Safety Data Sheet

N-Methyl-2-Pyrrolidone

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: N-Methyl-2-Pyrrolidone

Synonyms/Generic Names: N-Methyl-2-Pyrrolidinone; NMP; 1-Methyl-2-pyrrolidinone

Product Number: CP-8880

Product Use: Industrial, Manufacturing or Laboratory use

Manufacturer: ChemPure Brand Chemicals
39103 Warren Road
Westland, MI 48185

For More Information Call: 734-729-1805 (Monday-Friday 8:00-4:30)

In Case of Emergency Call: CHEMTREC – 800-424-9300 or 703-527-3887 (24 Hours/Day, 7Days/Week)

2. HAZARDS IDENTIFICATION

OSHA Hazards: Combustible liquid. Causes eye, skin and respiratory tract irritation. Developmental hazard. Hygroscopic. **Odor** : rotten-egg like.

Target Organs: Eyes, liver, spleen, kidney, skin, blood and respiratory system.

Signal Words: Danger

Pictograms:

GHS Classification:

Flammable liquids	Category 4
Skin Irritation	Category 2
Eye Irritation	Category 2
Reproductive toxicity	Category 1
Specific target organ toxicity – single exposure	Category 3 – Respiratory system

GHS Label Elements, including precautionary statements:

Signal Word: Danger

Hazard Statements:

H227	Flammable liquid and vapor
H315	Causes skin irritation
H319	Causes serious eye irritation
H335	May cause respiratory irritation
H360	May damage fertility or the unborn child

Precautionary Statements:

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/ eye protection/ face protection.

Response:

P302 + P352	IF ON SKIN (or hair) - Remove/Take off immediately all contaminated clothing. Rinse skin with plenty of water/shower and soap.
P304 + P340 + P312	IF INHALED – Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a physician if you feel sick.
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, immediately call a POISON CENTER or doctor/physician.
P332 + P313	If skin irritation occurs: Get medical advice, see a doctor/physician.
P337 + P313	If eye irritation persists: Get medical advice, see a doctor/physician.
P362	Take off contaminated clothing and wash before reuse.
P370 + P378	In case of fire: Use carbon dioxide, dry chemical or foam for extinction.
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.
P501	Dispose of contents/ container to an approved waste disposal plant.

Potential Health Effects

Eyes	Irritating to eyes.
Inhalation	May cause irritation of respiratory tract. May be harmful if inhaled.
Skin	May cause irritation. May be absorbed through the skin in harmful amounts.
Ingestion	May be harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.
Chronic Effects	Substances known to cause developmental toxicity in humans. Tumorigenic effects have been reported in experimental animals. Experiments have shown reproductive toxicity effects on laboratory animals. May cause adverse liver effects. May cause adverse kidney effects.
Aggravated Medical Conditions	No information available.

NFPA Ratings

Health	2
Flammability	2
Reactivity	0
Specific hazard	Not Available

HMIS Ratings

Health	3
Fire	2
Reactivity	0
Personal	0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	Weight %	CAS #	EINECS# / ELINCS#	Formula	Molecular Weight
N-Methyl-2-pyrrolidone	>99%	872-50-4	212-828-1	C_5H_9NO	99.13

4. FIRST-AID MEASURES

Eyes	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.
Inhalation	Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with a respiratory medical device. Get medical attention if symptoms occur.
Skin	Wash off immediately with plenty of water for at least 15 minutes. Get medical attention immediately if symptoms occur.
Ingestion	Do not induce vomiting. Obtain medical attention.
Note to Physician	Treat symptomatically.

