

Safety data sheet Safety data sheet

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



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

article number: **P052**
Version: **5.0 en**
Replaces version of: 2022-12-19
Version: (4)

date of compilation: 2015-12-07
Revision: 2024-03-04

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

1.1 Product identifier

| | |
|---------------------------------|---|
| Identification of the substance | N-Methyl-2-pyrrolidone PEPTIPURE® ≥99,8 %, for peptide synthesis |
| Article number | P052 |
| Index No (GB CLP) | 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

| | |
|---------------------------|--|
| Relevant identified uses: | Laboratory chemical Laboratory and analytical use |
| Uses advised against: | Do not use for products which come into contact with foodstuffs. Do not use for private purposes (household). Food, drink and animal feeding-stuffs. |

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 | |

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SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification acc. to GHS

| 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 | 2 | Eye Irrit. 2 | H319 |
| 3.7 | Reproductive toxicity | 1B | Repr. 1B | H360D |
| 3.8R | Specific target organ toxicity - single exposure (respiratory tract irritation) | 3 | STOT SE 3 | H335 |

For full text of abbreviations: see SECTION 16

2.2 Label elements

Labelling

Signal word

Danger

Pictograms

GHS07, GHS08



Hazard statements

| | |
|-------|----------------------------------|
| 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

P280 Wear protective gloves/protective clothing/eye protection/face protection

Precautionary statements - response

| | |
|----------------|---|
| P302+P352 | IF ON SKIN: Wash with plenty of soap and water |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing |
| P308+P313 | IF exposed or concerned: Get medical advice/attention |

For professional users only

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.

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Endocrine disrupting properties

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

SECTION 3: Composition/information on ingredients

3.1 Substances

| | |
|-------------------|----------------------------------|
| Name of substance | N-Methyl-2-pyrrolidone |
| Molecular formula | C ₅ H ₉ NO |
| Molar mass | 99,13 g/mol |
| CAS No | 872-50-4 |
| EC No | 212-828-1 |
| Index No (GB CLP) | 606-021-00-7 |

Substance of Very High Concern (SVHC)

| Name of substance | CAS No | EC No | Listed in | Remarks |
|------------------------|----------|-----------|----------------|------------|
| N-Methyl-2-pyrrolidone | 872-50-4 | 212-828-1 | Candidate list | Repr. A57c |

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)

Substance, Specific Conc. Limits, M-factors, ATE

| Specific Conc. Limits | M-Factors | ATE | Exposure route |
|---------------------------|-----------|-----|----------------|
| STOT SE 3; H335: C ≥ 10 % | - | - | |

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).

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4.2 Most important symptoms and effects, both acute and delayed

Irritation, Cough, Dyspnoea

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 firefighting measures to the fire surroundings!
water spray, alcohol resistant foam, dry extinguishing powder, BC-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: Nitrogen oxides (NO_x), Carbon monoxide (CO), Carbon dioxide (CO₂)

5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. 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.

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.

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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.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Provision of sufficient ventilation. Avoid exposure.

Measures to prevent fire as well as aerosol and dust generation



Keep away from sources of ignition - No smoking.

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

Direct light irradiation. Hygroscopic.

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 |
|---------|------------------------|----------|------------|-----------|--------------------------|------------|---------------------------|-----------------|--------------------------------|----------|-------------|
| EU | 1-methyl-2-pyrrolidone | 872-50-4 | IOELV | 10 | 40 | 20 | 80 | | | H | 2022/431/EU |
| GB | N-methyl-2-pyrrolidone | 872-50-4 | WEL | 10 | 40 | 20 | 80 | | | | EH40/2005 |

Notation

Ceiling-C Ceiling value is a limit value above which exposure should not occur

H Absorbed through the skin

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)

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Human health values

| Relevant DNELs and other threshold levels | | | | |
|---|------------------------|------------------------------------|-------------------|----------------------------|
| Endpoint | Threshold level | Protection goal, route of exposure | Used in | Exposure time |
| DNEL | 14,4 mg/m ³ | human, inhalatory | worker (industry) | chronic - systemic effects |
| DNEL | 40 mg/m ³ | human, inhalatory | worker (industry) | chronic - local effects |
| DNEL | 4,8 mg/kg bw/day | human, dermal | worker (industry) | chronic - systemic effects |

Environmental values

| Relevant PNECs and other threshold levels | | | | |
|---|-----------------|-----------------------|------------------------------|------------------------------|
| End-point | Threshold level | Organism | Environmental compartment | Exposure time |
| PNEC | 0,25 mg/l | aquatic organisms | freshwater | short-term (single instance) |
| PNEC | 0,025 mg/l | aquatic organisms | marine water | short-term (single instance) |
| PNEC | 10 mg/l | aquatic organisms | sewage treatment plant (STP) | short-term (single instance) |
| PNEC | 1,09 mg/kg | aquatic organisms | freshwater sediment | short-term (single instance) |
| PNEC | 0,109 mg/kg | aquatic organisms | marine sediment | short-term (single instance) |
| PNEC | 0,07 mg/kg | terrestrial organisms | soil | short-term (single instance) |

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.

