SECTION 1: Identification

1.1 Product identifier

Identification of the substance
N-Methyl-2-pyrrolidone

Article number 4306
Registration number (REACH) 01-2119472430-46-xxxx
Index No 606-021-00-7
EC number 212-828-1
CAS number 872-50-4

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

Emergency information service Poison Centre Munich: +49/(0)89 19240

SECTION 2: Hazard(s) identification

2.1 Classification of the substance or mixture

Classification acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

<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>A.2</td>
<td>skin corrosion/irritation</td>
<td>(Skin Irrit. 2)</td>
<td>H315</td>
</tr>
<tr>
<td>A.3</td>
<td>serious eye damage/eye irritation</td>
<td>(Eye Irrit. 2)</td>
<td>H319</td>
</tr>
<tr>
<td>A.7</td>
<td>reproductive toxicity</td>
<td>(Repr. 1B)</td>
<td>H360D</td>
</tr>
<tr>
<td>A.8R</td>
<td>specific target organ toxicity - single exposure (respiratory tract irritation)</td>
<td>(STOT SE 3)</td>
<td>H335</td>
</tr>
<tr>
<td>B.6</td>
<td>flammable liquid</td>
<td>(Flam. Liq. 4)</td>
<td>H227</td>
</tr>
</tbody>
</table>
## Supplemental hazard information

<table>
<thead>
<tr>
<th>Code</th>
<th>Supplemental hazard information</th>
</tr>
</thead>
<tbody>
<tr>
<td>HNOC001</td>
<td>may be harmful if swallowed (GHS category 5: acutely toxic - oral)</td>
</tr>
<tr>
<td>HNOC003</td>
<td>may be harmful if inhaled (GHS category 5: acutely toxic - inhalation)</td>
</tr>
</tbody>
</table>

### 2.2 Label elements

Labelling acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

**Signal word** Danger

**Pictograms**

GHS07, GHS08

**Hazard statements**

- **H227** Combustible liquid
- **H315** Causes skin irritation
- **H319** Causes serious eye irritation
- **H335** May cause respiratory irritation
- **H360D** May damage the unborn child

**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/sparks/open flames/hot surfaces. No smoking.
- Avoid breathing dust/fume/gas/mist/vapors/spray.
- Wash ... thoroughly after handling.
- Use only outdoors or in a well-ventilated area.
- Wear protective gloves/protective clothing/eye protection/face protection.
- Wear protective gloves/eye protection/face protection.
- Wear protective gloves.
- Wear eye protection/face protection.
- Wear personal protective equipment/face protection.

**Precautionary statements - response**

- If on skin: Wash with plenty of water.
- If inhaled: Remove person to fresh air and keep comfortable for breathing.
- If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- If exposed or concerned: Get medical advice/attention.
- Call a poison center/doctor if you feel unwell.
- Specific treatment (see ... on this label).
- If skin irritation occurs: Get medical advice/attention.
- If eye irritation persists: Get medical advice/attention.
- Take off contaminated clothing and wash it before reuse.
- Take off contaminated clothing and wash it before reuse.
- In case of fire: Use carbon dioxide, powder extinguisher or water spray to extinguish.
Precautionary statements - storage
Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Store locked up.

Precautionary statements - disposal
Dispose of contents/container in accordance with local/regional/national/international regulations.

For professional users only

Labelling of packages where the contents do not exceed 125 ml
Signal word: Danger

Symbol(s)

H227 Combustible liquid.
H360D May damage the unborn child.

Obtain special instructions before use.
Keep away from heat/sparks/open flames/hot surfaces. No smoking.
Wear protective gloves/eye protection/face protection.
Wear protective gloves.
Wear eye protection/face protection.
If exposed or concerned: Get medical advice/attention.
In case of fire: Use carbon dioxide, powder extinguisher or water spray to extinguish.
Dispose of contents/container in accordance with local/regional/national/international regulations.
HNOC001 May be harmful if swallowed (GHS category 5: acutely toxic - oral).
HNOC003 May be harmful if inhaled (GHS category 5: acutely toxic - inhalation).

