SECTION 1: Identification

1.1 Product identifier

Identification of the substance  
n-Heptane

Article number  
X878

Registration number (REACH)  
01-2119457603-38-xxxx

Index No  
601-008-00-2

EC number  
205-563-8

CAS number  
142-82-5

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

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>
</table>
| Poison and Drug Information Services  
Foothills Medical Centre 1403 | 29th Street N.W.  
T2N 2T9 Calgary | +1 403 944 1414 |                        |                           |

Emergency information service  
+49/(0)89 19240

SECTION 2: Hazard(s) identification

2.1 Classification of the substance or mixture

Classification Hazardous Products Regulations

<table>
<thead>
<tr>
<th>Classification acc. to GHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section</td>
</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>2.6</td>
</tr>
<tr>
<td>3.2</td>
</tr>
</tbody>
</table>
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>3.8D</td>
<td>specific target organ toxicity - single exposure (narcotic effects, drowsiness)</td>
<td>(STOT SE 3)</td>
<td>H336</td>
</tr>
<tr>
<td>3.10</td>
<td>aspiration hazard</td>
<td>(Asp. Tox. 1)</td>
<td>H304</td>
</tr>
</tbody>
</table>

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

2.2 Label elements
Labeling 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
H315   Causes skin irritation
H336   May cause drowsiness or dizziness

Precautionary statements

Precautionary statements - prevention
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Precautionary statements - response
IF SWALLOWED: Immediately call a POISON CENTER/doctor.
IF ON SKIN: Wash with plenty of soap and water.
Do NOT induce vomiting.
In case of fire: Use sand, carbon dioxide or powder extinguisher to extinguish.

Precautionary statements - storage
Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.

Labelling of packages where the contents do not exceed 125 ml
Signal word: Danger
Symbol(s)

H304   May be fatal if swallowed and enters airways.

IF SWALLOWED: Immediately call a POISON CENTER/doctor.
Do NOT induce vomiting.
Safety data sheet
Hazardous Products Regulations (HPR)
n-Heptane ROTISOLV® ≥99 %, Pestilyse®
article number: X878

2.3 Other hazards
There is no additional information.

SECTION 3: Composition/information on ingredients

3.1 Substances

Name of substance: n-Heptane
Index No: 601-008-00-2
Registration number (REACH): 01-2119457603-38-xxxx
EC number: 205-563-8
CAS number: 142-82-5
Molecular formula: C₇H₁₆
Molar mass: 100.2 g/mol

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. In case of skin irritation, consult a physician.

Following eye contact
Rinse cautiously with water for several minutes. In all cases of doubt, or when symptoms persist, seek medical advice.

Following ingestion
Do NOT induce vomiting. Call a physician immediately. Observe aspiration hazard if vomiting occurs.

4.2 Most important symptoms and effects, both acute and delayed
Aspiration hazard, Irritation, Headache, Vertigo, Dizziness, Drowsiness, Narcosis

4.3 Indication of any immediate medical attention and special treatment needed
none
SECTION 5: Fire-fighting 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 are heavier than air, spread along floors and 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
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
Wear personal protective equipment/face protection. Avoid contact with skin, eyes and clothes. Do not breathe vapor/spray. Avoidance of ignition sources.

6.2 Environmental precautions
Keep away from drains, surface and ground water. 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
SECTION 7: Handling and storage

7.1 Precautions for safe handling
Provision of sufficient ventilation. Use extractor hood (laboratory).

- 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.

- 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. 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 compatible storage of chemicals.

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>CA</td>
<td>heptane (n-heptane)</td>
<td>142-82-5</td>
<td>OEL (BC)</td>
<td>400</td>
<td>500</td>
<td></td>
<td></td>
<td></td>
<td>&quot;BC Regulation&quot;</td>
</tr>
<tr>
<td>CA</td>
<td>n-heptane</td>
<td>142-82-5</td>
<td>OEL (AB)</td>
<td>400</td>
<td>1,640</td>
<td>500</td>
<td>2,050</td>
<td>OHS Code</td>
<td></td>
</tr>
<tr>
<td>CA</td>
<td>n-heptane</td>
<td>142-82-5</td>
<td>PEV/VEA</td>
<td>400</td>
<td>1,640</td>
<td>500</td>
<td>2,050</td>
<td>Regulation OHS</td>
<td></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-
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 vapors with a boiling point of > 65 °C , color 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

<table>
<thead>
<tr>
<th>Physical state</th>
<th>liquid (fluid)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>colorless</td>
</tr>
<tr>
<td>Odor</td>
<td>like: Gasoline</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No data available</td>
</tr>
</tbody>
</table>

