

SAFETY DATA SHEET: N-Methyl-2-pyrrolidone for Binder

Version: 1.2

Revision Date: 11-5-2020

Section 1: Identification

1.1) Product identifier:

Product Name : N-Methyl-2-pyrrolidone for Binder
Synonyms : NMP, 1-Methyl-2-pyrrolidone
Product Number : BR0158
CAS Number : 872-50-4

1.2) Company information:

Address: MSE Supplies, LLC
4400 E Broadway Blvd, Suite 600
Tucson, AZ 85711, USA
Telephone: +1 520-789-6673
Email: info@mse Supplies.com
Emergency Telephone : +1-703-527-3887

1.3) Relevant identified uses of the substance or mixture and uses advised against:

Identifies uses: Laboratory chemicals, Synthesis of substances

Section 2: Hazard(s) Identification

2.1) Classification of the substance or mixture GHS classification in accordance with 29 CFR 1910 (OSHA HCS):

Flammable liquids (Category 4), H227
Skin irritation (Category 2), H315
Eye irritation (Category 2A), H319
Reproductive toxicity (Category 1B), H360
Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335

2.2) GHS Label elements, including precautionary statements:

Pictograms:



SAFETY DATA SHEET: N-Methyl-2-pyrrolidone for Binder

Version: 1.2

Revision Date: 11-5-2020

Signal Word: Danger

Hazard Statement(s)

H227	Combustible liquid.
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)

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P261	Avoid breathing dust/fume/gas/ mist/ vapors/ spray.
P264	Wash skin thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 + P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
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.
P332 + P313	If skin irritation occurs: Get medical advice/ attention.
P337 + P313	If eye irritation persists: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before reuse.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P403 + P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.

SAFETY DATA SHEET: N-Methyl-2-pyrrolidone for Binder

Version: 1.2

Revision Date: 11-5-2020

P501

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

2.3) Hazards not otherwise classified (HNOC) or covered by GHS:

None.

Section 3: Composition/Information on Ingredients

3.1) Substances:

Formula: C₅H₉NO
 Molecular Weight: 99.13 g/mol
 CAS Number: 872-50-4
 EC Number: 212-828-1
 Index Number: 606-021-00-7

Component	Classification	Concentration
1-Methyl-5-pyrrolidinone	Flam. Liq. 4; Skin Irrit. 2; Eye Irrit. 2A; Repr. 1B; STOT SE 3; H227, H315, H319, H360, H335	<= 100%

For the full text of the H-Statements mentioned in this Section, see Section 16.

Section 4: First-Aid Measures

4.1) Description of first aid measures:

General advice

Move out of dangerous area.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration.

In case of skin contact

Wash off with soap and plenty of water.

In case of eye contact

Flush eyes with water as a precaution.

If swallowed

SAFETY DATA SHEET: N-Methyl-2-pyrrolidone for Binder

Version: 1.2

Revision Date: 11-5-2020

Never give anything by mouth to an unconscious person. Rinse mouth with water.

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: Fire-Fighting Measures

5.1) 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 (NO_x)

Combustible.

5.3) Advise 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 vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

For personal protection see section 8.

6.2) Environmental precautions:

SAFETY DATA SHEET: N-Methyl-2-pyrrolidone for Binder

Version: 1.2

Revision Date: 11-5-2020

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 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:

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): 6.1C: Combustible, acute toxic Cat.3 / toxic compounds or compounds which 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

SAFETY DATA SHEET: N-Methyl-2-pyrrolidone for Binder

Version: 1.2

Revision Date: 11-5-2020

Component	CAS-Number	Value	Control Parameters	Basis
1-Methyl-5-pyrrolidinone	872-50-4	TWA	10 ppm	USA. Workplace Environmental Exposure Levels (WEEL)
	Remarks	Skin		
		PEL	1 ppm 4mg/m ³	California permissible exposure limits for chemical contaminants (Title 8, Article 107)

Biological occupational exposure limits

Component	CAS-Number	Parameters	Value	Biological Specimen	Basis
1-Methyl-5-pyrrolidinone	872-50-4	5-Hydroxy-N-2-pyrrolidone	100 mg/l	Urine	ACGIH - Biological Exposure Indices (BEI)
	Remarks	End of shift (As soon as possible after exposure ceases)			

Predicted No Effect Concentration (PNEC)

Compartment	Value
Water	5 mg/l
Soil	0.138 mg/kg
Marine Water	0.025 mg/kg
Fresh Water	0.25 mg/l
Fresh Water Sediment	0.805 mg/kg
Onsite sewage treatment plant	10 mg/l

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.

SAFETY DATA SHEET: N-Methyl-2-pyrrolidone for Binder

Version: 1.2

Revision Date: 11-5-2020

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

9.2) Information on basic physical and chemical properties:

a) Appearance (physical state, color, etc.)	Clear Colorless liquid
b) Upper/lower flammability or explosive limits	Upper explosion limit: 9.5 %(V) Lower explosion limit: 1.3 %(V)

SAFETY DATA SHEET: N-Methyl-2-pyrrolidone for Binder

Version: 1.2

Revision Date: 11-5-2020

c) Odor	amine-like
d) Odor threshold	No data available
e) Vapor pressure	0.32 hPa at 20 °C (68 °F) - OECD Test Guideline 104
f) Vapor density	3.42 - (Air = 1.0)
g) pH	7.7 - 88.5 - 10.0 at 100 g/l at 20 °C (68 °F)
h) Density	1.028 g/mL at 25 °C
i) Melting point/freezing point	-24 °C (-11 °F)
j) Solubility(ies) in water	1,000 g/l at 20 °C
k) Initial boiling point and boiling range	202 °C 396 °F
l) Flash point	91 °C (196 °F) - Pensky-Martens closed cup - ISO 2719
m) Evaporation rate	No data available
n) Flammability (solid, gas)	No data available
o) Partition coefficient: n-octanol/water	log Pow: -0.46 at 25 °C (77 °F) - OECD Test Guideline 107 - Bioaccumulation is not expected.
q) Auto-ignition temperature	245 °C (473 °F) at 1,013 hPa - DIN 51794
r) Decomposition temperature	No data available
s) Viscosity	No data available
t) Explosive properties	No data available
u) Oxidizing properties	No data available

