

SAFETY DATA SHEET

according to 1907/2006/EC, Article 3

Version no. : 2.1
Prepared on : 30.03.2019
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SECTION 1: Identification of the substance/mixture and of the company/undertaking.

1.1 Product identifiers

Product name N-Methyl-2-pyrrolidinone
Product Number PSR28290 / PSR38797
Brand PureSynth research chemicals
CAS No. 872-50-4

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

Identified uses : PurCert Standard

1.3 Details of the supplier of the safety data sheet

Company PureSynth Research Chemicals Pvt. Ltd.
64683 Einhausen Marie-Curie-Straße. 3, Germany

1.4 Emergency telephone number

Worldwide Helpline No.: 1800-8908-260

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Skin irritation (Category 2), H315 Eye irritation (Category 2), H319
Reproductive toxicity (Category 1B), H360D
Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335 For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008

Pictogram



Signal word

Danger

Hazard statement(s)

H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H360D May damage the unborn child.

Precautionary statement(s)

P202	Do not handle until all safety precautions have been read and understood.
P261	Avoid breathing mist or vapour
P264	Wash skin thoroughly after handling.
P302 + P352	IF ON SKIN: Wash with plenty of 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.

Supplemental Hazard Statements None

Restricted to professional users.

2.3 Other hazards:

This substance/mixture contains no components considered to be either persistent, bio accumulative and toxic (PBT), or very persistent and very bio accumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition / information on ingredients

3.1 Substances

Common names & Synonyms	Mol. formula	CAS number
N-Methyl-2-pyrrolidone; 1-Methyl-2-pyrrolidone; NMP	C ₅ H ₉ NO	872-50-4
Component	Classification	Concentration
N-methyl-2-pyrrolidone	Skin Irrit. 2; Eye Irrit. 2; Repr. 1B; STOT SE 3; H315, H319, H360D, H335 Concentration limits: >= 5 %: Repr. 1B, H360D; >= 10 %: STOT SE 3, H335;	<= 100 %

SECTION 4: First aid measures

Description of first aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media Suitable

extinguishing media

Water Foam Carbon dioxide (CO₂) Dry powder

5.2 Special hazards arising from the substance or mixture

Carbon oxides Nitrogen oxides (NO_x) Combustible. Fire may cause evolution of: nitrogen oxides, nitrous gases Vapors are heavier than air and may spread along floors. Forms explosive mixtures with air on intense heating. Development of hazardous combustion gases or vapors possible in the event of fire.

5.3 Advice for firefighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information

Remove container from danger zone and cool with water. Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system..

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, and consult an expert. For personal protection see section 8.

6.2 Environmental precautions

Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material. Dispose of properly. Clean up affected area.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Work under hood. Do not inhale substance/mixture. Avoid generation of vapors/aerosols. Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge. Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Protected from light. Tightly closed. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons. Recommended storage temperature, see product label.

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulate

SECTION 8: Exposure controls / Personal protection

8.1 Control parameters

Derived No Effect Level (DNEL)

Application Area	Exposure routes	Health effect	Value
Workers	Skin contact	Acute systemic effects	208mg/kg BW/d
Workers	Inhalation	Acute systemic effects	80 mg/m ³
Workers	Skin contact	Long-term systemic effects	19.8mg/kg BW/d
Workers	Inhalation	Long-term systemic effects	40 mg/m ³

Predicted No Effect Concentration (PNEC)

Compartment	Value
Water	5 mg/l
Soil	0.138 mg/kg
Marine water	0.025 mg/kg
Fresh water	0.25 mg/l
Fresh water sediment	0.805 mg/kg
Onsite sewage treatment plant	10 mg/l

8.2 Exposure controls

Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection

Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body Protection

Protective clothing

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use (US) or type ABEK (EN 14387) respirator cartridges as a backup to engine protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure

Do not let product enter drains

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

- | | |
|---|--|
| a) Appearance | Form: liquid Color: colorless |
| b) Odour | Amine-like |
| c) Odour Threshold | No data available |
| d) pH | 7.7 - 8 |
| e) Melting point/freezing point | Melting point/range: -24 °C - lit. |
| f) Initial boiling point and boiling range | 202 °C - lit. |
| g) Flash point | 91 °C |
| h) Evaporation rate | No data available |
| i) Flammability (solid, gas) | No data available |
| j) Upper/lower flammability or explosive limits | Upper explosion limit: 9.5 %(V)
Lower explosion limit: 1.3 %(V) |
| k) Vapour pressure | 0.29 - 0.32 mmHg at 20 °C
0.99 mmHg at 40 °C |
| l) Vapour density | 3.42 - (Air = 1.0) |
| m) Relative density | 1.028 g/cm ³ at 25 °C |
| n) Water solubility | No data available |
| o) Partition coefficient: n-octanol/water | Log Pow: -0.46 |
| p) Auto-ignition temperature | No data available |
| q) Decomposition temperature | No data available |
| r) Viscosity | No data available |
| s) Explosive properties | No data available |
| t) Oxidizing properties | No data available |

9.2 Other safety information

Conductivity	0, 2 - 0,4 µS/cm
Surface tension	40, 4 mN/m
Relative vapor	
Density	3, 42 - (Air = 1.0)

SECTION 10: Stability and reactivity

10.1 Reactivity

Forms explosive mixtures with air on intense heating. A range from approx. 15 Kelvin below the flash point is to be rated as critical.