5. FIREFIGHTING MEASURES

Suitable (and unsuitable) extinguishing media	Carbon dioxide (CO_2), Foam, Dry chemical. Use water spray to cool unopened containers. (no limitations are given).
Specific hazards during fire fighting	Water may be ineffective. The product will float on water and can be reignited on surface water.
Hazardous combustion products	Carbon oxides, Nitrogen oxides, Combustible, Vapors are heavier than air and may spread along floors.
Further Information	Forms explosive mixtures with air on intense heating. Prevent fire extinguishing water from contaminating surface water or the ground water system.
Special protective equipment for firefighters	Wear an approved positive pressure self-regulated breathing apparatus in addition to standard firefighting gear. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from

	heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult and expert.
Environmental precautions	Should not be released into the environment. Any release to the environment may require reporting to federal/national or local agencies.
Methods and materials for containment and cleaning up	Remove all sources of ignition. Soak up with inert absorbent material such as sand, earth diatomaceous earth, or vermiculite. Collect, bind and pump off spills. Clean up affected area. Ventilate

7. HANDLING AND STORAGE

Precautions for safe handling
Wear personal protective equipment. Keep away from open flames. Hot surfaces and sources of ignition. Take precautionary measures against static discharges. Do not breathe vapors or spray mist. Do not get in eyes, on skin or on clothing. Do not breath vapors or spray mist. Use only under a chemical fume hood.

Conditions for safe storage, including any incompatibilities
Store in a tightly closed container. Store in a dry, cool and ventilated area. Keep away from heat and sources of ignition. Protect from light.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational Exposure Controls:

Component	Exposure Limits /Permissible concentration	Value Type (Form of exposure)	Basis
N-methyl-2-pyrrolidone	10 ppm	TWA	USA. Workplace Environmental Exposure Level (WEEL)
	SKIN		
	1 ppm 4 mg/m^3	PEL	California permissible exposure limits for chemical contaminants (Title 8, Article 107)

Biological occupational exposure limits

Component	Value	Biological Specimen	Basis
N-methyl-2-pyrrolidone	100 mg/L	Urine	ACGIH- Biological Exposure Indices (BEI)
Remarks	End of shift (As soon as possible after exposure ceases).		

TWA: Time Weighted Average over 8 hours of work.
TLV: Threshold Limit Value over 8 hours of work.
REL: Recommended Exposure Limit
PEL: Permissible Exposure Limit
STEL: Short Term Exposure Limit during x minutes.
IDLH: Immediately Dangerous to Life or Health
WEEL: Workplace Environmental Exposure Levels

Engineering measures: Ensure adequate ventilation. Use only under a chemical fume hood. Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protection

Eyes	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Inhalation	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced
Skin	Wear appropriate gloves and protective clothes to prevent skin exposure.
Other	Not Available

Other Recommendations

Provide eyewash stations, quick-drench showers and washing facilities accessible to areas of use and handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance (physical state, color, etc.)	Liquid, clear
Odor	Rotten-egg like, amine like
Odor threshold	No information available
pH	7.7 to 8.0 at 100 g/L, H_2O at 20°C
Melting point/freezing point	-24°C (-11.2°F)
Initial boiling point and boiling range	202°C (395.6°F) @ 760 mmHg
Flash point	91°C (195.8 °F) closed cup
Density	1.030 g/mL at 20C
Evaporation rate (BuAc = 1)	1.3
Flammability (solid, gas)	Flammable
Upper/lower flammability or explosive limit	9.5% upper / 1.3% lower
Vapor pressure	0.52 mm Hg or 0.7 mbar (77°F / 25°C)
Vapor density	3.42 (air=1)
Relative density	2.1
Viscosity	1.67 cP (20°C)
Refractive Index	1.3862 (20°C)
Solubility (ies)	Soluble in water
Partition coefficient: n-octanol/water	Log Pow : 0.25 – 0.34 (calculated)
Auto-ignition temperature	245 °C (473 °F)
Decomposition temperature	Not Available
Molecular Weight	99.15
Molecular Formula	C_5H_9NO

10. STABILITY AND REACTIVITY

Chemical Stability	Stable under normal conditions.
Possibility of Hazardous Reactions	Vapors may form explosive mixture with air. Hazardous polymerization does not occur.
Conditions to Avoid	Heat, flames and sparks. Extremes of temperatures and direct sunlight.

