

SAFETY DATA SHEET

NMP, 1-methyl-2-pyrrolidone

1. IDENTIFICATION OF SUBSTANCE / MIXTURE AND OF SUPPLIER

Product Identifier: High Purity Chemicals
Synonyms: 1-Methyl-2-pyrrolidinone; 1-Methyl-2-pyrrolidone; N-Methylpyrrolidone; NMP; M-PYROL™
Other means of identification: CAS-No. 872-50-4
Recommended use of the chemical and restrictions on use:

Supplier Details:

Greenfield Global USA, Inc.
1101 Isaac Shelby Drive, Shelbyville,
KY 40065, USA.
Tel: 502.232.7600
Fax: 502.633.6100
CCN17213

Greenfield Global USA, Inc.
58 Vale Road, Brookfield,
CT 06804, USA.
Tel: 203.740.3471
Fax: 203.740.3481
CCN17213

Emergency Contact: CHEMTREC: 1.800.424.9300 (USA) / +1.703.527.3887 (International)

2. HAZARDS IDENTIFICATION

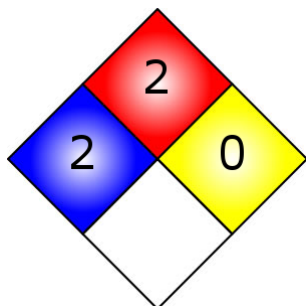
OSHA Hazards:

Combustible liquid, Flammable liquid, Target Organ Effect, Irritant, Irritant, Target organ effect, Teratogen

Target Organs:

Bone marrow, Lymphatic system, Spleen, Thymus

NFPA



GHS label elements, including precautionary statements



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+1.703.527.3887 (INT)



Signal Word:

DANGER!

Hazard statement(s)

H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H360	May damage fertility or the unborn child.

Precautionary statement(s)

P261	Avoid breathing dust/fumes/gas/mist/vapors.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P305 + P353 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P201	Obtain special instructions before use.

GHS Classification(s)

Eye irritation (Category 2)
Reproductive toxicity (Category 1B)
Skin irritation (Category 2)
Specific target organ toxicity - single exposure (Category 3)

Other hazards which do not result in classification:

Potential Health Effects:

Organ	Description
Eyes	Product will cause eye irritation.
Ingestion	Product may be harmful if ingested.
Inhalation	Product may be harmful if inhaled. Causes respiratory tract irritation.
Skin	This product may be harmful if absorbed through the skin. Causes skin irritation.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Chemical identity:	1-methyl-2-pyrrolidone
Common name / Synonym:	N-Methyl-2-pyrrolidone 1-Methyl-2-pyrrolidone
CAS number:	872-50-4



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EINECS number: 212-828-1 **+1.703.527.3887 (INT)**
ICSC number: 0513
RTECS #: UY5790000
EC #: 606-021-00-7

% Volume	Material	CAS
100	1-Methyl-2-pyrrolidone	872-50-4

4. FIRST AID MEASURES

General advice

Take proper precautions to ensure your own health and safety before attempting rescue and providing first aid. Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

Skin

Wash skin with soap and copious amounts of water. Seek medical attention.

Inhalation

Remove person to fresh air. If signs/symptoms continue, get medical attention. Give oxygen or artificial respiration as needed.

Eyes

Thoroughly flush the eyes with large amounts of clean low-pressure water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Seek medical attention.

Ingestion

DO NOT induce vomiting. If vomiting does occur, have victim lean forward to prevent aspiration. Rinse mouth with water. Seek medical attention. Never give anything by mouth to an unconscious individual.

5. FIRE FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media:

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Specific hazards arising from the chemical (e.g., nature of any hazardous combustion products):

Hazardous decomposition products formed under fire conditions. - Carbon oxides, nitrogen oxides (NOx)

Special protective equipment and precautions for firefighters:

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Keep unopened containers cool by spraying with water.

Flammable Properties

Flash point

96 °C (205 °F) - open cup



Product Information: 203.740.3471 Emergency Assistance (CHEMTREC): 1.800.424.9300 (USA)
Autoignition temperature **+1.703.527.3887 (INT)**
346 °C (655 °F)

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:

Do not inhale vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

Environmental precautions:

Stop leak. Contain spill if possible and safe to do so. Prevent product from entering drains.

Methods and materials for containment and cleaning up:

Contain spill, then collect with an electrically protected vacuum cleaner or by wet-brushing and put the material into a convenient waste disposal container. Keep container closed.

7. HANDLING AND STORAGE

Precautions for safe handling:

Do not get on skin or in eyes. Do not inhale vapor or mist. Take normal fire prevention measures.

Conditions for safe storage, including any incompatibilities:

Keep container tightly closed in a cool, dry and well-ventilated place.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters, e.g., occupational exposure limit values or biological limit values:

Occupational Exposure Limits

Component	Source	Type	Value	Note
N-methyl-2- pyrrolidone	US (WEEL)	Workplace Environmental Exposure Level	10 ppm	

Appropriate engineering controls:

Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

Individual protection measures, such as personal protective equipment:

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).

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Hand protection: +1.703.527.3887 (INT)

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.

