1. Identification of the substance/mixture and of the company/undertaking

Product identifier:
- **Product name:** N-Methyl-2-pyrrolidone
- **Product code (SDS NO):** 5048E-3

Details of the supplier of the safety data sheet
- **Manufacturer/Supplier:** KISHIDA CHEMICAL CO., LTD.
- **Address:** 3-1, Honmachibashi, Chuo-ku,Osaka 540-0029, JAPAN
- **Division:** Safety Management Dept. of Chemicals
- **Telephone number:** +81-6-6946-8061
- **FAX:** +81-6-6946-1607
- **e-mail address:** kagakuhinanzenkanri@kishida.co.jp

2. Hazards identification

GHS classification and label elements of the product

**Classification of the substance or mixture**
- Physical and chemical hazards
  - Flammable liquids: Category 4

**HEALTH HAZARDS**
- Skin corrosion/irritation: Category 2
- Serious eye damage/eye irritation: Category 2A
- Reproductive toxicity: Category 1B
- Specific target organ toxicity – single exposure: Narcosis Category 3
- Specific target organ toxicity – repeated exposure: Category 2 (nerve/nervous system; lung; liver; marrow)

**Label elements**

![Label](image-url)

**Signal word:** Danger

**HAZARD STATEMENT**
- Combustible liquid
- Causes skin irritation
- Causes serious eye irritation
- May damage fertility or the unborn child
- May cause drowsiness or dizziness
- May cause damage to organs through prolonged or repeated exposure

**PRECAUTIONARY STATEMENT**

**Prevention**
- Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
- Do not breathe dust/fume/gas/mist/vapors/spray.
- Use only outdoors or in a well-ventilated area.
- Wash contaminated parts thoroughly after handling.
- Wear protective gloves and face protection.
- Wear eye protection/face protection.

**Response**
- In case of fire: Use appropriate media other than water for extinction.
- Get medical advice/attention if you feel unwell.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF ON SKIN: Wash with plenty of soap and 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.

Storage:
Store in a well-ventilated place. Keep container tightly closed. Keep cool.

Disposal:
Dispose of contents/container in accordance with local/national regulation.

Physical and Chemical hazards:
Heating may cause fire.

3. Composition/information on ingredients

Mixture/Substance selection:

- Substance
  - Ingredient name: 1-Methyl-2-pyrrolidinone
  - Content(%): 99 (min)
  - Chemical formula: C₅H₉NO
  - Chemicals No., Japan: 5-113
  - CAS No.: 872-50-4
  - MW: 99.13
  - ECNO: 212-828-1

Note: The figures shown above are not the specifications of the product.

4. First-aid measures

Descriptions of first-aid measures:

General measures:
Get medical attention/advice if you feel unwell.

IF INHALED:
Remove person to fresh air and keep comfortable for breathing.
Call a POISON CENTER or doctor/physician if you feel unwell.

IF ON SKIN (or hair):
Take off immediately all contaminated clothing. Rinse skin with water/shower.
Wash with plenty of soap and water.
If skin irritation or rash occurs: Get medical advice/attention.

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 SWALLOWED:
Rinse mouth.
Call a POISON CENTER or doctor/physician if you feel unwell.

5. Fire-fighting measures

Extinguishing media:

Suitable extinguishing media:
Use appropriate extinguishing media suitable for surrounding facilities.

Specific hazards arising from the substance or mixture:
Containers may explode when heated.
N-Methyl-2-pyrrolidone, KISHIDA CHEMICAL CO., LTD., 5048E-3, 11/10/2018

6. Accidental release measures
   Personnel precautions, protective equipment and emergency procedures
   Ventilate area after material pick up is complete.
   Wear proper protective equipment.

Methods and materials for containment and cleaning up
   Absorb spill with inert material (dry sand, earth, etc.), then place in a chemical waste container.

Preventive measures for secondary accident
   Collect spillage.

7. Handling and storage
   Precautions for safe handling
   Preventive measures
      (Exposure Control for handling personnel)
      Do not breathe dust/fume/gas/mist/vapors/spray.
      (Protective measures against fire and explosion)
      Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

   Exhaust/ventilator
      Exhaust/ventilator should be available.

   Safety treatments
      Avoid contact with skin.
      Avoid contact with eyes.

   Safety Measures/Incompatibility
      Use only outdoors or in a well-ventilated area.
      Wear protective gloves, protective clothing or face protection.
      Wear eye protection/face protection.
      When using do not eat, drink or smoke.

   Conditions for safe storage, including any incompatibilities
   Recommendation for storage
      Keep container tightly closed.
      Store in a cool, dry place. Do not store in direct sunlight.

8. Exposure controls/personal protection
   Exposure controls
      Appropriate engineering controls
      Do not use in areas without adequate ventilation.
      Eye wash station should be available.
      Washing facilities should be available.

   Individual protection measures
   Respiratory protection
      Wear respiratory protection.
Hand protection
  Wear protective gloves.

Eye protection
  Wear eye/face protection.

Safety and Health measures
  Wash … thoroughly after handling.
  Take off contaminated clothing and wash it before reuse.

