

Material Safety Data Sheet

Product name N-Methylpyrrolidone

1. Identification of the substance/mixture and of the company/undertaking

1.1. Product name N-Methylpyrrolidone
 1.2. CAS-No. 872-50-4
 1.3. Relevant identified uses of the substance or mixture and uses advised against
 Identified uses Laboratory chemicals, Synthesis of substances
 1.4. Details of the supplier of the safety data sheet
 Company Glory Global CO.,LTD
 Address C-208, 10, Nowon-ro 15-gil, Nowon-gu, Seoul, Korea
 Emergency Phone +82 2 6223 0862

2. Hazards identification

2.1. Classification of the substance or mixture GHS – Skin irritation (Category 2), H315
 Classification in accordance with 29 CFR 1910 (OSHA HCS) – 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. GHS Label elements, including precautionary statements

Pictogram



Signal word

Warning

H315

Causes skin irritation.

H319

Causes serious eye irritation.

H335

May cause respiratory irritation

H360D

May damage the unborn child.

2.3. Precautionary statement(s)

P201

Obtain special instructions before use.

P280

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

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.

2.4. Hazards not otherwise classified (HNOC) or not covered by GHS

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

3. Composition/information on ingredients

3.1. Substances

Synonyms N-Methyl-2-pyrrolidone
 1-Methyl-2-pyrrolidone
 NMP
 M-PYROL™
 Formula C₅H₉NO
 Molecular weight 99.13 g/mol
 CAS No 872-50-4
 EC-No. 212-828-1

Component	Classification	Concentration
N-methyl-2-pyrrolidone included in the Candidate List of Substances of Very High Concern (SVHC) according to Regulation (EC) No. 1907/2006 (REACH)		
CAS-No. 872-50-4 EC-No. 212-828-1	Skin Irrit.2; Eye Irrit.2; Repr.1B; STOT SE3: H315, H319,H360D, H335 Concentration limits: ≥ 5 %: Repr.1B, H360D; ≥ 10 %: STOT SE3, H335;	≤ 100 %

4. First aid measures**4.1. 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.

4.2. 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

4.3. Indication of any immediate medical attention and special treatment needed

- No data available

5. Firefighting measures**5.1. Extinguishing media**

- Suitable extinguishing media – Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2. Special hazards arising from the substance or mixture

- Carbon oxides, Nitrogen oxides (NO_x)

5.3. Special protective equipment and precautions for fire fighters

- Wear self-contained breathing apparatus for firefighting if necessary.

5.4. Further information

- Use water spray to cool unopened containers.

6. Accidental release measures**6.1. Personal precautions, protective equipment and emergency procedures**

- Use personal protective equipment. Avoid breathing vapours, mist or gas.
– Ensure adequate ventilation. Remove all sources of ignition. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
– For personal protection see section 8.

6.2. Environmental precautions

- Prevent further leakage or spillage if safe to do so.
– Do not let product enter drains.

6.3. Methods and materials for containment and cleaning up

- Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal.

6.4. Reference to other sections

- For disposal see section 13.

7. Handling and storage**7.1. Precautions for safe handling**

- Avoid exposure
: Obtain special instructions before use. Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
– Keep away from sources of ignition
: No smoking. Take measures to prevent the build up of electrostatic charge.
– For precautions see section 2.2.

7.2. Conditions for safe storage, including any incompatibilities

- Store in cool place.
– Keep container tightly closed in a dry and well-ventilated place.
– Containers which are opened must be carefully resealed and kept upright to prevent leakage.
– Store under inert gas.
– Moisture sensitive.