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• type of material

Butyl caoutchouc (butyl rubber)

• material thickness

0,5 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.

Respiratory protection



Respiratory protection necessary at: Aerosol or mist formation. Type: A (against organic gases and vapours 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

| | |
|--|---|
| Physical state | liquid |
| Colour | colourless - clear |
| Odour | faintly perceptible - like: - amine |
| Melting point/freezing point | -24,2 °C at 1.013 hPa (ECHA) |
| Boiling point or initial boiling point and boiling range | 204,3 °C at 1.016 hPa (ECHA) |
| Flammability | this material is combustible, but will not ignite readily |
| Lower and upper explosion limit | 1,3 vol% (LEL) - 9,5 vol% (UEL) |
| Flash point | 91 °C at 1.013 hPa (ECHA) |
| Auto-ignition temperature | 251 °C at 1.013 hPa (ECHA) |
| Decomposition temperature | not relevant |
| pH (value) | 8,5 - 10 (in aqueous solution: 100 g/l, 20 °C) |
| Kinematic viscosity | 1,613 mm ² /s at 25 °C |
| Dynamic viscosity | 1,661 mPa s at 25 °C |
| <u>Solubility(ies)</u> | |
| Water solubility | 1.000 g/l at 20 °C (ECHA) |
| <u>Partition coefficient</u> | |

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| | |
|--|--|
| Partition coefficient n-octanol/water (log value): | -0,46 (25 °C) (ECHA) |
| Soil organic carbon/water (log KOC) | 0,87 (ECHA) |
| Vapour pressure | 0,32 hPa at 20 °C 2,54 hPa at 50 °C |
| <u>Density and/or relative density</u> | |
| Density | 1,03 g/cm ³ at 25 °C (ECHA) |
| Relative vapour density | 3,42 (air = 1) |

| | |
|--------------------------|-----------------------|
| 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:

| | |
|-------------|--------------------------------|
| Miscibility | completely miscible with water |
|-------------|--------------------------------|

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, Nitric acid, Strong acid

10.4 Conditions to avoid

Keep away from heat. No smoking.

10.5 Incompatible materials

Rubber articles, different plastics

10.6 Hazardous decomposition products

Hazardous combustion products: see section 5.

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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 if swallowed or if inhaled.

| Acute toxicity | | | | | |
|---------------------------|----------|--------------|---------|--------|--------|
| Exposure route | Endpoint | Value | Species | Method | Source |
| oral | LD50 | 4.150 mg/kg | rat | | ECHA |
| inhalation: dust/ mist | LC50 | >5,1 mg/l/4h | rat | | ECHA |
| dermal | LD50 | >5.000 mg/kg | rat | | ECHA |

Skin corrosion/irritation

Causes skin irritation.

Serious eye damage/eye irritation

Causes serious eye irritation.

Respiratory or skin sensitisation

Shall not be classified as a respiratory or skin sensitiser.

Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

Carcinogenicity

Shall not be classified as carcinogenic.

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

Causes serious eye irritation

• If inhaled

Irritation to respiratory tract, cough, Dyspnoea

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- **If on skin**

causes skin irritation

- **Other information**

none

11.2 Endocrine disrupting properties

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

11.3 Information on other hazards

There is no additional information.

SECTION 12: Ecological information

12.1 Toxicity

Shall not be classified as hazardous to the aquatic environment.

| Aquatic toxicity (acute) | | | | |
|--------------------------|------------|---------|--------|---------------|
| Endpoint | Value | Species | Source | Exposure time |
| LC50 | >500 mg/l | fish | ECHA | 96 h |
| ErC50 | 600,5 mg/l | algae | ECHA | 72 h |

| Aquatic toxicity (chronic) | | | | |
|----------------------------|-------------|---------------|--------|---------------|
| Endpoint | Value | Species | Source | Exposure time |
| EC50 | >1.000 mg/l | daphnia magna | ECHA | 24 h |

12.2 Persistence and degradability

Theoretical Oxygen Demand (without nitrification): 1,937 mg/mg

Theoretical Oxygen Demand (with nitrification): 2,582 mg/mg

Theoretical Carbon Dioxide: 2,22 mg/mg

Biodegradation

The substance is readily biodegradable.

| Process of degradability | | |
|--------------------------|------------------|------|
| Process | Degradation rate | Time |
| biotic/abiotic | >90 % | 20 d |
| oxygen depletion | 73 % | 28 d |

12.3 Bioaccumulative potential

Does not significantly accumulate in organisms.

| | |
|---------------------------|----------------------|
| n-octanol/water (log KOW) | -0,46 (25 °C) (ECHA) |
|---------------------------|----------------------|

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12.4 Mobility in soil

| | |
|--|--|
| Henry's law constant | 0 Pa m ³ /mol at 20 °C (ECHA) |
| The Organic Carbon normalised adsorption coefficient | 0,87 (ECHA) |

12.5 Results of PBT and vPvB assessment

Data are not available.

