

1. Identification

Material name	NMP
Issue date	28-April-2016
Revision date	-
Supersedes date	-
Other means of identification	
Spec ID	100000010704
Synonyms	N-Methylpyrrolidone; N-methyl-2-pyrrolidone
Recommended use	For industrial applications.
Recommended restrictions	None known.
Supplier information	FUJIFILM Ultra Pure Solutions, Inc. 11225 Commercial Parkway Castroville, CA 95012 Transportation Emergency: FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC: 1-800-424-9300 Medical Emergency (24HR): FOR ANY HEALTH & MEDICAL EMERGENCY, 24 HOURS /7 DAYS CALL: 1-800-365-8951 Non-Emergency Telephone : FOR ALL SDS REQUESTS & QUESTIONS, CALL CUSTOMER SERVICE: 1-832-632-2120
SDS file	18006_US_EN_V1.0
Replaces file	None

2. Hazard(s) identification

Physical hazards	Flammable liquids	Category 4
Health hazards	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2A
	Reproductive toxicity (the unborn child)	Category 1B
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation
OSHA defined hazards	Not classified.	
Label elements		



Signal word	Danger
Hazard statement	Combustible liquid. Causes skin irritation. Causes serious eye irritation. May damage the unborn child. May cause respiratory irritation.
Precautionary statement	
Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from flames and hot surfaces-No smoking. Wear protective gloves/protective clothing/eye protection/face protection. Avoid breathing mist/vapors/spray. Use only outdoors or in a well-ventilated area. Wash thoroughly after handling.
Response	IF exposed or concerned: Get medical advice/attention. If on skin: Wash with plenty of water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell. In case of fire: Use alcohol-resistant foam, carbon dioxide, dry powder or water fog for extinction.
Storage	Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool.

Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	None.

3. Composition/information on ingredients

Substance

Chemical name	Common name and synonyms	CAS number	%
N-methyl-2-pyrrolidone		872-50-4	100

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

Inhalation	Move injured person into fresh air and keep person calm under observation. Get medical attention if any discomfort continues.
Skin contact	Remove contaminated clothes and rinse skin thoroughly with water for at least 15 minutes. Get medical attention promptly if symptoms persist or occur after washing.
Eye contact	Immediately flush with plenty of water for up to 15 minutes. Remove any contact lenses and open eyelids wide apart. Get medical attention promptly if symptoms occur after washing.
Ingestion	Rinse mouth thoroughly with water and give large amounts of milk or water, if person is conscious. Only induce vomiting at the instruction of medical personnel. Get medical attention if any discomfort continues.
Most important symptoms/effects, acute and delayed	Inhalation: Headache. Eye contact: Visual disturbances including blurred vision. Causes redness and pain. Skin contact: Defats the skin. Ingestion: Burning sensation in mouth.
Indication of immediate medical attention and special treatment needed	Treat symptomatically.
General information	Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital.

5. Fire-fighting measures

Suitable extinguishing media	The product is combustible, and heating may generate vapors which may form explosive vapor/air mixtures. Extinguish with foam, carbon dioxide, dry powder or water fog.
Unsuitable extinguishing media	None.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed. Solvent vapors may form explosive mixtures with air.
Special protective equipment and precautions for firefighters	Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Use standard firefighting procedures and consider the hazards of other involved materials. Cool containers exposed to heat with water spray and remove container, if no risk is involved.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Extinguish all ignition sources. Avoid sparks, flames, heat and smoking. Ventilate the area. Avoid inhalation of vapors/spray and contact with skin and eyes. Wear suitable protective clothing. See Section 8 of the SDS for Personal Protective Equipment.
Methods and materials for containment and cleaning up	Remove sources of ignition. Absorb spillage with non-combustible, absorbent material. For waste disposal, see Section 13 of the SDS.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground unless authorized by permit.

7. Handling and storage

Precautions for safe handling	Local exhaust is recommended. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Pregnant women should not work with the product, if there is the least risk of exposure. Avoid inhalation of vapors and spray mist and contact with skin and eyes. Wear approved safety goggles. Wear protective gloves and appropriate clothing to prevent skin contact. The product is combustible, and heating may generate vapors which may form explosive vapor/air mixtures. Do not smoke and do not spray near an open flame or other sources of ignition. Take precautionary measures against static discharges. Observe good industrial hygiene practices.
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Conditions for safe storage, including any incompatibilities

Follow rules for combustible liquids. Keep away from heat, sparks and open flame. Do not store near heat sources or expose to high temperatures. Store in closed original container in a dry place. Store away from incompatible materials.