Other physical and chemical parameters

<table>
<thead>
<tr>
<th>pH (value)</th>
<th>This information is not available.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melting point/freezing point</td>
<td>-90.5 °C</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>98.2 – 98.4 °C at 100 kPa</td>
</tr>
<tr>
<td>Flash point</td>
<td>-4 °C</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>no data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>not relevant (fluid)</td>
</tr>
</tbody>
</table>

Explosive limits

- lower explosion limit (LEL) 0.84 vol%
- upper explosion limit (UEL) 6.7 vol%

Explosion limits of dust clouds not relevant

Vapor pressure 6.09 kPa at 25 °C

Density 0.69 g/cm³ at 15 °C

Vapor density 3.46 (air = 1)

Bulk density Not applicable

Relative density Information on this property is not available.

Solubility

Water solubility 2.4 mg/l at 25 °C

Partition coefficient

n-octanol/water (log KOW) 4.5 (ECHA)

Soil organic carbon/water (log KOC) 2.38 (ECHA)

Auto-ignition temperature 204 °C - ECHA
n-Heptane ROTISOLV® ≥99 %, Pestilyse®

article number: X878

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decomposition temperature</td>
<td>no data available</td>
</tr>
<tr>
<td>Viscosity</td>
<td></td>
</tr>
<tr>
<td>• kinematic viscosity</td>
<td>0.641 mm²/s at 20 °C</td>
</tr>
<tr>
<td>• dynamic viscosity</td>
<td>0.4423 cP</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Shall not be classified as explosive</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>none</td>
</tr>
</tbody>
</table>

9.2 Other information

Surface tension 19.66 mN/m (25 °C)

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: Strong oxidizer, Phosphorus, Chlorine

10.4 Conditions to avoid
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

10.5 Incompatible materials
Rubber articles, different plastics

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

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
Shall not be classified as acutely toxic.

<table>
<thead>
<tr>
<th>Exposure route</th>
<th>Endpoint</th>
<th>Value</th>
<th>Species</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>oral</td>
<td>LD50</td>
<td>&gt;5,000 mg/kg</td>
<td>rat</td>
<td>ECHA</td>
</tr>
<tr>
<td>inhalation: vapour</td>
<td>LC50</td>
<td>&gt;29.29 m³/m³/4h</td>
<td>rat</td>
<td>ECHA</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 sensitization
Shall not be classified as a respiratory or skin sensitizer.
n-Heptane ROTISOLV® ≥99 %, Pestilyse®

article number: X878

Summary of evaluation of the CMR properties
Shall not be classified as germ cell mutagenic, carcinogenic nor as a reproductive toxicant

• Specific target organ toxicity - single exposure
May cause drowsiness or dizziness.

• Specific target organ toxicity - repeated exposure
Shall not be classified as a specific target organ toxicant (repeated exposure).

Aspiration hazard
May be fatal if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics

• If swallowed
aspiration hazard

• If in eyes
causes slight to moderate irritation

• If inhaled
headache, vertigo, dizziness, drowsiness, narcosis

• If on skin
Prolonged or repeated skin contact may cause removal of natural fat from the skin resulting in dermatitis (skin inflammation)

Other information
None

SECTION 12: Ecological information

12.1 Toxicity
acc. to 1272/2008/EC: Shall not be classified as hazardous to the aquatic environment.

Aquatic toxicity (acute)

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Value</th>
<th>Species</th>
<th>Source</th>
<th>Exposure time</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC50</td>
<td>0.64 mg/l</td>
<td>aquatic invertebrates</td>
<td>ECHA</td>
<td>48 h</td>
</tr>
</tbody>
</table>

Aquatic toxicity (chronic)

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Value</th>
<th>Species</th>
<th>Source</th>
<th>Exposure time</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC50</td>
<td>0.23 mg/l</td>
<td>aquatic invertebrates</td>
<td>ECHA</td>
<td>21 d</td>
</tr>
<tr>
<td>NOEC</td>
<td>0.17 mg/l</td>
<td>aquatic invertebrates</td>
<td>ECHA</td>
<td>21 d</td>
</tr>
</tbody>
</table>

12.2 Process of degradability
Theoretical Oxygen Demand: 3.513 mg/mg
Theoretical Carbon Dioxide: 3.074 mg/mg

<table>
<thead>
<tr>
<th>Process</th>
<th>Degradation rate</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>oxygen depletion</td>
<td>28.2 %</td>
<td>2 d</td>
</tr>
</tbody>
</table>
12.3  **Bioaccumulative potential**
The substance fulfills the very bioaccumulative criterion.