2.3 Other hazards
There is no additional information.

SECTION 3: Composition/information on ingredients

3.1 Substances
Name of substance N-Methyl-2-pyrrolidone
Index No 606-021-00-7
Registration number (REACH) 01-2119472430-46-xxxx
EC number 212-828-1
CAS number 872-50-4
Molecular formula C₅H₉NO
Molar mass 99.13 g/mol

Substance of Very High Concern (SVHC)

<table>
<thead>
<tr>
<th>Name of substance</th>
<th>CAS No</th>
<th>Wt%</th>
<th>Listed in</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-Methyl-2-pyrrolidone</td>
<td>872-50-4</td>
<td>100</td>
<td>Candidate list</td>
<td>Repr. A57c</td>
</tr>
</tbody>
</table>

Legend
Candidate list Substances meeting the criteria referred to in Article 57 and for eventual inclusion in Annex XIV
Repr. A57c Toxic for reproduction (article 57c)
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
Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart. In case of eye irritation consult an ophthalmologist.

Following ingestion
In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

4.2 Most important symptoms and effects, both acute and delayed
Cough, Diarrhoea, Irritation, Vomiting, Dyspnoea

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. Vapours can form explosive mixtures with air.

Hazardous combustion products
In case of fire may be liberated: nitrogen oxides (NOx), 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

Advices on how to contain a spill
Covering of drains.

Advices 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. Avoid: Aerosol or mist formation.

• 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.

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 compatible storage of chemicals.

Consideration of other advice

• 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)
Data are not available.

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>US</td>
<td>N-methyl-2-pyrrolidone 5-hydroxy-N-methyl-2-pyrrolidone</td>
<td>BEI®</td>
<td></td>
<td></td>
<td>100 mg/l</td>
<td>urine</td>
<td>ACGIH® 2018</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>208 mg/kg</td>
<td>human, dermal</td>
<td>worker (industry)</td>
<td>acute - systemic effects</td>
</tr>
<tr>
<td>DNEL</td>
<td>80 mg/m³</td>
<td>human, inhalatory</td>
<td>worker (industry)</td>
<td>acute - systemic effects</td>
</tr>
<tr>
<td>DNEL</td>
<td>14.4 mg/m³</td>
<td>human, inhalatory</td>
<td>worker (industry)</td>
<td>chronic - systemic effects</td>
</tr>
<tr>
<td>DNEL</td>
<td>40 mg/m³</td>
<td>human, inhalatory</td>
<td>worker (industry)</td>
<td>chronic - local effects</td>
</tr>
<tr>
<td>DNEL</td>
<td>4.8 mg/kg bw/day</td>
<td>human, dermal</td>
<td>worker (industry)</td>
<td>chronic - systemic effects</td>
</tr>
</tbody>
</table>

• environment values

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Threshold level</th>
<th>Environmental compartment</th>
<th>Exposure time</th>
</tr>
</thead>
<tbody>
<tr>
<td>PNEC</td>
<td>5 mg/l</td>
<td>water</td>
<td>intermittent release</td>
</tr>
<tr>
<td>PNEC</td>
<td>0.25 mg/l</td>
<td>freshwater</td>
<td>short-term (single instance)</td>
</tr>
<tr>
<td>PNEC</td>
<td>0.025 mg/l</td>
<td>marine water</td>
<td>short-term (single instance)</td>
</tr>
<tr>
<td>PNEC</td>
<td>10 mg/l</td>
<td>sewage treatment plant (STP)</td>
<td>short-term (single instance)</td>
</tr>
<tr>
<td>PNEC</td>
<td>1.09 mg/kg</td>
<td>freshwater sediment</td>
<td>short-term (single instance)</td>
</tr>
<tr>
<td>PNEC</td>
<td>0.109 mg/kg</td>
<td>marine sediment</td>
<td>short-term (single instance)</td>
</tr>
<tr>
<td>PNEC</td>
<td>0.07 mg/kg</td>
<td>soil</td>
<td>short-term (single instance)</td>
</tr>
</tbody>
</table>

8.2 Exposure controls

Individual protection measures (personal protective equipment)

Eye/face protection
Use safety goggles 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.

- **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**


**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)
- Color: colorless
- Odor: like: amine
- Odor threshold: No data available

**Other physical and chemical parameters**

- pH (value): 8.5 – 10 (water: 100 g/l, 20 °C)
- Melting point/freezing point: -24.2 °C at 1,013 hPa
- Initial boiling point and boiling range: 204.3 °C at 1,016 hPa
- Flash point: 91 °C at 1,013 hPa
- Evaporation rate: no data available
Flammability (solid, gas) not relevant (fluid)

Explosive limits
• lower explosion limit (LEL) 1.3 vol%
• upper explosion limit (UEL) 9.5 vol%
Explosion limits of dust clouds not relevant

Vapor pressure 0.32 hPa at 20 °C
Density 1.03 g/cm³ at 25 °C

Vapor density 3.42 (air = 1)
Bulk density Not applicable
Relative density Information on this property is not available.