Incompatible Materials	Strong oxidizing agents, strong acids. Aldehydes, Acid anhydrides, Isocyanates. Do not mix with different types of chlorinating chemicals. May attack many plastics, rubbers and coatings.
Hazardous Decomposition Products	Carbon monoxide (CO), Carbon dioxide (CO_2), Oxides of nitrogen, dense black smoke.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Skin	LD50 (Dermal) – Rat – >5,000 mg/Kg,
Eyes	Eye irritation – rabbit.
Respiratory	LC50 Inhalation -rat- >5.1 mg/Kg , exposure time 4 hours, vapor.
Ingestion	LD50 Oral – rat – 3,914 mg/kg

Skin corrosion/irritation Causes skin irritation
Eye damage/irritation Causes serious eye irritation.

Carcinogenicity

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

Signs & Symptoms of Exposure

Skin	Redness, irritation
Eyes	Redness, severe irritation
Respiratory	Irritation of mucous membranes, coughing, dyspnea, drowsiness.
Ingestion	Irritation and burning sensations of mouth and throat, nausea, vomiting and abdominal pain
Carcinogenicity	There are no known carcinogenic chemicals in this product.
Chronic Toxicity	Not Available
Teratogenicity	Teratogenic effects have occurred in experimental animals.
Mutagenicity	Bacterial mutagenicity: Ames test is negative.
Reproductive Effects	Experiments have shown reproductive toxicity effects on lab animals.
Developmental Effects	Developmental effects have occurred in experimental animals.
Embryotoxicity	May cause harm; developmental effects have occurred in experimental animals
Specific Target Organ Toxicity	Not Available

12. ECOLOGICAL INFORMATION

Ecotoxicity

Aquatic Vertebrate	LC50 (Oncorhynchus mykiss (rainbow trout)): >500 mg/L, exposure for 96 hours
Aquatic Invertebrate	LC50 (Daphnia magna (water flea)): >955 – 1,259 mg/L, exposure for 96 hours. EC50 (Daphnia magna (water flea)) : 4,897 mg/L, exposure for 48 hours. Remarks: (IUCLID)
Terrestrial	Not Available
Persistence and Degradability	Biodegrades 73%, aerobic exposure 28 days. Readily biodegradable.
BOD	1.100 mg/g (literature)
COD	1.600 mg/g (literature)

Bioaccumulative Potential	Log Pow: -0.46 (experimental) , No data available.
Mobility in Soil	Not Available
Other Adverse Effects	Not Available

13. DISPOSAL CONSIDERATIONS

Waste Residues	Users should review their operations in terms of the applicable federal/national or local regulations and consult with appropriate regulatory agencies if necessary before disposing of waste product container.
Product Containers	Users should review their operations in terms of the applicable federal/national or local regulations and consult with appropriate regulatory agencies if necessary before disposing of waste product container.

The information offered in section 13 is for the product as shipped. Use and/or alterations to the product may significantly change the characteristics of the material and alter the waste classification and proper disposal methods.

14. TRANSPORT INFORMATION

US DOT	NA 1993, combustible liquid, n.o.s. (N-Methyl-2-pyrrolidone), CBL, packaging group III, Hazard label =none.
TDG	Not dangerous goods.
IMDG	Not regulated
Marine Pollutant	Not regulated
IATA/ICAO	Not regulated

15. REGULATORY INFORMATION

TSCA Inventory Status	N-Methyl-2-pyrrolidone is listed on the TSCA inventory.
DSCL (EEC)	All ingredients are listed on the DSCL inventory.
California Proposition 65	Not Listed
SARA 302	Not Listed
SARA 311	Acute Health Hazard= Yes, Fire Hazard=Yes, Chronic Health Hazard=Yes
SARA 312	Acute Health Hazard=Yes, Fire Hazard=Yes, Chronic Health Hazard=Yes
SARA 313	Not Listed
US DHS	This product does not contain any DHS chemicals.
WHMIS Canada	B3 Combustible liquid, D2B Toxic materials

16. OTHER INFORMATION

Revision	Date
Revision 1	04-09-2013
Revision 2	12-08-2021
Revision 3	

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