-n-octanol/water (log KOW)  4.5

BCF  552 (ECHA)

12.4  **Mobility in soil**
The Organic Carbon normalised adsorption coefficient  2.38

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.

**Waste treatment of containers/packages**
It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used.

**Sewage disposal-relevant information**
Do not empty into drains.

**Waste treatment of containers/packages**
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**
1206

14.2  **UN proper shipping name**
HEPTANES

Hazardous ingredients
n-Heptane

14.3  **Transport hazard class(es)**
n-Heptane ROTISOLV® ≥99 %, Pestilyse®

article number: X878

**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)**

  | UN number | 1206 |
  | Proper shipping name | HEPTANES |
  | Particulars in the transport document | UN1206, HEPTANES, 3, II, (D/E), environmentally hazardous |
  | Class | 3 |
  | Classification code | F1 |
  | Packing group | II |
  | Danger label(s) | 3 + "fish and tree" |
  | Environmental hazards | yes (hazardous to the aquatic environment) |
  | Excepted quantities (EQ) | E2 |
  | Limited quantities (LQ) | 1 L |
  | Transport category (TC) | 2 |
  | Tunnel restriction code (TRC) | D/E |
  | Hazard identification No | 33 |

• **International Maritime Dangerous Goods Code (IMDG)**

  | UN number | 1206 |
  | Proper shipping name | HEPTANES |
  | Particulars in the shipper’s declaration | UN1206, HEPTANES, 3, II, -4°C c.c., MARINE POLLUTANT |
  | Class | 3 |
  | Marine pollutant | yes (P) (hazardous to the aquatic environment) |
  | Packing group | II |
  | Danger label(s) | 3 + "fish and tree" |
n-Heptane ROTISOLV® ≥99 %, Pestilyse®

**article number: X878**

<table>
<thead>
<tr>
<th>Special provisions (SP)</th>
<th>-</th>
</tr>
</thead>
<tbody>
<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>B</td>
</tr>
</tbody>
</table>

- **International Civil Aviation Organization (ICAO-IATA/DGR)**
  - UN number: 1206
  - Proper shipping name: Heptanes
  - Particulars in the shipper's declaration: UN1206, Heptanes, 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 specific for the product in question

**National regulations (United States)**

- **Toxic Substance Control Act (TSCA)**
  - Not listed.

- **The List of Extremely Hazardous Substances and Their Threshold Planning Quantities (EPCRA Section 302, 304)**
  - Not listed.

- **CERCLA**
  - List of Hazardous Substances and Reportable Quantities (CERCLA section 102a) (40 CFR 302.4)
  - Not listed.

- **Clean Air Act**
  - Not listed.

- **New Jersey Worker and Community Right to Know Act**

<table>
<thead>
<tr>
<th>Name of substance</th>
<th>CAS No</th>
<th>Wt%</th>
<th>Remarks</th>
<th>Classifications</th>
<th>Listed in</th>
<th>Substance number</th>
<th>DOT number</th>
</tr>
</thead>
<tbody>
<tr>
<td>n-Heptane</td>
<td>142-82-5</td>
<td>100</td>
<td></td>
<td>F3</td>
<td>1 2 3 4 8 15</td>
<td>1339</td>
<td>1206</td>
</tr>
</tbody>
</table>

---

Canada (en)  Page 12 / 16
n-Heptane ROTISOLV® ≥99 %, Pestilyse®

article number: X878

<table>
<thead>
<tr>
<th>Name of substance</th>
<th>CAS No</th>
<th>Wt%</th>
<th>Remarks</th>
<th>Classification</th>
<th>Listed in</th>
<th>Substance number</th>
<th>DOT number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Legend**


17. "2009 TLVs® and BEIs®, Threshold Limit Values and Biological Exposure Indices," American Conference of Governmental Industrial Hygienists (ACGIH), 2009.


F3. Flammable - Third Degree

**California Environmental Protection Agency (Cal/EPA): Proposition 65 - Safe Drinking Water and Toxic Enforcement Act of 1987**

Not listed.

**Drug precursors**

Not listed.

