

SAFETY DATA SHEET



1000 Tedia Way
Fairfield, Ohio 45014
USA
Email: tedia@tedia.com
Web: www.tedia.com

24-Hour Emergency Number (CHEMTREC)

USA: 800-424-9300
International: 703-527-3887

All non-emergency numbers should be directed
to Customer Service at 800-PURITY1

1-METHYL-2-PYRROLIDINONE

SDS No. M0155

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: 1-Methyl-2-pyrrolidinone

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

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

2. HAZARDS IDENTIFICATION



Classification:

Flammable Liquids: GHS Category 4

Skin Irritation: GHS Category 2

Eye Irritation: GHS Category 2A

Reproductive Toxicity: GHS Category 1B

Specific Target Organ Toxicity, Single Exposure: GHS Category 3

Label Elements

Signal Word: DANGER!

Hazard Statements:

H315 - Causes skin irritation.

H319 – Causes serious eye irritation.

H335 – May cause respiratory irritation.

H360 – May damage fertility or the unborn child.

Precautionary Statements:

P280 – Wear protective gloves/protective clothing/eye protection/face protection.

P303+P361+P353 – If on skin or hair: Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.

P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do - continue rinsing.

P308+P313 - IF exposed or concerned: Get medical advice/ attention.

P501 - Dispose of contents/ container to an approved waste disposal plant.

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Emergency Overview

May cause irritation to the eyes, skin, and respiratory tract. May cause harm to the unborn child. Maybe harmful if swallowed, inhaled, or absorbed through the skin. Light sensitive. Combustible liquid and vapor. Hygroscopic.

HMIS Rating:

Health – 2* Flammability – 2 Physical Hazard – 1 PPE – User supplied

NOTE: HMIS ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. These ratings are based on the inherent properties of this chemical under expected conditions of normal use and are not intended to be used in emergency situations. PPE is determined by the user based on their needs and conditions.

3. 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

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 use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. They are for use by emergency personnel to address the hazards that are presented by short term, acute exposure to this product under fire, spill, or similar emergencies. Ratings involve data and interpretations that may vary from company to company.

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: Wear protective chemical goggles or other appropriate eye 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: None established.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State and Appearance: Clear, colorless liquid.

Odor: Amine-like, mild odor

Molecular Formula: C₅H₉NO

Molecular Weight: 99.13

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 %

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

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Routes of Entry: Inhalation, skin absorption, skin contact

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).

Animal Toxicity:

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.

14. TRANSPORT INFORMATION

Not regulated for transportation.

15. REGULATORY INFORMATION

US Federal Regulations:

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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.
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: This product contains N-methyl-2-pyrrolidinone, a chemical known to the State of California to cause birth defects or other reproductive harm.

16. OTHER INFORMATION

Originally Prepared: 6/30/2006

Last Revised: 03/22/2021 – Updated hazard categories, hazard statements, and precautionary statements in Section 2.

The information contained herein is based on current knowledge and experience; no responsibility is accepted that the information is sufficient or correct in all cases. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers and the protection of the environment.

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