8. Exposure controls/personal protection**Occupational exposure limits****US. Workplace Environmental Exposure Level (WEEL) Guides**

Components	Type	Value
N-methyl-2-pyrrolidone (CAS 872-50-4)	TWA	40 mg/m3
		10 ppm

Biological limit values**ACGIH Biological Exposure Indices**

Components	Value	Determinant	Specimen	Sampling Time
N-methyl-2-pyrrolidone (CAS 872-50-4)	100 mg/l	5-Hydroxy-N-methyl-2-pyrrolidone	Urine	*

* - For sampling details, please see the source document.

Exposure guidelines**US - California OELs: Skin designation**

N-methyl-2-pyrrolidone (CAS 872-50-4) Can be absorbed through the skin.

US WEEL Guides: Skin designation

N-methyl-2-pyrrolidone (CAS 872-50-4) Can be absorbed through the skin.

Appropriate engineering controls

Use explosion-proof equipment. Provide adequate ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of vapors.

Individual protection measures, such as personal protective equipment**Eye/face protection**

Wear approved safety goggles.

Skin protection**Hand protection**

Wear protective gloves impervious to the chemicals in use.

Other

Also wear appropriate clothing to prevent any possibility of skin contact. Suitable items can be recommended by the protective equipment supplier or by a qualified industrial hygienist.

Respiratory protection

If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA Standard 1910.134. Use a NIOSH/MSHA approved air purifying respirator as needed to control exposure. Consult with respirator manufacturer to determine respirator selection, use, and limitations. Use positive pressure, air-supplied respirator for uncontrolled releases or when air purifying respirator limitations may be exceeded. Follow respirator protection program requirements (OSHA 1910.134 and ANSI Z88.2) for all respirator use.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Routinely wash work clothing and protective equipment to remove contaminants. Observe any medical surveillance requirements.

9. Physical and chemical properties**Appearance**

Physical state Liquid.

Form Liquid.

Color Colorless.

Odor Mild amine.

Odor threshold No data available.

pH 7.7 - 8

Melting point/freezing point -11.2 °F (-24 °C)

Initial boiling point and boiling range 395.6 °F (202 °C)

Flash point 195.8 °F (91.0 °C)

Evaporation rate No data available.

Flammability (solid, gas) Not applicable.

Upper/lower flammability or explosive limits

Flammability limit - lower (%) 1.3

Flammability limit - upper (%) 9.5

Vapor pressure 0.24 mmHg (20°C)

Vapor density 3.42 (Air = 1)

Relative density 1.028

Solubility(ies)

Solubility (water) Completely soluble in water.

Partition coefficient (n-octanol/water) -0.38

Auto-ignition temperature 473 °F (245 °C)

Decomposition temperature 689 °F (365 °C)

Viscosity 1.61 mm²/s

Other information

Density 1.028 g/ml (25°C)

Molecular weight 99.1 g/mol

10. Stability and reactivity

Chemical stability Stable under normal temperature conditions.

Possibility of hazardous reactions Will not occur.

Conditions to avoid Heat, sparks, flames.

Incompatible materials Strong oxidizing agents. Strong bases. Copper and copper alloys.

Hazardous decomposition products At elevated temperatures: Carbon dioxide. Carbon monoxide. Nitrogen Oxides.

11. Toxicological information**Information on likely routes of exposure**

Inhalation May cause respiratory irritation. The substance can be absorbed into the body by inhalation.

Skin contact Causes skin irritation. May be absorbed through the skin.

Eye contact Causes serious eye irritation.

Ingestion May cause discomfort if swallowed. The substance can be absorbed into the body by ingestion.

Symptoms related to the physical, chemical and toxicological characteristics Inhalation: Headache. Eye contact: Visual disturbances including blurred vision. Causes redness and pain. Skin contact: Defats the skin. Ingestion: Burning sensation in mouth.

Information on toxicological effects**Acute toxicity**

Components	Species	Test Results
N-methyl-2-pyrrolidone (CAS 872-50-4)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	8000 mg/kg
<i>Inhalation</i>		
LC50	Rat	> 5.1 mg/l, 4 Hours
<i>Oral</i>		
LD50	Rat	3914 mg/kg
Skin corrosion/irritation	Causes skin irritation.	
Serious eye damage/eye irritation	Causes serious eye irritation.	
Respiratory or skin sensitization		
Respiratory sensitization	Due to lack of data the classification is not possible.	
Skin sensitization	Based on available data, the classification criteria are not met.	
Germ cell mutagenicity	Based on available data, the classification criteria are not met.	
Carcinogenicity	Due to lack of data the classification is not possible.	

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

NTP Report on Carcinogens

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

Reproductive toxicity	May damage the unborn child.
Specific target organ toxicity - single exposure	May cause respiratory irritation.
Specific target organ toxicity - repeated exposure	Due to lack of data the classification is not possible.
Aspiration hazard	Based on available data, the classification criteria are not met.
Chronic effects	May cause damage to the kidneys.

