

N-Methyl-2- Pyrrolidone

N-甲基吡咯烷酮

1、CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

- (1) PRODUCT NAME: N-Methyl -2- Pyrrolidone
- (2) OTHER/GENERIC NAMES: NMP
1-Methyl pyrrolidone
- (3) PRODUCT USE: Solvent
- (4) MANUFACTURER: Puyang Guangming Chemicals Co.,Ltd.
- (5) Tel:+86-393-6672018
- (6) Fax: +86-393-6672020
- (7) [Http://www.gmchemical.cn](http://www.gmchemical.cn)

2、PRODUCT SPECIFICATIONS

Index	Reagent Class	Electric Class	Common Class	Industrial Class
Purity %	≥99.9	≥99.9	≥99.8	≥99.5
Chroma Hazen	≤8	≤10	≤20	≤25
Density g/ml	1.032-1.035	1.032-1.035	1.032-1.035	1.032-1.035
Moisture%	≤0.008	≤0.01	≤0.03	≤0.05

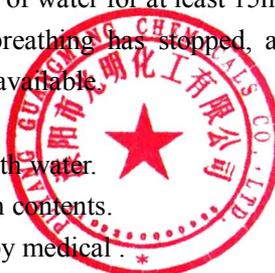
3、HAZARDS IDENTIFICATION

- (1) EMERGENCY OVERVIEW: Combustible liquid and vapor .Causes skin, eye and respiratory tract irritation.Harmful if swallowed,inhaled or absorbed through the skin.
- (2) POTENTIAL HEALTH HAZARDS
 - 1) SKIN: Can cause itching ,redness scaling and hives.Quickly absorbed through the skin and is capable of transporting other dissolved toxing into the body.
 - 2) EYES:Can cause irritation and corneal burns.
 - 3) INHALATION: Can cause respiratory tract irritation,headache,nausea,dizziness and drowsiness.
 - 4) INGESTION: Can cause dizziness,drowsiness, nausea, vomiting cramps and chills.
 - 5) DELAYED EFFECTS: Liver and Kidney damage can occur

Ingredients found on one of the OSHA designated carcinogen lists are listed below.

4 AID MEASURES:

- 1)SKIN: Flush affected area with large amounts of water for at least 15 minutes while removing ,contaminated clothing and shoes,Get medical attention for irritation or any other symptom
- 2) EYES: Immediately flush eyes with large quantities of water for at least 15minutes.Get immediate medical attention.
- 3) INHALATION: Remove victim to fresh air .If breathing has stopped, apply artificial respiration. If breathing is difficult, give oxygen provided a qualified operator is available.
Get immediate medical attention.
- 4)INGESTION: If person is conscious, rinse mouth with water.
Patient may drink water on milk to dilute stomach contents.
Do not induce vomiting unless directed to do so by medical





personnel .Get immediate medical attention.

5)ADVICE TO PHYSICIAN : No specific advice, Treat according to symptoms present.

5 FIRE FIGHTING MEASURES

(1)FLAMMABLE PROPERTIES

FLASH POINT: 187°F (88°C)

FLASH POINT METHOD : Closed Cup

AUTOIGNITION: 346°C

UPPER FLAME LIMIT (volume % in air): 9.5%

LOWER FLAME LIMIT(volume % in air): 1.3%

OSHA FLAMMABILITY CLASS : Combustible Liquid

EXTINGUISHING MEDIA: Carbon Dioxide, Dry Chemical or Foan

(2)UNUSUAL FIRE AND EXPLOSION HAZARDS:

Heat will build pressure within containers and may cause containers to rupture. May form explosive mixtures with air when heated above the flash point .

(3)SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS

Wear full protective clothing and The government approved self-contained breathing apparatus with full facepiece.

6. ACCIDENTAL RELEASE MEASURES

(1) In case of spill or leak

Eliminate sources of ignition, Isolate the spill area. Contain and recover liquid when possible.Absorb with inert absorbent and place in an approved chemical waste container. For large spills, dike up with inert material and transfer into same container. Do not allow to enter into sewers or waterways.

(2) Spills and releases may have to be reported to federal and/or local authorities. See section 15 regarding reporting requirements

7. HANDLING AND STORAGE

1).NORMAL HANDLING: (Always wear recommended personal protective equipment)

Keep away from heat and open flame. Use with adequate ventilation. Avoid contact with skin, eyes and clothing. Do not eat, Drink or smoke in the work area. Wash thoroughly after handling.

2).STORAGE RECOMMENDATIONS:

Store in a cool, dry, well ventilated area away from heat and sources of ignition and incompatible materials.Keep containers upright and tightly closed. Protect containers from physical damage .Do not reuse containers. Empty containers may contain product residue and /or vapors label warnings apply to empty containers that have not been cleaned.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

(1).ENGINEERING CONTROLS:

Ensure adequate mechanical ventilation. Use local ventilation at product handling or transfer points.

(2).PERSONAL PROTECTIVE EQUIPMENT

1). SKIN PROTECTION:

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

2).EYE PROTECTION:

Wear safety glasses with non-perforated sideshields for normal handling. Goggles or a full-face shield may be necessary depending on quantity of material and conditions of use.





3) RESPIRATORY PROTECTION:

Not required for properly ventilated areas. If there is potential for inhalation of vapor or mist, use an appropriate approved respiration. Warning Air-purifying respirators do not protect works in oxygen-deficient atmospheres.

