
<td>human, dermal</td>
<td>worker (industry)</td>
<td>chronic - systemic effects</td>
</tr>
</tbody>
</table>

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

NBR (Nitrile rubber)

• material thickness

≥0.4 mm

• 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. Flame-retardant protective clothing.
Respiratory protection
Respiratory protection necessary at: Aerosol or mist formation. Type: A (against organic gases and va-
pours with a boiling point of > 65 °C , colour code: Brown).

Environmental exposure controls
Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance
Physical state liquid (fluid)
Colour colourless
Odour like: Gasoline
Odour threshold No data available

Other physical and chemical parameters
pH (value) This information is not available.
Melting point/freezing point -95 °C at 1,013 hPa
Initial boiling point and boiling range 68 – 69 °C at 1,013 hPa
Flash point -22 °C at 1,013 hPa
Evaporation rate no data available
Flammability (solid, gas) not relevant (fluid)

Explosive limits
• lower explosion limit (LEL) 1.1 vol%
• upper explosion limit (UEL) 7.5 vol%

Explosion limits of dust clouds not relevant

Vapour pressure 160 hPa at 20 °C
Density 0.66 g/cm³ at 20 °C
Vapour density 2.79 (air = 1)
Bulk density Not applicable
Relative density Information on this property is not available.

Solubility(ies)
Water solubility <0.1 g/l at 20 °C

Partition coefficient
n-octanol/water (log KOW) 4 (pH value: 7, 20 °C) (ECHA)
Soil organic carbon/water (log KOC) 3.34 (ECHA)
Auto-ignition temperature 225 °C - ECHA
Decomposition temperature no data available
n-Hexane ROTISOLV® ≥96 %, Pestilyse® plus

article number: 7567

Viscosity

• kinematic viscosity 0.5 mm²/s at 20 °C
• dynamic viscosity 0.33 mPa s at 20 °C

Explosive properties

Shall not be classified as explosive

Oxidising properties

none

SECTION 10: Stability and reactivity

10.1 Reactivity
Risk of ignition. Vapours can 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: Peroxides, Chlorine, Iodine, Strong oxidiser, Nitrogen oxides (NOx), => Explosive properties

10.4 Conditions to avoid
Keep away from heat.

10.5 Incompatible materials
plastic and rubber

10.6 Hazardous decomposition products
Hazardous combustion products: see section 5.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

<table>
<thead>
<tr>
<th>Exposure route</th>
<th>Endpoint</th>
<th>Value</th>
<th>Species</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>inhalation: vapour</td>
<td>LC50</td>
<td>176 mg/l/4h</td>
<td>rat</td>
<td>RTECS</td>
</tr>
<tr>
<td>oral</td>
<td>LD50</td>
<td>25,000 mg/kg</td>
<td>rat</td>
<td>TOXNET</td>
</tr>
<tr>
<td>dermal</td>
<td>LD50</td>
<td>&gt;2,000 mg/kg</td>
<td>rabbit</td>
<td>ECHA</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation
Causes skin irritation.

Serious eye damage/eye irritation
Shall not be classified as seriously damaging to the eye or eye irritant.

Respiratory or skin sensitisation
Shall not be classified as a respiratory or skin sensitiser.

Summary of evaluation of the CMR properties

Reproductive toxicity:
Suspected of damaging fertility
• Specific target organ toxicity - single exposure
May cause drowsiness or dizziness.

• Specific target organ toxicity - repeated exposure
May cause damage to organs (nervous system) through prolonged or repeated exposure (if inhaled).

Aspiration hazard
May be fatal if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics
• If swallowed
nausea, vomiting, aspiration hazard
• If in eyes
Irritating to eyes, corneal opacity
• If inhaled
Irritation to respiratory tract, fatigue, narcosis
• If on skin
causes skin irritation

Other information
None

SECTION 12: Ecological information

12.1 Toxicity
Harmful to aquatic life. Harmful to aquatic life with long lasting effects.

Aquatic toxicity (acute)
Harmful to aquatic organisms.

