

**SAFETY DATA SHEET**

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**Section 1, Identification**

**Catalog Number:** S-1L-NMP, S-4L-NMP, S-4x4L-NMP  
**Product Name:** N-Methyl-2-Pyrrolidone (NMP)  
**Alternate Name:** 1-Methyl-2-pyrrolidone, NMP, M-PYROLTM  
**Chemical family:** Solvent  
**Recommended Use:** Peptide Synthesis  
**Restrictions on Use:**

**Section 2, Hazard(s) Identification**



- **Emergency Overview**
  - Combustible Liquid, target Organ Effect, Irritant, teratogen
  - Target Organs: Bone marrow, Thymus, Spleen, Lymphatic system
  - Flammable, toxic, irritant (skin and eye)
- **Routes of Entry:** Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion
- **Potential Acute Health Effects**
  - Eyes: No known acute effects of this product resulting from eye contact.
  - Skin: Hazardous in case of skin contact (permeator, irritant).
  - Skin inflammation is characterized by itching, scaling, reddening, or, occasionally blistering.
  - Inhalation: Hazardous in case of inhalation (lung irritant).
  - Ingestion: Hazardous in case of ingestion.

**Section 3, Composition/Information on Ingredients**

Components	CAS #	Chemical Formula	Molecular Weight
N-Methyl-2 Pyrrolidone	872-50-4	C <sub>5</sub> H <sub>9</sub> NO	99.1 g/mol

**Section 4, First-Aid Measures**

- **Eye Contact**
  - Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used.
  - Do not apply neutralizing agents.
  - Get medical attention immediately.

- **Skin Contact**
  - In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient.
  - Cold water may be used.
  - Wash clothing before reuse. Thoroughly clean shoes before reuse.
  - Get medical attention immediately.
- **Inhalation**
  - If inhaled, move to fresh air. If not breathing, give artificial respiration.
  - If breathing is difficult, give oxygen.
  - Get medical attention immediately.
- **Ingestion**
  - If swallowed, do not induce vomiting unless directed to do so by medical personnel.
  - Never give anything by mouth to an unconscious person.
  - Loosen tight clothing such as a collar, tie, belt or waistband.
  - Get medical attention immediately.

## Section 5, Fire-Fighting Measures

- **Suitable extinguishing media:**
  - Water spray
  - Alcohol-resistant foam
  - Dry chemical
  - Carbon dioxide
- **Special exposure hazards:**
  - Hazardous decomposition products formed under fire conditions – carbon oxides, nitrogen oxides
  - Flammables in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/ hot surface. No smoking
- **Instructions:**
  - Cool tanks/drums with water spray/remove them into safety Dilute toxic gases with water spray Take account of toxic firefighting water. Use firefighting water moderately and contain it
- **Special protection equipment for firefighters:**
  - Wear self contained breathing apparatus for firefighting if necessary

## Section 6, Accidental Release Measures

- **Small Spill and Leak**
  - Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.
- **Large Spill and Leak**
  - Keep away from heat.
  - Keep away from sources of ignition.
  - Stop leak if without risk.
  - Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed.
  - Call for assistance on disposal.
  - Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

## Section 7, Handling and Storage

- **Handling:**
  - Use spark/explosion-proof appliances and lighting system
  - Keep away from heat, sparks and flame
  - Handle unclean empty containers as full ones
  - Do not discharge the waste into the drain
  - Remove contaminated clothing immediately
  - Avoid breathing vapors and spray mists
- **Storage:** Keep container in a cool, well-ventilated area

## Section 8, Exposure Controls/Personal Protection

- **Recommended engineering controls:**
  - Measure the concentration in the air regularly.
  - Work under local exhaust/ventilation.
  - Keep tightly closed
  - Keep away from heat, sparks, and open flame
  - Store in a cool dry place
- **Personal Protection:**
  - Avoid prolonged or repeated exposure
  - Wash thoroughly after handling
- **Eye protection:** Protective goggles
- **Hand protection:** 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.
- **Skin 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
- **Respiratory protection:**
  - Where risk assessment shows air-purifying respirators are appropriate use a full-face 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).

## Section 9, Physical and Chemical Properties

- |                                      |                                 |
|--------------------------------------|---------------------------------|
| • <b>Physical Appearance:</b>        | Colorless to pale yellow liquid |
| • <b>Odor:</b>                       | N/A                             |
| • <b>Boiling Point:</b>              | 202°C                           |
| • <b>Melting Point:</b>              | -24°C                           |
| • <b>Specific Gravity:</b>           | 1.028                           |
| • <b>Vapor Pressure (mmHg/70 F):</b> | 0.29-0.32 mmHg @ 20°C           |
| • <b>Vapor Density (Air = 1):</b>    | N/A                             |
| • <b>Explosion limits in air:</b>    |                                 |
| ○ <b>Lower:</b>                      | 1.3 % (V)                       |
| ○ <b>Flashpoint:</b>                 | 91°C                            |
| ○ <b>Water Solubility:</b>           | N/A                             |

## Section 10, Stability and Reactivity

- **Stability:** Stable under recommended storage conditions
- **Thermal (heat) decomposition:** Hazardous decomposition products formed under fire conditions – Carbon oxides, nitrogen oxides. Other decomposition products – no data available
- **Conditions/materials to avoid:** Heat, flames and sparks. Strong acids, strong oxidizing agents

## Section 11, Toxicological Information

- **Acute toxicity:**
  - LD 50 oral rat: 3914 mg/kg
  - LD50 dermal rabbit: 8000 mg/kg
  - LC50 inhalation rat: 5100 ppm / 4 h
  - Skin rabbit: N/A
  - Eye rabbit: N/A
- **Routes of exposure:** Ingestion, inhalation, eyes and skin substance is absorbed through the skin
- **Inhalation:** Inhalation may be harmful. Causes respiratory tract irritation
- **Ingestion:** May be harmful if swallowed
- **Symptoms:** Dry/sore throat Coughing, nausea, headache, shortness of breath, wheezing, laryngitis
- **Skin Contact:** May be harmful if absorbed through skin. Causes skin irritation
- **Eye Contact:** Causes eye irritation

## Section 12, Ecological Information\*

- **BOD5 and COD:** N/A

## Section 13, Disposal Considerations\*

- **EPA waste number:** N/A
- **Treatment:** Material does not have an EPA Waste Number and is not a listed waste, however consultation with a permitted waste disposal site (TSD) should be accomplished. Always contact a permitted waste disposal (TSD) to assure compliance with all current local, state, and Federal Regulations.

## Section 14, Transport Information\*

- **Proper shipping name:** Combustible liquid, n.o.s. (N-methyl-2-pyrrolidone)
- **Transport by road/rail (ADR/RID):** Class CBL, UN 1993
- **Danger code:**
- **Danger labels on tanks:**
- **Danger labels on packages:**
- **Packing identification:** III
- **Maritime transport (IMDG code:)**

## Section 15, Regulatory Information\*

- **SARA 302 Components:** No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

- **SARA 313 Components:** The following components are subject to reporting levels established by SARA Title III, Section 313: N-methyl-2- pyrrolidone
- **SARA 311/312 Hazards:** Fire Hazard, Acute Health Hazard, Chronic Health Hazard
- **California Prop. 65 Component:** WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm: N-methyl-2-pyrrolidone

### **Section 16, Other Information**

The information accumulated herein is believed to be accurate but is not warranted to be whether origination with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This MSDS has been prepared by Gyros Protein Technologies.

\*Note: Since other Agencies regulate this information, OSHA will not be enforcing Sections 12 through 15(29 CFR 1910.1200(g)(2)).