12.6 Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of ≥ 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.

Waste treatment of containers/packagings

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 5 specific target organ toxicity (STOT)/aspiration toxicity
- HP 10 toxic for reproduction

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.

SECTION 14: Transport information

| | |
|---------------------------------|---|
| 14.1 UN number or ID number | not subject to transport regulations |
| 14.2 UN proper shipping name | not assigned |
| 14.3 Transport hazard class(es) | none |
| 14.4 Packing group | not assigned |
| 14.5 Environmental hazards | non-environmentally hazardous acc. to the dangerous goods regulations |

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14.6 Special precautions for user

There is no additional information.

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

International Maritime Dangerous Goods Code (IMDG) - Additional information

Not subject to IMDG.

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

Not subject to ICAO-IATA.

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 |
| | not assigned | | |

Deco-Paint Directive

| | |
|-------------|-----------|
| VOC content | 100 % |
| VOC content | 1.030 g/l |

Industrial Emissions Directive (IED)

| | |
|-------------|-----------|
| VOC content | 100 % |
| VOC content | 1.030 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

Water Framework Directive (WFD)

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| List of pollutants (WFD) | | | | |
|--------------------------|---|--------|-----------|---------|
| Name of substance | Name acc. to inventory | CAS No | Listed in | Remarks |
| N-Methyl-2-pyrrolidone | 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

| Substance of Very High Concern (SVHC) acc. to GB REACH and HSE | | | |
|--|----------|----------------|------------|
| Name of substance | CAS No | Listed in | Remarks |
| N-Methyl-2-pyrrolidone | 872-50-4 | Candidate list | Repr. A57c |

Legend

Candidate list Substances meeting the criteria referred to in Article 57 and for eventual inclusion in Annex XIV list

Repr. A57c Toxic for reproduction (Article 57c)

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 |
| N-Methyl-2-pyrrolidone | 1-methyl-2-pyrrolidone (NMP) | 872-50-4 | 71 |
| N-Methyl-2-pyrrolidone | N-methyl-2-pyrrolidone; 1-methyl-2-pyrrolidone (NMP) | 872-50-4 | 72 |
| N-Methyl-2-pyrrolidone | this product meets the criteria for classification in accordance with Regulation No 1272/2008/EC | | 3 |
| N-Methyl-2-pyrrolidone | toxic for reproduction | | 30 |

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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 | substance is listed |
| CA | DSL | substance is listed |
| CN | IECSC | substance is listed |
| EU | ECSI | substance is listed |
| EU | REACH Reg. | substance is listed |
| JP | CSCL-ENCS | substance is listed |
| JP | ISHA-ENCS | substance is listed |
| KR | KECI | substance is listed |
| MX | INSQ | substance is listed |
| NZ | NZIoC | substance is listed |
| PH | PICCS | substance is listed |
| TR | CICR | substance is listed |
| TW | TCSI | substance is listed |
| US | TSCA | substance is listed (ACTIVE) |
| VN | NCI | substance is 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 |
|---------|------------------------------------|--|-----------------|
| 2.3 | | Endocrine disrupting properties: Does not contain an endocrine disruptor (ED) at a concentration of ≥ 0,1%. | yes |
| 15.1 | VOC content: 100 % 1.030 g/l | VOC content: 100 % | yes |
| 15.1 | | VOC content: 1.030 g/l | yes |
| 15.1 | | National inventories: change in the listing (table) | yes |

Abbreviations and acronyms

| Abbr. | Descriptions of used abbreviations |
|-------------|--|
| 2022/431/EU | Directive (EU) 2022/431 of the European Parliament and of the Council of 9 March 2022 amending Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens or mutagens at work |
| 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 |
| CAS | Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances) |
| Ceiling-C | Ceiling value |
| 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 |
| 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 CLP | The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use) (Amendment etc.) (EU Exit) Regulations 2019, SI 2019/720 (as amended) |
| 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 |
| HSE | Health and Safety Executive |

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| Abbr. | Descriptions of used abbreviations |
|----------|---|
| IATA | International Air Transport Association |
| IATA/DGR | Dangerous Goods Regulations (DGR) for the air transport (IATA) |
| ICAO | International Civil Aviation Organization |
| IMDG | 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 |
| IOELV | Indicative occupational exposure limit value |
| 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 |
| LEL | Lower explosion limit (LEL) |
| 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 |
| Repr. | Reproductive toxicity |
| 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 |
| UEL | Upper explosion limit (UEL) |
| 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. |
| H319 | Causes serious eye irritation. |
| H335 | May cause respiratory irritation. |
| H360D | May damage the unborn child. |

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Disclaimer

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