SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers
Product name: N-Methyl-2-Pyrrolidone
CAS-No.: 872-50-4

1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified uses: Laboratory chemicals, Industrial & for professional use only.

1.3 Details of the supplier of the safety data sheet
Company: Central Drug House (P) Ltd
7/28 Vardaan House
New Delhi-10002
INDIA
Telephone: +91 11 49404040
Email: care@cdhfinechemical.com

1.4 Emergency telephone number
Emergency Phone #: +91 11 49404040 (9:00am - 6:00 pm) [Office hours]

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008
Skin irritation (Category 2), H315
Eye irritation (Category 2), H319
Reproductive toxicity (Category 1B), H360
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.

Classification according to EU Directives 67/548/EEC or 1999/45/EC
R61
Xi Irritant R36/37/38

For the full text of the R-phrases mentioned in this Section, see Section 16.

2.2 Label elements
Labelling according Regulation (EC) No 1272/2008
Pictogram

Signal word: Danger
Hazard statement(s)
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H360 Obtain special instructions before use.

Precautionary statement(s)
P201 Wear eye protection/ face protection.
P280 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P305 + P351 + P338 IF exposed or concerned: Get medical advice/ attention.
P308 + P313 If eye irritation persists: Get medical advice/ attention.
P337 + P313

Supplemental Hazard Statements
Restricted to professional users.

2.3 Other hazards
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.

SECTION 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
Index-No.: 606-021-00-7
Registration number: 01-2119472430-46-XXXX

Hazardous ingredients according to Regulation (EC) No 1272/2008
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 Skin Irrit. 2; Eye Irrit. 2; Repr. <= 100 %
EC-No. 212-828-1 1B; STOT SE 3; H315, H319,
Index-No. 606-021-00-7 H335, H360
Registration number 01-2119472430-46-XXXX

Hazardous ingredients according to Directive 1999/45/EC
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 T, Repr.Cat.2, R61 - <= 100 %
EC-No. 212-828-1 R36/37/38
Index-No. 606-021-00-7
Registration number 01-2119472430-46-XXXX

For the full text of the H-Statements and R-Phrases mentioned in this Section, see Section 16

SECTION 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

SECTION 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 (NOx)

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
Use water spray to cool unopened containers.

SECTION 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. Evacuate personnel to safe areas. 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.

SECTION 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.
Storage class (TRGS 510): Non-combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials causing chronic effects

7.3 **Specific end use(s)**
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

**SECTION 8: Exposure controls/personal protection**

8.1 **Control parameters**

Components with workplace control parameters

**Derived No Effect Level (DNEL)**

<table>
<thead>
<tr>
<th>Application Area</th>
<th>Exposure routes</th>
<th>Health effect</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers</td>
<td>Skin contact</td>
<td>Acute systemic effects</td>
<td>208mg/kg BW/d</td>
</tr>
<tr>
<td>Workers</td>
<td>Inhalation</td>
<td>Acute systemic effects</td>
<td>80 mg/m3</td>
</tr>
<tr>
<td>Workers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
<td>19.8mg/kg BW/d</td>
</tr>
<tr>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
<td>40 mg/m3</td>
</tr>
</tbody>
</table>

**Predicted No Effect Concentration (PNEC)**

<table>
<thead>
<tr>
<th>Compartment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>5 mg/l</td>
</tr>
<tr>
<td>Soil</td>
<td>0.138 mg/kg</td>
</tr>
<tr>
<td>Marine water</td>
<td>0.025 mg/kg</td>
</tr>
<tr>
<td>Fresh water</td>
<td>0.25 mg/l</td>
</tr>
<tr>
<td>Fresh water sediment</td>
<td>0.805 mg/kg</td>
</tr>
<tr>
<td>Onsite sewage treatment plant</td>
<td>10 mg/l</td>
</tr>
</tbody>
</table>