(3).EXFOSURE GUIDELINES:

INGREDIENT NAME	ACGIH TLY	OSHA PEL	OTHER LIMIT
N-Mehtyl Pyrrolidone	None Established	None Established	10ppm 8hr TWA

Skin contact can invalidate limit values.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE :	Clear
PHYSICAL STATE:	Liquid
MOLECULAR WEIGHT:	99.15
CHEMICAL FORMULA :	C ₅ H ₉ NO
ODOR:	Amine like odor
SPECIFIC GRAVITY (Water = 1.0):	1.03
SOLUBILITY IN WATER (weight%):	100%
pH:	Not Applicable
BOILING POINT:	396°F (202°C)
MELTING POINT :	-11°F (-24°C)
VAPOR PRESSURE :	<1 mm Hg@ 68°F (20°C)
VAPOR DENSITY (air=1.0):	3.4
EVAPORATION RATE:	>1 (Compared to : Butyl Acetate = 1)
% VOLATILES:	-100
FLASH POINT:	187°F (88°C)

10. STABILITY AND REACTIVITY

(1).NORMALLY STABLE (CONDITIONS TO AVOID):

Stable under normal conditions of use and storage. Avoid heat, flames, ignition sources and incompatible material.

(2).INCOMPATIBILITIES:

Oxidizers and strong acids.

(3).HAZARDOUS DECOMPOSITION PRODUCTS:

Thermal decomposition may produce carbon monoxide, carbon dioxide,and nitrogen oxides.

(4) HAZARDOUS POLYMERIZATION:

Not expected to occur.

11.TOXICOLOGICAL INFORMATION

(1).IMMEDIATE(ACUTE)EFFECTS:

Oral-Rat LD₅₀: 3914mg/kg.

Oral-Mouse LD₅₀: 5130 mg/kg.

Dermal Approximate LD₅₀(rabbit):4000-8000mg/kg(intact skin) and 2000-4000mg/kg(abraded skin).

Dermal Irritation (rabbit):slight irritation ,Primary Derma Irritation index of 0.5/8.0.

Eye (rabbit):Severe irritation.

(2). DELAYED(SUBCHRONIC AND CHORNIC)EFFECTS:

1).Subchronic:





In a repeated dose study in which mice were fed dietary concentrations of 0, 1000, 2500 or 7500ppm over a 3-month period, concentrations of 2500 and 7500 produced toxic effects of the liver. The study concluded that 1000ppm was a NOAEL level.

2) Chronic:

Rats were exposed to vapor concentrations of 0/40(10ppm),or 400mg/m³(100ppm)6hr/d,5d/wk for 2 years. No life-shortening toxic or carcinogenic effect was observed at any level.The body weight of males exposed to 400mg/m³ was reduced slightly. While a NOEL was determined to be 40mg/m³

(3). Reproductive / Developmental Toxicity:

Three inhalation developmental / reproductive studies in rats showed toxicological effects in the offspring,with a fourth study giving indications of behavioral problems, making that the endpoint of concern. Date reproductive / developmental effects in rats.

For rats exposed dermally, the fetal and maternal NOAEL is reported to be 237mg/kg/day Developmental effects were observed at the maternally toxic level of 750mg/kg/day.

(4). Mutagenicity:

Ames Test: Negative.

Mouse Micronucleous Test : Negative ,after single oral doses up to 3800mg/kg.

Chinese Hamster Bone Marrow Test :Negative,after single oral doses up to 3800mg/kg.

12. ECOLOGICAL INFORMATION

(1).Biodegradation



$$TOD=2.2g/g(6.75 \times 32/99.14)$$

$$TOC=0.61g/g(5 \times 12/99.14)$$

$$1\% \text{ Solution } BOD_5=13000\text{ppm (Actual test value)} \quad 1\% \text{ Solution } COD_{MN}=3400\text{ppm (Actual test value)}$$

(2).Evaluation of Biodegradation

1).Evaluation between Computational Value and Actual Test Value

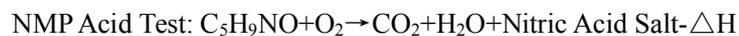
$$BOD/TOD=1.3/2.2=0.6 \quad \text{Biodegradable Possibility } (0.6 <)$$

$$BOD/TOC=1.3/0.61=1.8 \quad \text{Liable Biodegradation } (0.2 <)$$

2).Government office appraisal

industry province basic industry chemicals safe lesson , trading of Japan , think to security detection result NMP good biological degradability material.

3).Biodegradable Reaction



13. DISPOSAL CONSIDERATIONS

(1). RCRA: Is the unused product a RCRA hazardous waste if discarded? Not listed.

If yes, the RCRA ID number is: Not Applicable.

(2). OTHER DISPOSAL CONSIDERATIONS:

Whatever cannot be saved for recovery or recycling should be managed in an approved waste disposal facility. Dispose of container and unused contents in accordance with federal , state and local requirements.





濮阳市光明化工有限公司

PUYANG GUANGMING CHEMICALS CO.,LTD.

14. Laws and regulations material.

Laws and regulations: Handles the transportation according to the ordinary chemical industry condition

15. Ships the capital

CAS NO.:872-50-4

Ships stipulated that, Carries on the transportation according to the ordinary chemical industry

16. Other material

System window body posture:

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Scheduling person: Feng Xianshu Title: Engineer

Scheduling date: 2007/03/06

