1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Code: 5000108
Product Name: N-Methyl Pyrrolidone
Synonyms: NMP, M-Pyrol, 1-Methyl-2-Pyrrolidinone
Trade Name: ACL-500 Electronic Grade NMP
Manufacturer/Supplier: Applied Chemical Laboratories, Inc.
Address: 526 Almanor Ave.
Sunnyvale, CA 94085
Phone Number: (408) 737-8880
Emergency Phone Number: (408) 737-8880
Chemtrec #: (800) 424-9300
MSDS first issued: January 7, 2008
MSDS data revised: NA
Prepared By: Environmental, Health & Safety Department
Local Sales Company: Applied Chemical Laboratories, Inc.
526 Almanor Ave.
Sunnyvale, CA 94085

2. COMPOSITION/INFORMATION ON THE INGREDIENTS

Components without CAS numbers are Trade Secret
Component Name | CAS# Codes | Concentration
---|---|---
N-Methyl-2-Pyrrolidinone | 872-50-4 | >99%

3. HAZARD IDENTIFICATION

Main Hazards: Combustible Liquid. Irritant - Skin - Eye - Respiratory System
Routes of Entry: Inhalation, ingestion, eye and skin contact, absorption.
Carcinogenic Status: Not considered carcinogenic by NTP, IARC and OSHA
Health Effects - Eyes: Moderate to severe eye irritant, pain with blurred vision.
Health Effects - Skin: Material may cause irritation. Not a sensitizer.
Health Effects - Ingestion: May result in gastric irritation, discomfort and dizziness.
Health Effects - Inhalation: May cause respiratory tract irritation with continuous exposure to aerosol or high vapor concentrations. Harmful if inhaled or swallowed.
### 4. FIRST AID MEASURES

<table>
<thead>
<tr>
<th>First Aid - Eyes</th>
<th>Immediately flush the eye with plenty of water for at least 15 minutes, holding the eye open. Obtain medical attention immediately.</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Aid - Skin</td>
<td>Immediately flush the skin with large quantities of water, preferably under a shower. Remove contaminated clothing while flushing skin. Continue washing for at least 15 minutes. Contaminated clothing should be washed or dry-cleaned before re-use. Obtain medical attention immediately.</td>
</tr>
<tr>
<td>First Aid - Ingestion</td>
<td>Do not induce vomiting. Wash out mouth with water. Have victim drink 1-3 glasses of water to dilute stomach contents. Obtain medical attention immediately. Never administer anything by mouth if a victim is losing consciousness, is unconscious or is convulsing.</td>
</tr>
<tr>
<td>First Aid - Inhalation</td>
<td>Remove from exposure and move to fresh air immediately. If there is difficulty in breathing, give oxygen. Obtain medical attention immediately.</td>
</tr>
<tr>
<td>Advice to Physicians</td>
<td>Treat symptomatically.</td>
</tr>
</tbody>
</table>

### 5. FIRE FIGHTING MEASURES

<table>
<thead>
<tr>
<th>Extinguishing Media</th>
<th>Use water spray, alcohol foam, dry chemical or carbon dioxide. Keep containers and surroundings cool with water spray.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Fire-Fighting Procedures</td>
<td>This product may give rise to hazardous vapors in a fire. Vapors can travel a considerable distance to a source of ignition and result in flashback.</td>
</tr>
<tr>
<td>Protective Equipment for Fire-Fighting</td>
<td>Wear full protective clothing and self-contained breathing apparatus.</td>
</tr>
</tbody>
</table>

### 6. ACCIDENTAL RELEASE MEASURES

<table>
<thead>
<tr>
<th>Spill Procedures</th>
<th>In case of spill, remove any sources of ignition. Keep people away. Absorb the spilled material with earth or similar inert material. Flush the spilled area with plenty of water. Prevent material from entering waterways, sewers, basements or confined areas.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Precautions</td>
<td>Wear appropriate protective clothing. Wear respiratory protection.</td>
</tr>
<tr>
<td>Environmental Precautions</td>
<td>Prevent the material from entering drains or water courses. Do not discharge directly to a water source.</td>
</tr>
</tbody>
</table>
7. HANDLING AND STORAGE

Handling
Use local exhaust ventilation. Avoid contact with eyes, skin and clothing. Keep container tightly closed. Keep away from heat, sparks, flame, and other sources of ignition. Practice good personal hygiene to prevent accidental exposure.

Storage
Store in original container. Storage area should be cool dry well ventilated out of direct sunlight.

Other
None known.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Standards

Engineering Control Measures
Engineering methods to prevent or control exposure are preferred. Methods include process or personnel enclosure, mechanical ventilation (local exhaust), and control of process conditions.

Respiratory Protection
An organic solvent approved air purifying respirator recommended.

Hand Protection
Butyl rubber gloves. Nitrile, or other chemical resistant gloves may be recommended by your safety professional. Inspect all gloves prior to use and replace worn or damaged gloves.

Eye Protection
Chemical safety goggles. Eye bath should be present nearby.