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**

**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).

**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.

**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.

**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).

**Control of environmental exposure**
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

**SECTION 9: Physical and chemical properties**

9.1 **Information on basic physical and chemical properties**

a) **Appearance**
Form: liquid
Colour: colourless
<table>
<thead>
<tr>
<th>Property</th>
<th>Value/Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>b) Odour</td>
<td>No data available</td>
</tr>
<tr>
<td>c) Odour Threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>d) pH</td>
<td>7.7 - 8</td>
</tr>
<tr>
<td>e) Melting point/freezing point</td>
<td>Melting point/range: -24 °C</td>
</tr>
<tr>
<td>f) Initial boiling point and boiling range</td>
<td>202 °C and 81 - 82 °C at 13 hPa</td>
</tr>
<tr>
<td>g) Flash point</td>
<td>91 °C - closed cup</td>
</tr>
<tr>
<td>h) Evaporation rate</td>
<td>No data available</td>
</tr>
<tr>
<td>i) Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
</tbody>
</table>
| j) Upper/lower flammability or explosive limits | Upper explosion limit: 9.5 %(V)  
Lower explosion limit: 1.3 %(V) |
| k) Vapour pressure                           | 0.39 - 0.43 hPa at 20 °C  
1.32 hPa at 40 °C |
| l) Vapour density                            | 3.42 - (Air = 1.0)                              |
| m) Relative density                          | 1.028 g/mL at 25 °C                             |
| n) Water solubility                          | No data available                               |
| o) Partition coefficient: n-octanol/water    | log Pow: -0.46                                   |
| p) Auto-ignition temperature                 | No data available                               |
| q) Decomposition temperature                 | No data available                               |
| r) Viscosity                                 | No data available                               |
| s) Explosive properties                      | No data available                               |
| t) Oxidizing properties                      | No data available                               |
| 9.2 Other safety information                 | Surface tension: 40.7 mN/m  
Relative vapour density: 3.42 - (Air = 1.0) |

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
Heat, flames and sparks.

10.5 Incompatible materials
Strong acids, Strong oxidizing agents, Strong reducing agents

10.6 Hazardous decomposition products
Other decomposition products - No data available
In the event of fire: see section 5
SECTION 11: Toxicological information

11.1 Information on toxicological effects

**Acute toxicity**
- LD50 Oral - Rat: 3.914 mg/kg
- LDLO Inhalation - Rat: > 5100 ppm
- LD50 Dermal - Rabbit: 8.000 mg/kg

**Skin corrosion/irritation**
Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

**Serious eye damage/eye irritation**
- Eyes - Rabbit
  - Result: Eye irritation

**Respiratory or skin sensitisation**
No data available

**Germ cell mutagenicity**
No data available

**Carcinogenicity**
- IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**Reproductive toxicity**
Damage to fetus possible

**Specific target organ toxicity - single exposure**
- Inhalation: May cause respiratory irritation.

**Specific target organ toxicity - repeated exposure**
No data available

**Aspiration hazard**
No data available

**Additional Information**
- RTECS: UY5790000

prolonged or repeated exposure can cause: Vomiting, Diarrhoea, Abdominal pain, Rats exposed to 1-methyl-2-pyrrolidinone at a concentration of 1 mg/L as an aerosol for 10 days showed depletion of hematopoietic cells in the bone marrow and atrophy of the lymphoid tissues of the thymus, spleen, and lymph nodes.
- Bone marrow - Irregularities - Based on Human Evidence

SECTION 12: Ecological information

12.1 Toxicity

**Toxicity to fish**
- LC50 - other fish: 4.000 mg/l - 96 h
- LC50 - Leuciscus idus (Golden orfe): > 500 mg/l - 96 h

**Toxicity to daphnia and other aquatic invertebrates**
- EC50 - Daphnia magna (Water flea): > 1.000 mg/l - 24 h

**Toxicity to bacteria**
- LC50 - Bacteria: > 9.000 mg/l
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

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

SECTION 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.

SECTION 14: Transport information

14.1 UN number
   ADR/RID: -  IMDG: -  IATA: -

14.2 UN proper shipping name
   ADR/RID:  Not dangerous goods  
   IMDG: Not dangerous goods  
   IATA: Not dangerous goods

14.3 Transport hazard class(es)
   ADR/RID: -  IMDG: -  IATA: -

14.4 Packaging group
   ADR/RID: -  IMDG: -  IATA: -

14.5 Environmental hazards
   ADR/RID: no  IMDG Marine pollutant: no  IATA: no

14.6 Special precautions for user
   No data available

SECTION 15: Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
   Authorisations and/or restrictions on use

   N-methyl-2-pyrrolidone  CAS-No.: 872-50-4  
   REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59).  
   Toxic for reproduction (article 57c)  
   ED/31/2011

15.2 Chemical Safety Assessment
   A Chemical Safety Assessment has been carried out for this substance.
SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3.

Eye Irrit.  Eye irritation
H315  Causes skin irritation.
H319  Causes serious eye irritation.
H335  May cause respiratory irritation.
H360  May damage fertility or the unborn child.
Repr.  Reproductive toxicity
Skin Irrit.  Skin irritation
STOT SE  Specific target organ toxicity - single exposure

Full text of R-phrases referred to under sections 2 and 3

T  Toxic
R36/37/38  Irritating to eyes, respiratory system and skin.
R61  May cause harm to the unborn child.
Repr.Cat.2  Toxic to Reproduction Category 2

Further information
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Central Drug House (P) Ltd and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.cdhfinechemical.com for additional terms and conditions of sale.