

N-Methyl-2-pyrrolidone MSDS (Material Safety Data Sheet)

Section 1: Product Name and Identification

- **Product Name:** [N-Methyl-2-pyrrolidone](#)
- **Chemical Name:** 1-Methyl-2-pyrrolidone
- **Synonyms:** NMP, 1-Methylpyrrolidin-2-one
- **CAS Number:** 872-50-4
- **Use of Product:** Industrial solvent, paint remover, polymer processing, cleaning applications

Section 2: Composition/Ingredients

- **Chemical Composition:**
 - N-Methyl-2-pyrrolidone - $\geq 99\%$
- **Molecular Formula:** C₅H₉NO
- **Molecular Weight:** 99.13 g/mol
- **Impurities or Additives:** May contain trace amounts of water or unreacted precursors

Section 3: Hazards Identification

- **GHS Classification:**
 - Skin Irritation (Category 2)
 - Eye Irritation (Category 2A)
 - Reproductive Toxicity (Category 1B)
- **Signal Word:** Danger
- **Hazard Statements:**
 - H315: Causes skin irritation.
 - H319: Causes serious eye irritation.
 - H360D: May damage the unborn child.
- **Precautionary Statements:**
 - Avoid contact with skin and eyes.
 - Wear suitable personal protective equipment.
 - Use only in well-ventilated areas.

Section 4: First Aid Measures

- **Eye Contact:** Rinse immediately with water for several minutes. Remove contact lenses if easy to do. Seek medical attention if irritation persists.
- **Skin Contact:** Wash thoroughly with soap and water. Remove contaminated clothing. If symptoms develop, consult a physician.

- **Inhalation:** Move to fresh air. If breathing is difficult, seek medical attention.
- **Ingestion:** Rinse mouth thoroughly and drink water. Do not induce vomiting. Contact a healthcare provider immediately.

Section 5: Handling and Storage

- **Handling:**
 - Avoid direct contact with the substance.
 - Use appropriate personal protective equipment.
 - Ensure proper ventilation in work areas.
- **Storage:**
 - Store in a tightly sealed container.
 - Keep in a cool, dry, well-ventilated area away from strong acids, bases, and oxidizing agents.

Section 6: Exposure Controls/Personal Protection

- **Exposure Limits:**
 - ACGIH TLV: 10 ppm (skin)
 - OSHA PEL: Not established
- **Engineering Controls:**
 - Maintain adequate ventilation or use local exhaust systems.
- **Personal Protective Equipment (PPE):**
 - **Eye Protection:** Chemical safety goggles or face shield.
 - **Hand Protection:** Chemical-resistant gloves (e.g., nitrile).
 - **Skin Protection:** Protective clothing to minimize skin contact.
 - **Respiratory Protection:** Use an approved respirator if airborne concentrations exceed recommended limits.

Section 7: Physical and Chemical Properties

- **Appearance:** Colorless to pale yellow liquid
- **Odor:** Mild amine-like odor
- **Melting Point:** -24°C (-11.2°F)
- **Boiling Point:** 202°C (396°F)
- **Solubility:** Fully miscible in water
- **pH:** Neutral (6-8 in water solution)
- **Flashpoint:** 91°C (195°F)
- **Vapor Pressure:** 0.3 mmHg at 20°C
- **Density:** 1.028 g/cm³ at 20°C
- **Auto-ignition Temperature:** 346°C (655°F)

Section 8: Stability and Reactivity

- **Stability:** Stable under normal usage and storage conditions.
- **Conditions to Avoid:** Avoid exposure to excessive heat, open flames, and humidity.
- **Materials to Avoid:** Strong acids, strong bases, and oxidizing agents.
- **Hazardous Decomposition Products:** Under decomposition, may emit toxic fumes such as nitrogen oxides and carbon monoxide.

Section 9: Toxicological Information

- **Routes of Exposure:** Skin contact, eye contact, inhalation, ingestion.
- **Acute Toxicity:**
 - LD50 (Oral - Rat): 3914 mg/kg
 - LD50 (Dermal - Rabbit): 8000 mg/kg
 - LC50 (4h - Rat, inhalation): >5.1 mg/L
- **Chronic Exposure:** Prolonged or repeated exposure may result in damage to the reproductive system.
- **Symptoms of Overexposure:** Eye and skin irritation, headache, dizziness, nausea.
- **Carcinogenicity:** Not classified as carcinogenic by IARC, NTP, or OSHA.
- **Reproductive Effects:** May cause adverse effects on fertility or the unborn child based on animal studies.

Section 10: Disposal Considerations

- **Waste Disposal:**
 - Dispose of waste material through a licensed disposal organization. Follow all applicable local, state, and federal disposal regulations.
- **Container Disposal:**
 - Ensure containers are completely emptied before disposal. Residual product should not be discarded into sewage or natural waterways.