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Value</th>
<th>Species</th>
<th>Source</th>
<th>Exposure time</th>
</tr>
</thead>
<tbody>
<tr>
<td>LL50</td>
<td>12.51 mg/l</td>
<td>fish</td>
<td>ECHA</td>
<td>96 h</td>
</tr>
<tr>
<td>EL50</td>
<td>21.85 mg/l</td>
<td>aquatic invertebrates</td>
<td>ECHA</td>
<td>48 h</td>
</tr>
</tbody>
</table>

Aquatic toxicity (chronic)
May cause long-term adverse effects in the aquatic environment.

12.2 Process of degradability
The substance is readily biodegradable.
Theoretical Oxygen Demand: 3.527 mg/mg
Theoretical Carbon Dioxide: 3.064 mg/mg

<table>
<thead>
<tr>
<th>Process</th>
<th>Degradation rate</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>oxygen depletion</td>
<td>83 %</td>
<td>10 d</td>
</tr>
</tbody>
</table>

12.3 Bioaccumulative potential
The substance fulfills the very bioaccumulative criterion.
n-octanol/water (log KOW) 4 (pH value: 7, 20 °C)
BCF 501.2 (ECHA)
n-Hexane ROTISOLV® ≥96 %, Pestilyse® plus

article number: 7567

12.4 Mobility in soil

The Organic Carbon normalised adsorption coefficient 3.34

12.5 Results of PBT and vPvB assessment

Data are not available.

12.6 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.

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.

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.

SECTION 14: Transport information

14.1 UN number 1208

14.2 UN proper shipping name HEXANES

Hazardous ingredients n-Hexane

14.3 Transport hazard class(es)

Class 3 (flammable liquids)

14.4 Packing group II (substance presenting medium danger)

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 Transport in bulk according to Annex II of MARPOL and the IBC Code

The cargo is not intended to be carried in bulk.
14.8 Information for each of the UN Model Regulations

• Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN)

<table>
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<tr>
<th>Description</th>
<th>Details</th>
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</thead>
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<tr>
<td>UN number</td>
<td>1208</td>
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<tr>
<td>Proper shipping name</td>
<td>HEXANES</td>
</tr>
<tr>
<td>Particulars in the transport document</td>
<td>UN1208, HEXANES, 3, II, (D/E), environmentally hazardous</td>
</tr>
<tr>
<td>Class</td>
<td>3</td>
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<tr>
<td>Classification code</td>
<td>F1</td>
</tr>
<tr>
<td>Packing group</td>
<td>II</td>
</tr>
<tr>
<td>Danger label(s)</td>
<td>3 + &quot;fish and tree&quot;</td>
</tr>
<tr>
<td>Environmental hazards</td>
<td>yes (hazardous to the aquatic environment)</td>
</tr>
<tr>
<td>Excepted quantities (EQ)</td>
<td>E2</td>
</tr>
<tr>
<td>Limited quantities (LQ)</td>
<td>1 L</td>
</tr>
<tr>
<td>Transport category (TC)</td>
<td>2</td>
</tr>
<tr>
<td>Tunnel restriction code (TRC)</td>
<td>D/E</td>
</tr>
<tr>
<td>Hazard identification No</td>
<td>33</td>
</tr>
</tbody>
</table>

• International Maritime Dangerous Goods Code (IMDG)