7.3. Specific end use(s)

- S- storage class (TRGS 510): Non-combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials causing chronic effects.
– Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

8. Exposure controls/personal protection**8.1. Control parameters**

Components with workplace 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

a) 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).

b) 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.

c) Body Protection

– Impervious clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

d) Respiratory protection

– Where risk assessment shows air-purifying respirators are appropriate use a fullface respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of 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).

e) Control of environmental exposure

– Prevent further leakage or spillage if safe to do so. Do not let product enter drains.
– Discharge into the environment must be avoided.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Form: liquid Colour: colourless
Odour	No data available
Odour Threshold	No data available
pH	7.7 – 8
Melting / freezing point	Melting point/range: –24 °C
Initial Boiling Point and Boiling Range	202 °C 81 – 82 °C at 13 hPa
Flash point	91 °C – closed cup
Evaporation rate	No data available
Flammability (solid, gas)	No data available
Upper/lower flammability or explosive limits	Upper explosion limit: 9.5 %(V) Lower explosion limit: 1.3 %(V)
Vapour pressure	0.29 – 0.32 mmHg at 20 °C 0.99 mmHg at 40 °C
Vapour density	3.42 – (Air = 1.0)
Relative Density	1.028 g/mL at 25 °C
Water solubility	No data available
Partition coefficient n-octanol/water	–0.46
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No data available

9.2. Other safety information

Surface tension	40.7 mN/m
Relative vapour density	3.42 – (Air = 1.0)

10. Stability and reactivity

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| 10.1. Reactivity | – No data available |
| 10.2. Chemical stability | – Stable under recommended storage conditions. |
| 10.3. Possibility of hazardous reactions | – Vapours may form explosive mixture with air. |
| 10.4. Conditions to avoid | – Heat, flames and sparks. |
| 10.5. Incompatible materials | – Strong oxidizing agents, Strong reducing agents, Strong bases |
| 10.6. Hazardous decomposition products | – Hazardous decomposition products formed under fire conditions.: Carbon oxides
– Other decomposition products: No data available
– In the event of fire: see section 5 |

11. Toxicological information

11.1. Information on toxicological effects

Acute toxicity	LD50 Oral-Rat-3,914 mg/kg(N-methyl-2-pyrrolidone) LDLO Inhalation-Rat-4 h-> 5100 ppm(N-methyl-2-pyrrolidone) LD50 Dermal-Rabbit-8,000 mg/kg(N-methyl-2-pyrrolidone)
Skin corrosion/irritation	Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)(N-methyl-2-pyrrolidone)
Serious eye damage/eye irritation	Eyes-Rabbit(N-methyl-2-pyrrolidone) Result: Eye irritation
Respiratory or skin sensitisation	No data available(N-methyl-2-pyrrolidone)
Germ cell mutagenicity	No data available(N-methyl-2-pyrrolidone)

11.2. Carcinogenicity

11.3. Reproductive toxicity

Damage to fetus possible(N-methyl-2-pyrrolidone)

11.4. Specific target organ toxicity – single exposure

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

11.5. Specific target organ toxicity – repeated exposure

No data available

11.6. Aspiration hazard

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

11.7. Additional Information

Bone marrow-Irregularities-Based on Human Evidence(N-methyl-2-pyrrolidone)

12. Ecological information

12.1. Toxicity

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)
Algae/aquatic plants	EC50-Daphnia magna (Water flea)-> 1,000 mg/l/24 h(N-methyl-2-pyrrolidone)
Bacteria	LC50-Bacteria-> 9,000 mg/l(N-methyl-2-pyrrolidone)
12.2. Persistence and degradability	Biodegradability Result: 90 %-Readily biodegradable.
12.3. Bioaccumulative potential	- No data available
12.4. Mobility in soil	No data available(N-methyl-2-pyrrolidone)
12.5. Results of PBT and vPvB assessment	- This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.
12.6 Other adverse effects	- No data available

13. Disposal considerations

13.1 Waste treatment methods

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

14. Transport information

14.1. DOT (US)	- Not dangerous goods
14.2. IMDG	- Not dangerous goods
14.3. IATA (Country variations may apply)	- Not dangerous goods

15. Regulatory information

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

15.2. Authorisations and/or restrictions on use

15.3. Chemical safety assessment

A Chemical Safety Assessment has been carried out for this substance.

16. Other information

16.1. Further information	- Always work safely around open hatches on bulk tanks. The low density makes flotation difficult for immersed person.
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