9. Physical and Chemical Properties
Information on basic physical and chemical properties

Physical properties
  Appearance: Liquid
  Color: Colorless
  Odor: Amine-like odour

Phase change temperature
  Initial Boiling Point/Boiling point: 202℃
  Melting point/Freezing point: −24.4℃
  Flash point: (C.C.)(1-Methyl-2-pyrrolidinone)(C.C.) 86℃
  Auto-ignition temperature: 245℃

Explosive properties: Flammability or explosive limit
  Lower limit: 1.3 vol %
  Upper limit: 9.5 vol %

Vapor pressure: 39 Pa (25℃)

Relative Vapor Density (Air=1): 3.4

Relative density of the Vapor/air–mixture at 20℃ (Air = 1): 1

Specific gravity/Density: 1.03

Kinematic viscosity: 1.62mm²/s (25℃)

Solubility
  Solubility in water: Miscible
  n-Octanol /water partition coefficient: log Pow=0.38

10. Stability and Reactivity
Chemical stability
  Turn color slowly.

Possibility of hazardous reactions
  Decomposes on heating and on burning. This produces toxic fumes including nitrogen oxides.
  It reacts violently with strong acids and strong bases. Attacks copper and its alloys.
  (ICSC 0513)

Conditions to avoid
  Contact with incompatible materials.
  Contact with fire source.

Incompatible materials
  Strong acids, Strong bases

Hazardous decomposition products
  Carbon oxides, Nitrogen oxides
11. Toxicological Information

Information on toxicological effects

Acute toxicity

Acute toxicity (Oral)

[GHS Cat. Japan, base data]
\(1\text{-Methyl-2-pyrrolidinone}\)
rat LD50=3500mg/kg (DFGOT vol.10, 1998)

Irritant properties

Skin corrosion/irritation

[GHS Cat. Japan, base data]
\(1\text{-Methyl-2-pyrrolidinone}\)
human mild to moderate transient irritation (SIDS, 2009)

Serious eye damage /irritation

[GHS Cat. Japan, base data]
\(1\text{-Methyl-2-pyrrolidinone}\)
rabbit moderate to severe irritation (DFGOT vol.10, 1998)

No Allergenic and sensitizing effects data available

No Mutagenic effects data available

No Carcinogenic effects data available

Reproductive toxicity

[GHS Cat. Japan, base data]
\(1\text{-Methyl-2-pyrrolidinone}\)
cat. 1B; SIDS, 2009

No Teratogenic effects data available

Delayed and immediate effects and also chronic effects from short- and long-term exposure

STOT

STOT—single exposure

[cat.3(drow./dizz.)]

[Japan published data]
\(1\text{-Methyl-2-pyrrolidinone}\)
Narcosis (CICAD 35, 2001)

STOT—repeated exposure

[cat.2]

[Japan published data]
\(1\text{-Methyl-2-pyrrolidinone}\)
nerve/nervous system; lung; liver; marrow (CICAD 35, 2001)

No Aspiration hazard data available

12. Ecological Information

Ecotoxicity

Aquatic toxicity

Aquatic acute toxicity component(s) data

[GHS Cat. Japan, base data]
\(1\text{-Methyl-2-pyrrolidinone}\)
Algae (Scenedesmus) EC50 >500mg/L/72hr (SIDS, 2009)

Water solubility

\(1\text{-Methyl-2-pyrrolidinone}\)
100 g/100 ml (SRC, 2005)

Persistence and degradability

\(1\text{-Methyl-2-pyrrolidinone}\)
Degradation rapidly (BOD. NO2 Degradation: 73% / 28 days; BOD. NH3 Degradation: 94% / 28 days; TOC Degradation: 96% / 28 days; GC Degradation: 100% / 28 days (MITI official bulletin))
Bioaccumulative potential
(1-Methyl-2-pyrrolidinone)
log Pow=−0.38 (ICSC, 2014)
No Mobility in soil data available
Ozone depleting chemical data not available

13. Disposal considerations
Waste treatment methods
Dispose of contents/container in accordance with local/national regulation.

14. Transport Information
Not applicable to UN NO.
Environmental hazards
MARPOL Annex V – Substances Harmful to Marine Environment
Reproductive toxicity: cat. I, 1A, 1B
1-Methyl-2-pyrrolidinone
Transport in bulk according to Annex II of MARPOL73/78 and IBC Code
Noxious Liquid : Cat. Y
1-Methyl-2-pyrrolidinone

15. Regulatory Information
Safety, health and environmental regulations/legislation specific for the substance or mixture
US major regulations
TSCA
1-Methyl-2-pyrrolidinone
Other regulatory information
Ensure this material in compliance with federal requirements and ensure conformity to local regulations.

16. Other information
GHS classification and labelling
Flam. Liq. 4: H227 Combustible liquid
Skin Irrit. 2: H315 Causes skin irritation
Eye Irrit. 2A: H319 Causes serious eye irritation
Repr. 1B: H360 May damage fertility or the unborn child
STOT SE 3: H336 May cause drowsiness or dizziness
STOT RE 2: H373 May cause damage to organs through prolonged or repeated exposure
Reference Book
Globally Harmonized System of classification and labelling of chemicals, (5th ed., 2013), UN Recommendations on the TRANSPORT OF DANGEROUS GOODS 19th edit., 2015 UN Classification, labelling and packaging of substances and mixtures (table3–1 ECN06182012)
2016 EMERGENCY RESPONSE GUIDEBOOK (US DOT)
2018 TLVs and BEIs. (ACGIH)
http://monographs.iarc.fr/ENG/Classification/index.php
Supplier’s data/information
General Disclaimer
This information contained in this data sheet represents the best information currently available to us. However, no warranty is made with respect to its completeness and we assume no liability resulting from its use. It are advised to make their own tests to determinate the safety and suitability of each such product or combination for their own
purposes.
The data given here is based on current knowledge and experience. The purpose of this
Safety Data Sheet is to describe the products in terms of their safety requirements. The
data does not signify any warranty with regard to the products’ properties.
The GHS classification data given here is based on current Japan official data (NITE published in
2017).