



SAFETY DATA SHEET

N-Methyl-2-Pyrrolidone

1. IDENTIFICATION OF THE SUBSTANCE OR MIXTURE AND OF THE SUPPLIER

Product name:	N-Methyl-2-Pyrrolidone
Recommended use:	Chemical for industrial
Manufacturer/Supplier:	MODERN CHEMICAL CO.,LTD. 82/80 Soi Ekamai 22 (Nuannoi), Sukhumvit 63, Klong Tan Nuea, Watthana, Bangkok 10110
Telephone No:	0-2715-0897-9, 0-2392-3410-3
Fax No:	0-2715-0908-9, 0-2391-1571-2
Emergency Telephone No:	0-2715-0897-9, 0-2392-3410-3

2. HAZARDS IDENTIFICATION

Label elements

Pictogram



Signal word

Danger

Hazard statement(s):

- 1.) Combustible liquid.
- 2.) May be harmful if swallowed.
- 3.) Causes serious eye irritation.
- 4.) May cause respiratory irritation.
- 5.) May cause drowsiness or dizziness.
- 6.) May damage fertility or the unborn child.

**Precautionary statement(s):**

- 1.) Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.
- 2.) Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
- 3.) Avoid breathing dust/fume/gas/mist/vapours/spray.
- 4.) Wash skin thoroughly after handling.
- 5.) Use only outdoors or in a well-ventilated area.
- 6.) Wear protective gloves/protective clothing/eye protection/face protection.
- 7.) In case of fire: Use dry chemical, carbon dioxide, water spray, or alcohol resistant-foam.
- 8.) IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.
- 9.) IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- 10.) If eye irritation persists: Get medical advice/attention.
- 11.) IF exposed or concerned: Get medical advice/attention.
- 12.) Store in a well-ventilated place. Keep container tightly closed.
- 13.) Keep cool.
- 14.) Store locked up.
- 15.) Dispose of contents/ container to an approved waste disposal plant.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonym: n-Methylpyrrolidinone; 1-Methyl-2-Pyrrolidinone; N-methyl-2-pyrrolidone

Ingredients	% (w/w)	CAS NO.
N-Methyl-2-Pyrrolidone	100	872-50-4

4. FIRST AID MEASURES**General advice:**

Take proper precautions to ensure your own health and safety before attempting rescue and providing first aid. Do not leave the victim unattended. Show this material safety data sheet to the doctor in attendance. Wear appropriate personal protective equipment, avoid direct contact. Move out of dangerous area. Remove contaminated shoes and clothing. Get medical attention immediately.

Inhalation:

Remove victim to fresh air and keep at rest in a position comfortable for breathing.



Do not leave the victim unattended. Immediately seek medical attention. Keep patient warm and rest. If breathing is difficult, give oxygen. If unconscious, place in recovery position and seek medical advice. In the event of unconsciousness, apnea or cardiac arrest (no pulse), apply cardiopulmonary resuscitation.

Skin contact:

Appears to be readily absorbed through the skin but no systemic toxicity is expected from acute dermal exposure. Take off contaminated clothing and shoes immediately. In case of contact, immediately flush skin with soap and plenty of water. Seek medical attention if ill effect or irritation develops. Wash contaminated clothing before reuse.

Eye contact:

In case of eye contact, remove contact lens and rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention immediately if irritation persists.

Ingestion:

If victim is drowsy or unconscious, place on the left side with head down. If victim is conscious and able to swallow, have victim drink water to dilute. Never give anything by mouth if victim is unconscious or having convulsions. This product poses a possible lung aspiration hazard if it is ingested. Induce vomiting only if advised by physician or Poison Control Center. CALL A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY! If vomiting does occur, have victim lean forward to reduce risk of aspiration.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media:

SMALL FIRE: Use dry chemical, carbon dioxide, water spray or alcohol-resistant foam.

LARGE FIRE: Use water spray, water fog or alcohol-resistant form.

Unsuitable Extinguishing Media:

Do not use solid water stream.