Solubility(ies)
Water solubility 1,000 g/l at 20 °C miscible in any proportion

Partition coefficient
n-octanol/water (log KOW) -0.46 (25 °C) (ECHA)

Soil organic carbon/water (log KOC) 0.87 (ECHA)

Auto-ignition temperature 245 °C at 1,013 hPa - ECHA
Decomposition temperature no data available

Viscosity
• kinematic viscosity 1.613 mm²/s
• dynamic viscosity 1.661 mPa s at 25 °C

Explosive properties Shall not be classified as explosive
Oxidizing properties none

SECTION 10: Stability and reactivity

10.1 Reactivity
In case of warming: 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, Strong alkali, Strong acid

10.4 Conditions to avoid
Direct light irradiation. Keep away from heat.

10.5 Incompatible materials
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>4,150 mg/kg</td>
<td>rat</td>
<td>ECHA</td>
</tr>
<tr>
<td>inhalation: dust/mist</td>
<td>LC50</td>
<td>&gt;5.1 mg/l/4h</td>
<td>rat</td>
<td>ECHA</td>
</tr>
<tr>
<td>dermal</td>
<td>LD50</td>
<td>&gt;5,000 mg/kg</td>
<td>rat</td>
<td>ECHA</td>
</tr>
</tbody>
</table>

**Skin corrosion/irritation**
Causes skin irritation.

**Serious eye damage/eye irritation**
Causes serious eye irritation.

**Respiratory or skin sensitization**
Shall not be classified as a respiratory or skin sensitizer.

**Summary of evaluation of the CMR properties**

**Reproductive toxicity:**
May damage the unborn child

- **Specific target organ toxicity - single exposure**
  May cause respiratory irritation.

- **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**
diarrhoea, vomiting, nausea

- **If in eyes**
Irritating to eyes

- **If inhaled**
cough, breathing difficulties, Irritation to respiratory tract

- **If on skin**
causes skin irritation

**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>LC50</td>
<td>&gt;500 mg/l</td>
<td>rainbow trout</td>
<td>ECHA</td>
<td>96 h</td>
</tr>
<tr>
<td>ErC50</td>
<td>600.5 mg/l</td>
<td>algae</td>
<td>ECHA</td>
<td>72 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>&gt;1,000 mg/l</td>
<td>daphnia magna</td>
<td>ECHA</td>
<td>24 h</td>
</tr>
<tr>
<td>NOEC</td>
<td>12.5 mg/l</td>
<td>daphnia magna</td>
<td>ECHA</td>
<td>21 d</td>
</tr>
</tbody>
</table>

12.2 Process of degradability
The substance is readily biodegradable.
Theoretical Oxygen Demand with nitrification: 2.502 mg/mg
Theoretical Oxygen Demand: 1.937 mg/mg
Theoretical Carbon Dioxide: 2.22 mg/mg

<table>
<thead>
<tr>
<th>Process</th>
<th>Degradation rate</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>biotic/abiotic</td>
<td>&gt;90 %</td>
<td>20 d</td>
</tr>
<tr>
<td>oxygen depletion</td>
<td>73 %</td>
<td>28 d</td>
</tr>
</tbody>
</table>

12.3 Bioaccumulative potential
Does not significantly accumulate in organisms.
n-octanol/water (log KOW) -0.46 (25 °C)

12.4 Mobility in soil
Henry's law constant 0 Pa m^3/mol at 20 °C
The Organic Carbon normalised adsorption coefficient 0.87

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.

Sewage disposal-relevant information
Do not empty into drains.

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
(not subject to transport regulations)

14.2 UN proper shipping name
not relevant

14.3 Transport hazard class(es)
not relevant

Class
-

14.4 Packing group
not relevant not assigned to a packing group

14.5 Environmental hazards
none (non-environmentally hazardous acc. to the dangerous goods regulations)

14.6 Special precautions for user
There is no additional information.

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 or rail (49 CFR US DOT)
Not subject to transport regulations.

• International Maritime Dangerous Goods Code (IMDG)
Not subject to IMDG.

• International Civil Aviation Organization (ICAO-IATA/DGR)
Not subject to ICAO-IATA.
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.

Superfund Amendment and Reauthorization Act (SARA TITLE III)

The List of Extremely Hazardous Substances and Their Threshold Planning Quantities (EPCRA Section 302, 304)

Not listed.

