

MATERIAL SAFETY DATA SHEET



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1-METHYL-2-PYRROLIDINONE

MSDS No. M0155

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: 1-Methyl-2-pyrrolidinone

Product Catalog Number(s): MB1283, MB3901, ME1962, MH3903, MR1282, MS1961

Synonyms: N-Methylpyrrolidinone; N-Methyl-2-pyrrolidone; NMP; M-Pyrol, paint thinner

Chemical Formula: C₅H₉NO

Recommended Use: This product is recommended for laboratory and manufacturing use only. It is not recommended for drug, food or household use.

2. COMPOSITION AND INFORMATION ON INGREDIENTS

<u>Ingredient</u>	<u>CAS No</u>	<u>Percent</u>	<u>Hazardous</u>
1-Methyl-2-pyrrolidinone	872-50-4	99-100%	Yes

3. HAZARDS IDENTIFICATION

WARNING! MAY CAUSE IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY CAUSE HARM TO THE UNBORN CHILD. MAY BE HARMFUL IF SWALLOWED, INHALED, OR ABSORBED THROUGH THE SKIN. LIGHT SENSITIVE. COMBUSTIBLE LIQUID AND VAPOR. HYGROSCOPIC



Acute Exposure Hazards:

Inhalation Hazard: Causes respiratory tract irritation. May cause headache. Material has a very low vapor pressure at room temperature, so inhalation exposures are not expected unless material is heated or misted.

Ingestion Hazard: Ingestion may cause gastrointestinal irritation with nausea, vomiting, and diarrhea.

Skin Contact Hazard: May cause skin irritation. May be harmful if absorbed through the skin. Not expected to cause an allergic reaction. Because of the high permeability rate of NMP in human skin, prolonged contact should be avoided.

Eye Contact Hazard: May cause eye irritation. May cause temporary corneal clouding.

Chronic Exposure Hazards: Prolonged or repeated exposure may cause dermatitis. Adverse reproductive effects have been reported in animals. Testicular effects were noted in rats after repeated, high-dose oral and inhalation exposures (BASF). Human occupational exposure has been associated with chronic eye irritation, headaches, and irritant contact dermatitis. Airborne concentrations of 49 to 83 ppm are intolerable (REPROTEXT).

Mutagenic: Possible effects reported.

Teratogenic: Possible effects reported.

4. FIRST-AID MEASURES

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Ingestion: **Do not** induce vomiting unless directed by medical personnel. If vomiting occurs naturally, have victim lean forward. Never give anything by mouth to an unconscious person. Get medical aid.

Skin Contact: Remove any contaminated clothing. Wash skin with soap or mild detergent and water for at least 15 minutes. Get medical attention.

Eye Contact: Check for and remove contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention.

Notes to Physician: Treat symptomatically and supportively.

5. FIRE FIGHTING MEASURES

Flammability: Combustible liquid and vapor. (GHS Category 4)

Auto-ignition Temperature: 245° C (473° F)

Flash Point: 91° C (195° F)

Flammable Limits: Lower Limit – 1.3 vol %, Upper Limit – 9.5 vol %

Products of Combustion: May decompose into irritating and highly toxic gases under fire conditions (nitrogen oxides, carbon monoxide, carbon dioxide).

Specific Fire Hazards: As in any fire, always wear self-contained breathing apparatus in pressure-demand (MSA/NIOSH approved or equivalent), and full protective gear. Use water spray to keep fire exposed containers cool. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products.

Specific Explosion Hazards: No information available.

Fire Fighting Media: Use dry chemical, carbon dioxide, water spray, or appropriate foam.

National Fire Protective Association: Health - 2, Flammability - 2, Reactivity - 0

NOTE: NFPA ratings involve data and interpretations that may vary from company to company. They are intended only for rapid, general identification of the magnitude of the specific hazard. To deal adequately with the safe handling of this material, all the information contained in this MSDS must be considered.

6. ACCIDENTAL RELEASE MEASURES

Absorb spilled liquid with sorbent pads, socks, or other inert material such as vermiculite, sand, or earth. Use spark-proof tools. Provide ventilation to the affected area and remove all ignition sources. Approach the spill from upwind and pick up absorbed material and place it in a suitable container. Always use proper personal protective equipment as described in section 8.

7. HANDLING AND STORAGE

Precautions: Always use proper personal protective equipment as described in section 8. Wash thoroughly after handling. Avoid contact with eyes, skin, and clothing. Remove contaminated clothing and wash before reuse. Empty containers contain product residue (liquid and vapor) and can be dangerous. Use with adequate ventilation. Avoid breathing vapor or mist.

Storage: Store away from ignition sources. Keep in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Store under nitrogen blanket.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Use explosion-proof ventilation equipment. Facilities storing or using the material should be equipped with eyewash station and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Personal Protection: Use butyl rubber gloves and protective clothing to prevent skin exposure. A respiratory protection program that meets OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever possible. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

Exposure Limits:

ACGIH – None

NIOSH – None

OSHA Final PELs – None

OSHA Vacated PELs: None

Eye Protection: Wear protective chemical goggles or other appropriate eye protection.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State and Appearance: Clear, colorless liquid.