9.2) Other Safety information:

Conductivity: 0.2 - 0.4 µS/cm

Surface tension: 40.4 mN/m

Relative vapor density: 3.42 - (Air = 1.0)

SAFETY DATA SHEET: N-Methyl-2-pyrrolidone for Binder

Version: 1.2

Revision Date: 11-5-2020

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 oxidizing agents

10.6) Hazardous decomposition products:

Hazardous decomposition products formed under fire conditions. - Carbon oxides, Nitrogen oxides (NO_x)

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 - male and female - 4,150 mg/kg
(OECD Test Guideline 401)

LC50 Inhalation - Rat - male and female - 4 h - > 5.1 mg/l (OECD Test Guideline 403)

LD50 Dermal - Rat - male and female - > 5,000 mg/kg
(OECD Test Guideline 402)

No data available

Skin corrosion/irritation:

SAFETY DATA SHEET: N-Methyl-2-pyrrolidone for Binder

Version: 1.2

Revision Date: 11-5-2020

Skin - Rabbit

Result: Irritating to skin. - 24 h

(OECD Test Guideline 404)

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

Serious eye damage/ eye irritation:

Eyes - Rabbit

Result: Eye irritation

(OECD Test Guideline 405)

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

Respiratory or skin sensitization:

Local lymph node assay (LLNA) - Mouse

Result: negative

(OECD Test Guideline 429)

Germ cell mutagenicity:

Ames test

Salmonella typhimurium

Result: negative

In vitro mammalian cell gene mutation test

Chinese hamster ovary cells

Result: negative

unscheduled DNA synthesis assay

rat hepatocytes

Result: negative

OECD Test Guideline 474

Mouse - male and female - Bone marrow

Result: negative

OECD Test Guideline 475

Chinese hamster - male and female - Bone marrow

Result: negative

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.

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 on OSHA's list of regulated carcinogens.

SAFETY DATA SHEET: N-Methyl-2-pyrrolidone for Binder

Version: 1.2

Revision Date: 11-5-2020

Reproductive toxicity:

May damage the unborn child.

Specific target organ toxicity – single exposure:

Inhalation - May cause respiratory irritation. - Respiratory system

Specific target organ toxicity – repeated exposure:

No data available

Aspiration hazard:

No data available

Additional information:

Repeated dose toxicity - Rabbit - male - Dermal - 20 d - No observed adverse effect level - 826 mg/kg - Lowest observed adverse effect level - 1,653 mg/kg

Subacute toxicity

RTECS: UY5790000

Prolonged or repeated exposure may 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.

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Section 12: Ecological Information

12.1) Toxicity:

Toxicity to fish: static test LC50-Oncorhynchus mykiss (rainbow trout) - > 500 mg/l -96h

Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnia magna (Water flea) - ca. 4,897 mg/l - 48 h Remarks: (IUCLID)

Toxicity to algae: static test EC50 - Desmodesmus subspicatus (green algae) - 672.8 mg/l - 72 h (DIN 38412)

12.2) Persistence and degradability:

Biodegradability: aerobic - Exposure time 28 d Result: 73 % - Readily biodegradable.

SAFETY DATA SHEET: N-Methyl-2-pyrrolidone for Binder

Version: 1.2

Revision Date: 11-5-2020

(OECD Test Guideline 301C)

Biochemical Oxygen Demand (BOD): 1.100 mg/g

Chemical Oxygen Demand (COD): 1.600 mg/g

12.3) Bioaccumulative potential:

No data available

12.4) Mobility in soil:

No data available

12.5) Results of PBT and vPvB assessment:

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

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. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging:

Dispose of as unused product.

Section 14: Transport Information

DOT (US)

NA-Number: 1993 Class: None Packing Group: III

Proper shipping name: Combustible liquid, n.o.s. (1-Methyl-5-pyrrolidinone)



SAFETY DATA SHEET: N-Methyl-2-pyrrolidone for Binder
Version: 1.2 **Revision Date: 11-5-2020**

Reportable Quantity (RQ): 5.0L
Poison Inhalation Hazard: No

IMDG:

Not dangerous goods

IATA:

Not dangerous goods

Section 15: Regulatory Information

SARA 302 Components:

This material does not contain any components with a section 302 EHS TPQ.

SARA 313 Components:

The following components are subject to reporting levels established by SARA Title III, Section 313:

1-Methyl-5-pyrrolidinone	CAS#	Revision Date
	872-50-4	2007-03-01

SARA 311/312 Hazards:

Fire Hazard, Chronic Health Hazard

Massachusetts Right To Know Components:

1-Methyl-5-pyrrolidinone	CAS#	Revision Date
	872-50-4	2007-03-01

Pennsylvania Right To Know Components:

1-Methyl-5-pyrrolidinone	CAS#	Revision Date
	872-50-4	2007-03-01

New Jersey Right To Know Components:

1-Methyl-5-pyrrolidinone	CAS#	Revision Date
	872-50-4	2007-03-01



SAFETY DATA SHEET: N-Methyl-2-pyrrolidone for Binder

Version: 1.2

Revision Date: 11-5-2020

Section 16: Other Information

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. MSE Supplies LLC and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product.

Version: 1.2

Revision Date: 11-5-2020