Specific hazards arising from Chemicals:

When heated above the flash point, releases flammable vapors. When mixed with air and exposed to ignition source, vapors can burn in open or explode if confined. Vapors may be heavier than air. May travel long distances along the ground before igniting and flashing back to vapor source. Fine sprays/mists may be combustible at temperatures below normal flash point. Move containers from fire area if it can be done without risk. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Heat may build enough pressure to rupture closed



containers/spreading fire/increasing risk of burns/injuries. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. Always stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Do not allow run-off from fighting to enter drains or water courses. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Special protective equipment for fire-fighters:

Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighter's protective clothing will only provide limited protection.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:

Clean-up to be performed only by trained and properly equipped personnel. Wear recommended personal protective equipment. Ensure adequate ventilation. Evacuate personnel to safe areas.

Environmental precautions:

Prevent entry into waterways, sewers, basements or confined areas. If the product contaminates rivers and lakes or drains inform respective authorities. If necessary, all contaminated waste water must be treated in a municipal or industrial wastewater treatment plant before release to surface water.

Chemical remove by air and water pollution control devices must meet the minimum efficiency requirements needed to reduce exposures to an acceptable level. The discharge of treatment plant effluent to rivers and oceans must achieve the dilution ratio needed to reduce exposures to an acceptable level. The size and capacity of wastewater treatment plants must meet the minimum requirements needed to reduce exposures to an acceptable level.

Waste management practices such as Incineration, recycling, reuse must be enforced as needed to reduce exposure to an acceptable level.

External treatment and disposal of waste should comply with applicable local and/or national regulations. The maximum allowable site tonnage and the days of use should be below the number needed to maintain exposures at an acceptable level.



Methods and Material for Containment and Clean Up:

Combustible liquid. Eliminate all sources of ignition. All equipment used when handling this product must be grounded. Do not touch or walk through spilled material. Stop leak if you can do it without risk. A vapor suppressing foam may be used to reduce vapors. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Use clean non-sparking tools to collect absorbed material. Dike large spills and place materials in salvage containers. Water spray may reduce vapor, but may not prevent ignition in closed spaces. Treat all waste as hazardous and dispose using licenced waste removal company.

7. HANDING AND STORAGE

Precautions for Safe Handling & Product Transfer:

Use only in area provided with appropriate exhaust ventilation. Handle empty containers with care-residue may be combustible and burn if exposed to heat/sparks/open flame. In addition to the fire/explosion hazard, residual vapor and liquid may also be toxic. Keep container tightly closed when not in use. Keep away from heat and sources of ignition. Isolate, vent, drain, wash and purge systems or equipment before maintenance or repair. Wear recommended personal protective equipment. Avoid contact with incompatible agents. Observe precautions pertaining to confined space entry. Keep away from heat and sources of ignition.

Conditions for Safe Storage & Unsuitable Materials:

Mild or stainless steel. Store away from heat, sparks, open flames, strong oxidizing agents and direct sunlight. Keep container tightly closed and properly labeled.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits: No data available

Appropriate Engineering Controls: At elevated temperatures, special ventilation may be required even if the flash point has not been exceeded. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits.

Individual Protection Measures

Respiratory protection: When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.



- Hand protection:** Use chemical resistant gloves appropriate to conditions of use. Wear chemical resistant gloves such as: Butyl rubber. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
- Eye protection:** Eye protection, including both chemical splash goggles and face shield, must be worn when possibility exists for eye contact due to splashing/spraying liquid, airborne particles, or vapor.
- Skin and body Protection:** When skin contact is possible, protective clothing including gloves, apron, sleeves, boots, head and face protection should be worn. Choose body protection according to the amount and concentration of the dangerous substance at the work place. Use PPE that is chemical resistant to the product and prevents skin contact.
- Hygiene measure:** Selection of appropriate personal protective equipment should be based on an evaluation of the performance characteristics of the protective equipment relative to the task (s) to be performed, conditions present, duration of use, and the hazards and/or potential hazards that may be encountered during use. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet facilities. Take off contaminated clothing and wash before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form, Color and Odor: liquid, colorless, Amine-like	Evaporation rate: N/A
Melting Point: -24.2 °C	Specific gravity: 1.02-1.04 g/cm ³ at 25 °C
pH: N/A	Solubility in water: 1,000 g/l at 20 °C completely miscible
Boiling point: 204 °C	Viscosity: 1.661 mPa.s at 25°C
Vapour pressure: 0.32 hPa at 20 °C	Vapour density: 3.4 at 15.5 – 32.2 °C (air=1)
Lower explosion limits: 1.3%Vol	Upper explosive limit: 9.5%Vol
Auto-ignition temperature: 245 °C	Flash point: 91°C
Odour threshold: N/A	Flammability (solid, gas): N/A
Decomposition temperature: N/D	Solubility in other solvents: N/A
n-octanol/water partition coefficient (log P_{ow}): -0.46 at 25°C	



10. STABILITY AND REACTIVITY

Chemical Stability: Stable under recommended storage conditions.