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature).

10.3 Possibility of hazardous reactions

Risk of ignition or formation of inflammable gases or vapors with: Oxidizing agents violent reactions possible with: Strong acids Strong bases

10.4 Conditions to avoid

Strong heating

10.5 Incompatible materials

Various plastics

10.6 Hazardous decomposition products

In the event of fire: see section 5

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity

LD50 Oral - Rat –
Male and female - 4.150 mg/kg
(OECD Test Guideline 401) LC50 Inhalation –
Rat - male and female - 4 h - > 5,1 mg/l
(OECD Test Guideline 403)
LD50 Dermal - Rat –
Male and female - > 5.000 mg/kg (OECD Test Guideline 402) No data available

Skin corrosion/irritation

Skin - Rabbit Result:
Irritating to skin. - 24 h (OECD Test Guideline 404)
Classified according to
Regulation (EU) 1272/2008,
Annex VI (Table 3.1/3.2)

Serious eye damage/eye irritation Eyes -

Rabbit Result: Eye irritation (OECD Test Guideline 405) Classified according to
Regulation (EU) 1272/2008, Annex VI
(Table 3.1/3.2)

Respiratory or skin sensitization

Local lymph node assay (LLNA) - Mouse
Result: negative (OECD Test Guideline 429)

Germ cell mutagenicity

Test Type: Ames test
Test system: Salmonella
Typhimurium Metabolic activation:
With and without

Metabolic activation Method:
OECD Test Guideline
471 Result: negative Test Type:
In vitro mammalian cell
Gene mutation test Test system:
Chinese hamster ovary
Cells Metabolic activation:
With and without
Activation Method: OECD
Test Guideline 476 Result:
Negative Test Type:

Unscheduled DNA synthesis
Test system: rat hepatocytes Method: OECD Test
Guideline 482 Result: negative Test Type: In vivo
Micronucleus test Species: Mouse Cell type: Bone
Marrow Application Route: Oral Method: OECD Test
Guideline 474 Result: negative

Carcinogenicity

IARC: No component of this product present at levels
Greater than or equal to 0.1% is identified as
Probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity

May damage the unborn child.
May damage fertility.

Specific target organ toxicity - single exposure

Inhalation - May cause respiratory irritation.
(N-methyl-2-pyrrolidone)

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available
(N-methyl-2-pyrrolidone)

Additional Information

Repeated dose toxicity - Rabbit - male - Dermal - 20 d - NOAEL
(No observed adverse effect level) - 826 mg/kg –
LOAEL (Lowest observed adverse effect level) –
1.653 mg/kg Remarks: Subacute toxicity Prolonged or
Repeated exposure may cause: Vomiting, Diarrhea,
Abdominal pain, Rats exposed to 1-methyl-2-pyrrolidinone at a
Concentration of 1 mg/L as an aerosol for 10 days showed
Depletion of hematopoietic cells in
The bone marrow and atrophy of the lymphoid
tissues of the thymus, spleen, and lymph nodes.
To the best of our knowledge, the c
Chemical, physical, and toxicological
Properties have not
Been thoroughly investigated.
Bone marrow - Irregularities –
Based on Human Evidence

SECTION 12: Ecological information

Toxicity

Toxicity to fish	LC50 - other fish - 4,000 mg/l - 96 h (N-methyl-2-pyrrolidone) LC50 - Leuciscus idus (Golden orfe) - > 500 mg/l - 96 h (N-methyl-2-pyrrolidone)
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - > 1,000 mg/l - 24 h (N-methyl-2-pyrrolidone)
Toxicity to bacteria	LC50 - Bacteria - > 9,000 mg/l (N-methyl-2-pyrrolidone)

Persistence and degradability

Biodegradability Result: 90 % - Readily biodegradable
Biochemical Oxygen Demand (BOD): 1,100 mg/g Remarks: (Lit.)
Chemical Oxygen Demand (COD): 1,600 mg/g Remarks: (Lit.)

Bio accumulative potential

No data available

Mobility in soil

No data available (N-methyl-2-pyrrolidone)

Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bio accumulative and toxic (PBT), or very persistent and very bio accumulative (vPvB) at levels of 0.1% or higher.

Other adverse effects

No data available

SECTION 13: Disposal considerations

Waste treatment methods	This combustible material may be burned in a chemical incinerator equipped with an afterburner and
Products	scrubber. Offer surplus and non-recyclable solutions to a licensed disposal company.
Contaminated packaging	Dispose of as unused product.

SECTION 14: Transport information

	UN no.	UN proper shipping name	Hazard Class(es)	Packaging group	Marine Pollutant
ADR / RID	-	1-Methyl-2-pyrrolidinone	Not dangerous goods	-	No
IMDG	-	1-Methyl-2-pyrrolidinone	Not dangerous goods	-	No
IATA	-	1-Methyl-2-pyrrolidinone	Not dangerous goods	-	No

SECTION 15: Regulatory information

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

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

Chemical safety assessment

For this product a chemical safety assessment was not carried out.

SECTION 16: Other information

The information in this SDS is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. The user must be determined suitability of this information for his application.