Specific Toxic Chemical Listings (EPCRA Section 313)

<table>
<thead>
<tr>
<th>Name of substance</th>
<th>CAS No</th>
<th>Wt%</th>
<th>Remarks</th>
<th>Effective date</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-Methyl-2-pyrrolidone</td>
<td>872-50-4</td>
<td>100</td>
<td></td>
<td>1995-01-01</td>
</tr>
</tbody>
</table>

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-Methyl-2-pyrrolidone</td>
<td>872-50-4</td>
<td>100</td>
<td></td>
<td>TE F2</td>
<td>3 6 15 17 18</td>
<td>3716</td>
<td>1993</td>
</tr>
</tbody>
</table>

Legend


F2 Flammable - Second Degree

TE Teratogenic

California Environmental Protection Agency (Cal/EPA): Proposition 65 - Safe Drinking Water and Toxic Enforcement Act of 1987
N-Methyl-2-pyrrolidone ≥99.8 %, for synthesis

article number: 4306

<table>
<thead>
<tr>
<th>Name of substance</th>
<th>CAS No</th>
<th>Wt%</th>
<th>Remarks</th>
<th>Type of toxicity</th>
<th>Remarks</th>
<th>NSRL or MADL (µg/day)</th>
<th>Date listed</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-Methyl-2-pyrrolidone</td>
<td>872-50-4</td>
<td>100</td>
<td></td>
<td>developmental</td>
<td></td>
<td>3200 (inhalation) 17000 (dermal)</td>
<td>2001-06-15</td>
</tr>
</tbody>
</table>

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>chronic (long-term) health effects may result from repeated overexposure</td>
</tr>
<tr>
<td>Health</td>
<td>2</td>
<td>temporary or minor injury may occur</td>
</tr>
<tr>
<td>Flammability</td>
<td>2</td>
<td>material that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur</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>2</td>
<td>material that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur</td>
</tr>
<tr>
<td>Health</td>
<td>2</td>
<td>material that, under emergency conditions, can cause temporary incapacitation or residual injury</td>
</tr>
<tr>
<td>Instability</td>
<td>0</td>
<td>material that is normally stable, even under fire conditions</td>
</tr>
<tr>
<td>Special hazard</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

National inventories
Substance is listed in the following national inventories:
### Country National inventories Status

<table>
<thead>
<tr>
<th>Country</th>
<th>National inventories</th>
<th>Status</th>
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<tr>
<td>AU</td>
<td>AICS</td>
<td>substance is listed</td>
</tr>
<tr>
<td>CA</td>
<td>DSL</td>
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<tr>
<td>CN</td>
<td>IECSC</td>
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</tr>
<tr>
<td>EU</td>
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</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>JP</td>
<td>ISHA-ENCS</td>
<td>substance is listed</td>
</tr>
<tr>
<td>KR</td>
<td>KECI</td>
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<td>MX</td>
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<tr>
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<td>PH</td>
<td>PICCS</td>
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</tr>
<tr>
<td>TR</td>
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<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)
- **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
- **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>49 CFR US DOT</td>
<td>49 CFR § 40 U.S. Department of Transportation</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>
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</tbody>
</table>
Safety data sheet
acc. to OSHA, Appendix D to § 1910.1200

N-Methyl-2-pyrrolidone ≥99,8 %, for synthesis

article number: 4306

<table>
<thead>
<tr>
<th>Abbr.</th>
<th>Descriptions of used abbreviations</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNEL</td>
<td>Derived No-Effect Level</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>GHS</td>
<td>&quot;Globally Harmonized System of Classification and Labelling of Chemicals” 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>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>OSHA</td>
<td>Occupational Safety and Health Administration (United States)</td>
</tr>
<tr>
<td>PBT</td>
<td>Persistent, Bioaccumulative and Toxic</td>
</tr>
<tr>
<td>PNEC</td>
<td>Predicted No-Effect Concentration</td>
</tr>
<tr>
<td>REACH</td>
<td>Registration, Evaluation, Authorisation and Restriction of Chemicals</td>
</tr>
<tr>
<td>Repr.</td>
<td>reproductive toxicity</td>
</tr>
<tr>
<td>vPvB</td>
<td>very Persistent and very Bioaccumulative</td>
</tr>
</tbody>
</table>

Key literature references and sources for data
- Transport of dangerous goods by road or rail (49 CFR US DOT)
- 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>
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<tbody>
<tr>
<td>H227</td>
<td>combustible liquid</td>
</tr>
<tr>
<td>H315</td>
<td>causes skin irritation</td>
</tr>
<tr>
<td>H319</td>
<td>causes serious eye irritation</td>
</tr>
<tr>
<td>H335</td>
<td>may cause respiratory irritation</td>
</tr>
<tr>
<td>H360D</td>
<td>may damage the unborn child</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.