Eye protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Use equipment approved by appropriate government standards, such as NIOSH (US) or EN166 (EU) Maintain eye wash fountain and quick-drench facilities in work area.

Skin and body protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Hygiene measures:

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance (physical state, color, etc.)	Liquid. Colorless.
pH	7.7-8
Freezing point	-24 °C (-11 °F)
Initial boiling point and boiling range	202 °C (396 °F); 81 - 82 °C (178 - 180 °F) at 13 hPa (10 mmHg)
Flash point	96 °C (205 °F) - open cup
Upper / Lower flammability or explosive limits	1.3 %(V) / 9.5%(V)
Vapor pressure	0.39 - 0.43 hPa (0.29 - 0.32 mmHg) at 20 °C (68 °F) 1.32 hPa (0.99 mmHg) at 40 °C (104 °F)
Vapor Density	3.42 - (Air = 1.0)
Relative Density	1.028 g/mL at 25 °C (77 °F)
Partition coefficient n-octanol/water(ies)	log Pow: -0.46
Auto-ignition temperature	346 °C (655 °F)
Formula (1-Methyl-2-pyrrolidone)	C5H9NO
Molecular Weight (1-Methyl-2-pyrrolidone)	99.13 g/mol

10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	No data available
Conditions to avoid (e.g., static discharge, shock or vibration)	Heat, flames, and sparks.
Incompatible materials	Strong acids, strong oxidizing agents
Hazardous decomposition products	Hazardous decomposition products formed under fire conditions. - Carbon oxides, nitrogen oxides (NOx)



11. TOXICOLOGICAL INFORMATION

- 1-Methyl-2-Pyrrolidinone 872-50-4

Product Summary:

Laboratory tests indicate that the product may cause fetal damage. No data available for the mutagenic or reproductive effects of the product.

Acute Toxicity:

LD50 (Dermal)	8,000 mg/kg	Rabbit	
LD50 (Oral)	Rat	3,914 mg/kg	
LDLO (Inhalation)	> 5100 ppm	Rat	4 hours

Irritation:

Eyes

Rabbit - irritating to eyes

Skin

No data available

Carcinogenicity

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

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Other Hazards

Organ	Description
Eyes	Causes irritation, redness, and pain. May possibly cause corneal clouding.
Ingestion	Causes irritation to the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea.
Inhalation	Mild irritant if vapor or mist from heated solvent is inhaled. Coughing, possible breathing difficulties may be observed.
Skin	Mild irritant, may cause some discomfort if in contact with the skin for several hours.
Chronic	Minor skin irritation on repeated contact.



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12. ECOLOGICAL INFORMATION

+1.703.527.3887 (INT)

- 1-Methyl-2-Pyrrolidinone 872-50-4

Ecotoxicity (aquatic and terrestrial, where available):

Acute Fish Toxicity (1-METHYL-2-PYRROLIDINONE)

LC50 / 96 hours / Golden orfe - > 500 mg/L

Toxicity to Daphnia (1-METHYL-2-PYRROLIDINONE)

EC50 / 24 hours / Water flea - 1,000 mg/L

Persistence and degradability:

Readily biodegradable.

Bioaccumulative potential:

No data available

13. DISPOSAL CONSIDERATIONS

Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging:

This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber.

Offer left over and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

14. TRANSPORT INFORMATION

Description of waste residues and information on their safe handling and methods of disposal:

UN number	Not a dangerous good.
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IMDG

UN-Number: Not a dangerous good.

Marine pollutant: No

IATA

UN-Number: Not a dangerous good.

15. REGULATORY INFORMATION

Safety, health and environmental regulations specific for the product in question:

OSHA Hazards



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Combustible liquid, Flammable liquid, Target Organ Effect, Irritant, Irritant, Target organ effect, Irritant, Irritant
 1.703.527.9887 (INT)

All ingredients are on the following inventories or are exempted from listing

Country	Notification
Australia	AICS
Canada	DSL
China	IECS
European Union	EINECS
Japan	ENCS/ISHL
Korea	ECL
New Zealand	NZIoC
Philippines	PICCS
United States of America	TSCA

SARA 302 Components

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

SARA 313 Components

N-methyl-2-pyrrolidone CAS-No. 872-50-4 Revision Date 2007-07-01

SARA 311/312 Hazards

- Acute Health Hazard
- Chronic Health Hazard
- Fire Hazard

CERCLA

No chemicals in this material with known CAS numbers are subject to the reporting requirements of CERCLA

Massachusetts Right To Know Components

N-methyl-2-pyrrolidone CAS-No. 872-50-4 Revision Date 2007-07-01

Pennsylvania Right To Know Components

N-methyl-2-pyrrolidone CAS-No. 872-50-4 Revision Date 2007-07-01

New Jersey Right To Know Components

N-methyl-2-pyrrolidone CAS-No. 872-50-4 Revision Date 2007-07-01

California Prop 65 Components

WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm. N-methyl-2-pyrrolidone CAS-No. 872-50-4 Revision Date 2009-02-01



PHARMCO
by Greenfield Global

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16. OTHER INFORMATION: INCLUDING INFORMATION ON PREPARATION AND REVISION OF THE SDS

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