Reactions: Not classified as a reactivity hazard.

Possibility of Hazardous Reactions: Not expected to occur. Stable.

Conditions to avoid: In contact with moisture, this hygroscopic (i.e., absorbs water from the air) material may degrade or become contaminated. Heat, sparks, open flame, other ignition sources, and oxidizing conditions.

Materials to be avoided: Strong oxidizing agents. Strong reducing agent. Moisture and humidity.

Hazardous Decomposition Products: Carbon monoxides and nitrogen oxide fumes emitted when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

Acute toxicity: LD50 (Oral, rat): 4,150 mg/kg
LC50 (Inhalation, rat): >5.1 mg/l – 4h
LD50 (Dermal, rat): >5,000 mg/kg

Sensitization: After eye contact: Causes serious eye irritation. After skin contact: may cause mild skin irritation.

Chronic toxicity: Carcinogenicity: This product has had a positive finding in a carcinogenic investigation. The findings do not appear to be relevant to classification due to the non genotoxic mechanism and the species sensitivity to the liver tumors observed. May damage the unborn child. Target Organ systemic toxicant-single exposure: may cause respiratory irritation., may cause drowsiness or dizziness. Exposure routes: Inhalation. Target Organs: Respiratory system, Central nervous system. Aspiration hazard: May be harmful if swallowed and enters airways.

Further toxicological information: No data available.

12. ECOLOGICAL INFORMATION

Toxicity

Toxicity to fish: Acute toxicity to fish is very low.

Toxicity to daphnia and other aquatic invertebrates:

Low acute toxicity to aquatic invertebrates.



Toxicity to algae:	Low toxicity to algae.
Toxicity to bacteria:	Low toxicity to sewage microbes.
Biodegradability remark:	Readily biodegradable. BOD = 73% (28 day).
Bioaccumulative potential:	Not expected to bioaccumulate in aquatic organisms.
Mobility:	Low potential for soil adsorption expected.
Affected in any other way:	Stability in water: Hydrolysis expected to be very slow. Half-life > 1 year.

13. DISPOSAL CONSIDERATIONS

Material Disposal: Dispose of as hazardous waste in compliance with local and national regulations. The product should not be allowed to enter drains, water courses or the soil. Incinerate concentrated liquids in compliance with local, state or international regulation. Contaminated product, soil, water, container residues and spill cleanup materials may be hazardous wastes. Comply with applicable local, state or international regulations concerning solid or hazardous waste disposal and/or container disposal.

Container Disposal: Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.

14. TRANSPORT INFORMATION

ADR/RID

No data available

IMDG

BLG (MARPOL Annex II)

Description of the goods: N-METHYL-2-PYRROLIDONE

Pollution category: Y

Ship type: 3

IATA

No data available

15. REGULATORY INFORMATION

Other International regulations

Global Inventory Status



The ingredients of this product are compliant with the following chemical inventory requirements or exemptions.

*Additional Explanatory Status Statements follow the table, as necessary.

Country/Region	Inventory	Status Description
Australia	AICS	Compliant
Canada	DSL	Compliant
China	IECSC	Compliant
Europe	REACH	See REACH Compliance Statement
Japan	ENCS	Compliant
Korea	KECI	Compliant
New Zealand	NZIoC	Compliant
Philippines	PICCS	Compliant
United States of America	TSCA	Compliant
Taiwan	TCSCA	Compliant

REACH status

It the product has been purchased from any company of the LyondellBasell group of companies registered in the European Union, we confirm that the chemical substance in this product has been pre-registered or, where required under REACH, registered, and that we have the intention to proceed with any required registration in accordance with the deadlines set forth in REACH. (Regulation (EU) No. 1907/2006)

16. OTHER INFORMATION

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