12. Ecological information

Ecotoxicity	The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
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Components	Species		Test Results
N-methyl-2-pyrrolidone (CAS 872-50-4)			
Acute	EC50	Algae - Skeletonema costatum	> 500 mg/l, 72 hours
Aquatic			
Acute			
Crustacea	EC50	Daphnia magna	> 1000 mg/l, 24 hours
Fish	LC50	Oncorhynchus mykiss	> 500 mg/l, 96 hours
Persistence and degradability	The product is readily biodegradable.		
Bioaccumulative potential	Not expected to bioaccumulate on the basis of the low octanol-water partition coefficient.		
Bioaccumulative potential			
Octanol/water partition coefficient log Kow			
N-methyl-2-pyrrolidone (CAS 872-50-4)	-0.38		
Mobility in soil	This product is water soluble and may disperse in soil.		
Mobility in general	The product is soluble in water. This organic solvent will evaporate easily from all surfaces.		
Other adverse effects	The product is a volatile organic compound which has a photochemical ozone creation potential.		

13. Disposal considerations

Disposal instructions	Disposal recommendations are based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.
Hazardous waste code	Not regulated.
Waste from residues / unused products	Dispose of waste and residues in accordance with local authority requirements.
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information**DOT**

UN number	NA1993
UN proper shipping name	Combustible liquid, n.o.s. (n-Methyl-2-pyrrolidone)
Transport hazard class(es)	
Class	Combustible liq
Subsidiary risk	-
Label(s)	None
Packing group	III
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	IB3, T1, T4, TP1
Packaging exceptions	150
Packaging non bulk	203
Packaging bulk	241

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. Regulatory information

US federal regulations

This product is hazardous according to OSHA 29 CFR 1910.1200.
TSCA Section 4(a) Final Test Rules & Testing Consent Orders: Not regulated.
TSCA Section 5(e) PMN-Substance Consent Orders: Not regulated.

Drug Enforcement Administration (DEA). List 1(i), Precursor Chemicals (21 CFR 1310.02(a) and 1310.04(f)(1))
Not listed.

TSCA Section 5(a)(2) Final Significant New Use Rules (SNURs)(40CFR 721, Subpt. E)

Not regulated.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration

N-methyl-2-pyrrolidone (CAS 872-50-4) 1.0 %

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance

N-methyl-2-pyrrolidone (CAS 872-50-4) Listed.

CERCLA (Superfund) reportable quantity (lbs) (40 CFR 302.4)

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard - No

Section 302 extremely hazardous substance (40 CFR 355, Appendix A)
No

Section 311/312 (40 CFR 370)
Yes

Safe Drinking Water Act (SDWA)
Contaminate candidate list

Drug Enforcement Administration (DEA) (21 CFR 1308.11-15)
Not controlled

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

All ingredients are TSCA compliant.

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s)

State regulations

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

N-methyl-2-pyrrolidone (CAS 872-50-4) Listed.

US - California Proposition 65 - CRT: Listed date/Developmental toxin

N-methyl-2-pyrrolidone (CAS 872-50-4) Listed: June 15, 2001 Developmental toxin.

US. Massachusetts RTK - Substance List

N-methyl-2-pyrrolidone (CAS 872-50-4) Listed.

US. New Jersey Worker and Community Right-to-Know Act

N-methyl-2-pyrrolidone (CAS 872-50-4)

US. Pennsylvania Worker and Community Right-to-Know Law

N-methyl-2-pyrrolidone (CAS 872-50-4)

US. Rhode Island RTK

N-methyl-2-pyrrolidone (CAS 872-50-4)

Listed.

16. Other information, including date of preparation or last revision

Further information

HMIS® is a registered trade and service mark of the NPCA.
G - Safety Glasses, Gloves, Vapor Respirator

HMIS® ratings

Health: 2*
Flammability: 2
Physical hazard: 0
Personal protection: G

NFPA ratings

Health: 2
Flammability: 2
Instability: 0

List of abbreviations

LD50: Lethal Dose, 50%.
LC50: Lethal Concentration, 50%.
EC50: Effective Concentration, 50%.

Disclaimer

THIS SAFETY DATA SHEET (SDS) HAS BEEN PREPARED IN COMPLIANCE WITH THE FEDERAL OSHA HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200. THE INFORMATION IN THIS SDS SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. FUJIFILM ULTRA PURE SOLUTIONS BELIEVES THIS INFORMATION TO BE RELIABLE AND UP TO DATE AS OF THE DATE OF PUBLICATION BUT, MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS SDS IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT FUJIFILM ULTRA PURE SOLUTIONS AT THE PHONE NUMBER 1-831-632-2120 (CUSTOMER SERVICE) TO MAKE CERTAIN THAT THIS DOCUMENT IS CURRENT.

SDS file

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Replaces file

None