Body Protection
Wear suitable protective clothing, gloves, boots, and aprons as necessary to prevent contact.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State
Liquid

Color
Clear to straw liquid

Odor
Slight amine odor

Specific Gravity (g/ml)
1.03 @ 20°C

pH
7.5 +/- 1

Initial Boiling Point (°C/F)
202°C

Flash Point (PMCC) (°C/F)
199°F / 93°C

Explosion Limits (%)
Not determined.

Solubility in Water
Completely soluble.

Evaporation Rate
Slower than ether.

Vapor Pressure
0.5 mmHg @ 20°C
10. STABILITY AND REACTIVITY

<table>
<thead>
<tr>
<th>Stability</th>
<th>Stable under normal conditions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions to Avoid</td>
<td>Severe reducing conditions. Sparks, heat, open flames.</td>
</tr>
<tr>
<td>Incompatibilities</td>
<td>With other material: strong reducing agents, strong oxidizing agents</td>
</tr>
<tr>
<td>Hazardous Polymerization</td>
<td>Will not occur.</td>
</tr>
<tr>
<td>Hazardous Decomposition</td>
<td>Will not occur.</td>
</tr>
</tbody>
</table>

11. TOXICOLOGICAL INFORMATION

| Acute Data                  | Oral toxicity: Rat LD50 (main ingredient): 5130 mg/Kg |
|                            | Inhalation toxicity: data not available |
|                            | Dermal toxicity: Rabbit LD50 (main ingredient): 8000 mg/Kg. |
| Chronic/Subchronic Data    | Skin irritation: (main ingredient) rabbit skin mild irritation. |
|                            | Eye irritation: Moderate irritant; no permanent damage. |
| Additional Data            | None known. |

12. ECOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>Mobility</th>
<th>No data available.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persistence/Degradability</td>
<td>The product is expected to be readily biodegradable.</td>
</tr>
<tr>
<td>Bio-accumulation</td>
<td>Product is not expected to bio accumulate.</td>
</tr>
<tr>
<td>Ecotoxicity</td>
<td>This product is not expected to be non-hazardous to aquatic species.</td>
</tr>
</tbody>
</table>

13. DISPOSAL CONSIDERATIONS

<table>
<thead>
<tr>
<th>Product Disposal</th>
<th>Dispose of waste and unused material in accordance with local, state and federal regulations. Under RCRA, it is the responsibility of the product’s user to determine at the time of disposal, whether the product meets RCRA criteria for hazardous waste. If additional information is required, contact Applied Chemical Labs Technical Services.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Container Disposal</td>
<td>Labels should not be removed from containers until they have been cleaned. Empty containers may contain hazardous residues. Dispose of containers with care.</td>
</tr>
</tbody>
</table>
14. TRANSPORT INFORMATION

DOT Ground: Not Regulated for non-bulk shipments (<119 gallons)
UN Proper Shipping Name: Combustible Liquid N.O.S. for bulk shipments >119 gallon containers
UN Class: Combustible Liquid N.O.S.
UN Number: NA 1993
UN Packaging Group: III
N.O.S. 1: Not applicable.
N.O.S. 2: Not applicable.
Subsidiary Risks: None.
CERCLA RQ: None.
Marine Pollutant: None.

15. REGULATORY INFORMATION

TSCA Sec.12(b) Export Notification
Toxic Substance Control Act (TSCA) Section 12(b) Export Notification (40CFR 707, Subt D) Inventory status: All ingredients of this product are listed on the TSCA inventory (See section 12(b) for the CAS numbers)

RCRA Hazard Waste No
Not Regulated.

CRCLA
No.

California Proposition 65
This product contains the following materials which the State of California has found to cause cancer, birth defects or other reproductive harm:
N-Methyl-2-Pyrrolidinone CAS# 872-50-4

SARA TITLE III-Section 311/312 Categorization (40 CFR 370)
Immediate, delayed, flammability hazard.

SARA TITLE III-Section 313 (40 CFR 372)
This product contains the following chemicals which is listed in section 313 at or above deminimis concentrations.
N-Methyl-2-Pyrrolidinone CAS# 872-50-4

16. OTHER INFORMATION

NFPA Rating- FIRE: 1
NFPA Rating- HEALTH: 2
NFPA Rating- REACTIVITY: 0
NFPA Rating- SPECIAL: None.
Revisions Highlighted: N/A
Abbreviations
CAS#: Chemical Abstract Services Number
ACGIH: American Conference of Governmental Industrial Hygienists
16. OTHER INFORMATION

OSHA: Occupational Safety and Health Administration
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
STEL: Short Term Exposure Limit
NTP: National Toxicology Program
IARC: International Agency for Research on Cancer
R: Risk
S: Safety
LD50: Lethal Dose 50%
LC50: Lethal Concentration 50%
BOD: Biological Oxygen Demand
TLm: Median Tolerance Limit

Disclaimer
The data contained herein is based on information that Applied Chemical Labs Inc. believes to be reliable, but no expressed or implied warranty is made with regard to the accuracy of such data or its suitability for a given situation. Such data relates only to the specific product described and not to such products in combination with any other product and no agent of ACLI is authorized to vary any of such data. ACLI and its agents disclaim all liability for any action taken or foregone on reliance upon such data.