Odor: Amine-like, mild odor

Odor Threshold: Not available.

Molecular Formula: C₅H₉NO

Molecular Weight: 99.13

pH: 8.5 - 10.0 (100 g/L H₂O)

Boiling Point: 202° C @ 760 mm Hg

Freezing/Melting Point: -24° C

Decomposition Temperature: Not available.

Specific Gravity: 1.030 g/cm³

Vapor Density (Air=1): 3.4

Vapor Pressure: 0.342 mm Hg @ 25° C.

Evaporation Rate (Butyl acetate = 1): Not available.

Viscosity: 1.65 cps @ 25° C.

Solubility: Soluble

10. STABILITY AND REACTIVITY

Stability: Stable at room temperature in closed container under normal handling and storage conditions.

Conditions to Avoid: Light, ignition sources, excess heat, exposure to moist air or water.

Incompatibility With Various Substances: Strong oxidizing agents, strong acids.

Hazardous Decomposition Products: Nitrogen oxides, carbon monoxide, carbon dioxide.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation, skin absorption, skin contact

Animal Toxicity (RTECS):

Draize test, rabbit, eye: 100 mg Moderate

Oral, mouse: LD50 = 5130 mg/kg;

Oral, rat: LD50 = 3914 mg/kg;

Skin, rabbit: LD50 = 8 g/kg;

Sensitization test, guinea pig: negative; patch test (humans): negative (Merck)

Carcinogenicity: Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65

Epidemiology: No information available.

Teratogenicity: Proposition 65 maximum allowable dose level for developmental toxicity for NMP is 3200 ug/day for the inhalation route and 17.00 ug/day for the dermal route.

Reproductive Effects: Possible effects observed.

Mutagenicity: Possible effects observed.

Neurotoxicity: No information available.

Other Studies: No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity:

Daphnia: EC50, 4897 mg/L, 48H
Fish: Gold orfe: LC50 4000 mg/L, 96H
Bacteria: EC50, >9000 mg/L, 48H
Algae: IC50, >500mg/L, 72H
Log Pow = -0.46 (25° C); BOD = 110 mg/L; COD = 1600 mg/L

Environmental Fate: No information available.

Physical: No information available.

13. DISPOSAL CONSIDERATIONS

Material that cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Processing, use or contamination of this product may change the waste management options. Waste generators must decide if discarded material is a hazardous waste. State and local disposal regulations may differ from federal disposal definitions found in 40 CFR 261.3. Dispose of container and unused contents in accordance with federal, state and local requirements. This material is not a "P" listed waste under 40 CFR 261.33. It is not a "U" listed waste.

14. TRANSPORT INFORMATION

US DOT

Not regulated as a hazardous material.

Canada TDG

No information available.

International (Water, I.M.O.)

Not regulated as a hazardous material

International (Air, I.C.A.O.)

Not regulated as a hazardous material

15. REGULATORY INFORMATION

US Federal Regulations:

TSCA: CAS# 872-50-4 is listed on the TSCA Inventory.

Health and Safety Reporting List: Not listed.

Chemical Test Rules: 40 CFR 799.5000.

Section 12b: Not listed.

TSCA Significant New Use Rule: Does not have an SNUR under TSCA.

CERCLA Hazardous Substances: CAS# 872-50-4 does not have an RQ

SARA Section 302: Does not have a TPQ

SARA Codes: CAS# 872-50-4 – immediate, delayed, fire

Section 313: NMP (872-50-4) is subject to SARA Title III Section 313 reporting requirements.

Clean Air Act: CAS# 872-50-4 is not listed as a hazardous air pollutant (HAP). It is not a Class 1 Ozone Depleter. It is not a Class 2 Ozone Depleter.

Clean Water Act: CAS# 872-50-4 is not listed as a Hazardous Substance. It is not a Priority Pollutant. It is not a Toxic Pollutant.

OSHA: Not considered highly hazardous by OSHA.

US State Regulations:

CAS# 872-50-4 is on the following state right-to-know lists: Pennsylvania, Minnesota, and Massachusetts

California Prop 65: California No Significant Risk Level: Not listed

Canada:

DSL/NDSL: CAS# 872-50-4 is listed on Canada's DSL list.

WHMIS: This product has a WHMIS classification of B3, D2A, D2B. This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and this MSDS contains all the information required by those regulations.

Ingredient Disclosure List: No information available.

DSCL (EEC):

Hazard Symbols: Xi, T

Risk Phrases: R36/37/38 – Irritating to eyes, respiratory system, skin; R61 – May cause harm to the unborn child.

Safety Phrases: S26 – In case of contact with eyes, rinse with plenty of water and seek medical advice; S37/39 – Wear suitable gloves and eye/face protection; S45 – In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible); S53 – Avoid exposure, obtain special instructions before use.

WGK (Water Danger/protection): CAS# 872-50-4: 1

16. OTHER INFORMATION

Originally Prepared: 6/30/2006

Last Revised: 7/24/2008

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