**Industry or sector specific available guidance(s)**

**NPCA-HMIS® III**


<table>
<thead>
<tr>
<th>Category</th>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic</td>
<td></td>
<td>none</td>
</tr>
<tr>
<td>Health</td>
<td>2</td>
<td>temporary or minor injury may occur</td>
</tr>
<tr>
<td>Flammability</td>
<td>3</td>
<td>material that can be ignited under almost all ambient temperature conditions</td>
</tr>
<tr>
<td>Physical hazard</td>
<td>0</td>
<td>material that is normally stable, even under fire conditions, and will not react with water, polymerize, decompose, condense, or self-react. Non-explosive</td>
</tr>
<tr>
<td>Personal protection</td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>

**NFPA® 704**


<table>
<thead>
<tr>
<th>Category</th>
<th>Degree of hazard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammability</td>
<td>3</td>
<td>material that can be ignited under almost all ambient temperature conditions</td>
</tr>
<tr>
<td>Health</td>
<td>2</td>
<td>material that, under emergency conditions, can cause temporary incapacitation or residual injury</td>
</tr>
</tbody>
</table>
n-Heptane ROTISOLV® ≥99 %, Pestilyse®

article number: X878

<table>
<thead>
<tr>
<th>Category</th>
<th>Degree of hazard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instability</td>
<td>0</td>
<td>material that is normally stable, even under fire conditions</td>
</tr>
</tbody>
</table>

Flammability:
Health:
Instability:

National regulations Canada:
Domestic Substances List (DSL)
Substance is listed.

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>
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</tr>
<tr>
<td>NZ</td>
<td>NZIoC</td>
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</tr>
<tr>
<td>PH</td>
<td>PICCS</td>
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</tr>
<tr>
<td>TR</td>
<td>CICR</td>
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</tr>
<tr>
<td>TW</td>
<td>TCSI</td>
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</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)
IECSSC Inventory of Existing Chemical Substances Produced or Imported in China
INSC 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.
## Abbreviations and acronyms

<table>
<thead>
<tr>
<th>Abbr.</th>
<th>Descriptions of used abbreviations</th>
</tr>
</thead>
<tbody>
<tr>
<td>“BC Regulation”</td>
<td>OHS Regulation: Section 5.48 (British Columbia)</td>
</tr>
<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>CERCLA</td>
<td>Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)</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>DMEL</td>
<td>Derived Minimal Effect Level</td>
</tr>
<tr>
<td>DNEL</td>
<td>Derived No-Effect Level</td>
</tr>
<tr>
<td>EC50</td>
<td>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</td>
</tr>
<tr>
<td>EINECS</td>
<td>European Inventory of Existing Commercial Chemical Substances</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>
<tr>
<td>LC50</td>
<td>Lethal Concentration 50%: the LC50 corresponds to the concentration of a tested substance causing 50 % lethality during a specified time interval</td>
</tr>
<tr>
<td>LD50</td>
<td>Lethal Dose 50 %: the LD50 corresponds to the dose of a tested substance causing 50 % lethality during a specified time interval</td>
</tr>
<tr>
<td>MARPOL</td>
<td>International Convention for the Prevention of Pollution from Ships (abbr. of &quot;Marine Pollutant&quot;)</td>
</tr>
<tr>
<td>NLP</td>
<td>No-Longer Polymer</td>
</tr>
<tr>
<td>NOEC</td>
<td>No Observed Effect Concentration</td>
</tr>
<tr>
<td>PBT</td>
<td>Persistent, Bioaccumulative and Toxic</td>
</tr>
<tr>
<td>PNEC</td>
<td>Predicted No-Effect Concentration</td>
</tr>
</tbody>
</table>
### Abbreviations and their Descriptions

<table>
<thead>
<tr>
<th>Abbr.</th>
<th>Descriptions of used abbreviations</th>
</tr>
</thead>
<tbody>
<tr>
<td>ppm</td>
<td>parts per million</td>
</tr>
<tr>
<td>REACH</td>
<td>Registration, Evaluation, Authorisation and Restriction of Chemicals</td>
</tr>
<tr>
<td>Regulation OHS</td>
<td>Regulation respecting occupational health and safety: Permissible exposure values for airborne contaminants (Quebec)</td>
</tr>
<tr>
<td>RID</td>
<td>Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail)</td>
</tr>
<tr>
<td>STEL</td>
<td>short-term exposure limit</td>
</tr>
<tr>
<td>TWA</td>
<td>time-weighted average</td>
</tr>
<tr>
<td>vPvB</td>
<td>very Persistent and very Bioaccumulative</td>
</tr>
</tbody>
</table>

### Key Literature References and Sources for Data
- Hazardous Products Regulations (HPR)
- 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)

<table>
<thead>
<tr>
<th>Code</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>H225</td>
<td>highly flammable liquid and vapour</td>
</tr>
<tr>
<td>H304</td>
<td>may be fatal if swallowed and enters airways</td>
</tr>
<tr>
<td>H315</td>
<td>causes skin irritation</td>
</tr>
<tr>
<td>H336</td>
<td>may cause drowsiness or dizziness</td>
</tr>
</tbody>
</table>

### 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.