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
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<tbody>
<tr>
<td>UN number</td>
<td>1208</td>
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<tr>
<td>Proper shipping name</td>
<td>HEXANES</td>
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<tr>
<td>Particulars in the shipper’s declaration</td>
<td>UN1208, HEXANES, 3, II, -22°C c.c., MARINE POLLUTANT</td>
</tr>
<tr>
<td>Class</td>
<td>3</td>
</tr>
<tr>
<td>Marine pollutant</td>
<td>yes (P) (hazardous to the aquatic environment)</td>
</tr>
<tr>
<td>Packing group</td>
<td>II</td>
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<tr>
<td>Danger label(s)</td>
<td>3 + &quot;fish and tree&quot;</td>
</tr>
<tr>
<td>Special provisions (SP)</td>
<td>-</td>
</tr>
<tr>
<td>Excepted quantities (EQ)</td>
<td>E2</td>
</tr>
<tr>
<td>Limited quantities (LQ)</td>
<td>1 L</td>
</tr>
<tr>
<td>EmS</td>
<td>F-E, S-D</td>
</tr>
<tr>
<td>Stowage category</td>
<td>E</td>
</tr>
</tbody>
</table>

• International Civil Aviation Organization (ICAO-IATA/DGR)

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN number</td>
<td>1208</td>
</tr>
</tbody>
</table>
n-Hexane ROTISOLV® ≥96 %, Pestilyse® plus

article number: 7567

Proper shipping name Hexanes

Particulars in the shipper’s declaration UN1208, Hexanes, 3, II

Class 3

Environmental hazards yes (hazardous to the aquatic environment)

Packing group II

Danger label(s) 3

Excepted quantities (EQ) E2

Limited quantities (LQ) 1 L

SECTION 15: Regulatory information

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

National inventories

Substance is listed in the following national inventories:

<table>
<thead>
<tr>
<th>Country</th>
<th>National Inventories</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>AU</td>
<td>AICS</td>
<td>substance is listed</td>
</tr>
<tr>
<td>CA</td>
<td>DSL</td>
<td>substance is listed</td>
</tr>
<tr>
<td>CN</td>
<td>IECSC</td>
<td>substance is listed</td>
</tr>
<tr>
<td>EU</td>
<td>ECSI</td>
<td>substance is listed</td>
</tr>
<tr>
<td>EU</td>
<td>REACH Reg.</td>
<td>substance is listed</td>
</tr>
<tr>
<td>JP</td>
<td>CSCL-ENCS</td>
<td>substance is listed</td>
</tr>
<tr>
<td>KR</td>
<td>KECI</td>
<td>substance is listed</td>
</tr>
<tr>
<td>MX</td>
<td>INSQ</td>
<td>substance is listed</td>
</tr>
<tr>
<td>NZ</td>
<td>NZIoC</td>
<td>substance is listed</td>
</tr>
<tr>
<td>PH</td>
<td>PICCS</td>
<td>substance is listed</td>
</tr>
<tr>
<td>TR</td>
<td>CICR</td>
<td>substance is listed</td>
</tr>
<tr>
<td>TW</td>
<td>TCSI</td>
<td>substance is listed</td>
</tr>
<tr>
<td>US</td>
<td>TSCA</td>
<td>substance is listed</td>
</tr>
</tbody>
</table>

Legend

AICS Australian Inventory of Chemical Substances
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
KECI Korea Existing Chemicals Inventory
NZIoC New Zealand Inventory of Chemicals
PICCS Philippine Inventory of Chemicals and Chemical Substances
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.

16.1 Indication of changes (revised safety data sheet)

<table>
<thead>
<tr>
<th>Section</th>
<th>Former entry (text/value)</th>
<th>Actual entry (text/value)</th>
<th>Safety-relevant</th>
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</thead>
<tbody>
<tr>
<td>2.2</td>
<td>Pictograms: change in the listing (table)</td>
<td>yes</td>
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<tr>
<td>2.2</td>
<td>Labelling of packages where the contents do not exceed 125 ml: change in the listing (table)</td>
<td>yes</td>
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<td>8.1</td>
<td>Biological limit values: change in the listing (table)</td>
<td>yes</td>
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</table>

Abbreviations and acronyms

<table>
<thead>
<tr>
<th>Abbr.</th>
<th>Descriptions of used abbreviations</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADN</td>
<td>Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)</td>
</tr>
<tr>
<td>ADR</td>
<td>Accord européen relatif au transport international des marchandises dangereuses par route (European Agreement concerning the International Carriage of Dangerous Goods by Road)</td>
</tr>
<tr>
<td>BCF</td>
<td>bioconcentration factor</td>
</tr>
<tr>
<td>CAS</td>
<td>Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)</td>
</tr>
<tr>
<td>CMR</td>
<td>Carcinogenic, Mutagenic or toxic for Reproduction</td>
</tr>
<tr>
<td>DGR</td>
<td>Dangerous Goods Regulations (see IATA/DGR)</td>
</tr>
<tr>
<td>DME</td>
<td>Department of Minerals and Energy: Mine Health and Safety Act, 1996 (Occupational Exposure Limits for Airborne Pollutants)</td>
</tr>
<tr>
<td>DMEL</td>
<td>Derived Minimal Effect Level</td>
</tr>
<tr>
<td>DNEL</td>
<td>Derived No-Effect Level</td>
</tr>
<tr>
<td>DoL-BEI</td>
<td>Department of Labour: Hazardous Chemical Substances Regulations, 1995 (Biological Exposure Indices)</td>
</tr>
<tr>
<td>DoL-OEL</td>
<td>Department of Labour: Hazardous Chemical Substances Regulations, 1995 (Occupational Exposure Limits - Control Limits/Recommended Limits)</td>
</tr>
<tr>
<td>EINECS</td>
<td>European Inventory of Existing Commercial Chemical Substances</td>
</tr>
<tr>
<td>EL50</td>
<td>Effective Loading 50 %: the EL50 corresponds to the loading rate required to produce a response in 50% of the test organisms</td>
</tr>
<tr>
<td>ELINCS</td>
<td>European List of Notified Chemical Substances</td>
</tr>
<tr>
<td>EmS</td>
<td>Emergency Schedule</td>
</tr>
<tr>
<td>GHS</td>
<td>&quot;Globally Harmonized System of Classification and Labelling of Chemicals&quot; developed by the United Nations</td>
</tr>
<tr>
<td>IATA</td>
<td>International Air Transport Association</td>
</tr>
<tr>
<td>IATA/DGR</td>
<td>Dangerous Goods Regulations (DGR) for the air transport (IATA)</td>
</tr>
<tr>
<td>ICAO</td>
<td>International Civil Aviation Organization</td>
</tr>
<tr>
<td>IMDG</td>
<td>International Maritime Dangerous Goods Code</td>
</tr>
<tr>
<td>index No</td>
<td>the Index number is the identification code given to the substance in Part 3 of Annex VI to Regulation (EC) No 1272/2008</td>
</tr>
</tbody>
</table>


**Abbr.** | **Descriptions of used abbreviations**
--- | ---
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
LL50 | Lethal Loading 50 %; the LL50 corresponds to the loading rate causing 50 % lethality
MARPOL | International Convention for the Prevention of Pollution from Ships (abbr. of "Marine Pollutant")
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
vPvB | very Persistent and very Bioaccumulative

**Key literature references and sources for data**
- UN Recommendations on the Transport of Dangerous Good
- Dangerous Goods Regulations (DGR) for the air transport (IATA)
- International Maritime Dangerous Goods Code (IMDG)

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

| Code | Text |
--- | --- |
H225 | highly flammable liquid and vapour |
H304 | may be fatal if swallowed and enters airways |
H313 | may be harmful in contact with skin |
H315 | causes skin irritation |
H336 | may cause drowsiness or dizziness |
H361f | suspected of damaging fertility |
H373 | may cause damage to organs (nervous system) through prolonged or repeated exposure (if inhaled) |
H402 | harmful to aquatic life |
H412 | harmful to aquatic life with long lasting effects |

**Disclaimer**

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.