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# Safety Data Sheet

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

Product identifier:
Product name: N-Methyl-2-pyrrolidone
SDS No. : 5048E-7
Recommended use of the chemical and restrictions on use
Research and Development
Details of the supplier of the safety data sheet
Manufacturer/Supplier: KISHIDA CHEMICAL CO., LTD.
Address: 3-1, Honmachibashi, Chuo-ku, Osaka, JAPAN
Division: Chemical Safety Management Department
Telephone number: +81-6-6946-8061
FAX: +81-6-6946-1607

## Section 2. Hazards identification

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: Category 3 (Narcotic effects)
Specific target organ toxicity - repeated exposure: Category 2 (bone marrow, liver, nervous system, lungs)
(Note) GHS classification without description: Not classified/Classification not possible
Label elements
Hazard pictograms:



Signal word: Danger
Hazard statements
H227 Combustible liquid
H315 Causes skin irritation
H319 Causes serious eye irritation
H360 May damage fertility or the unborn child
H336 May cause drowsiness or dizziness
H373 May cause damage to organs through prolonged or repeated exposure (bone marrow, liver, nervous system, lungs)
Precautionary statements
Prevention
P203 Obtain, read and follow all safety instructions before use.
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P260 Do not breathe dust/fume/gas/mist/vapors/spray.
P271 Use only outdoors or in a well-ventilated area.
P264 Wash hands thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P264 + P265 Wash hands thoroughly after handling. Do not touch eyes.

Response

P370 + P378 In case of fire: Use appropriate media to extinguish.
P318 IF exposed or concerned, get medical advice.
P319 Get medical help if you feel unwell.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P302 + P352 IF ON SKIN: Wash with plenty of water.
P332 + P317 If skin irritation occurs: Get medical help.
P362 + P364 Take off contaminated clothing and wash it before reuse.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P317 If eye irritation persists: Get medical help.

Storage

P403 Store in a well-ventilated place.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.

Disposal

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Specific danger/hazard

Health hazard

See "11. Toxicological Information".

## Section 3. Composition/information on ingredients

Substance/mixture:

Substance

| Ingredient name | Content (%) | CAS RN | ENCS | Chemical formula |
|---|---|---|---|---|
| N-Methyl-2-pyrrolidone | ≧99 | 872-50-4 | 5-113 | C5H9NO |

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

## Section 4. First aid measures

Descriptions of first aid measures

General measures

IF exposed or concerned, get medical advice.
Get medical help if you feel unwell.

IF INHALED

IF INHALED: Remove person to fresh air and keep comfortable for breathing.
If experiencing respiratory symptoms: Get emergency medical help immediately.
Get medical help if you feel unwell.

IF ON SKIN

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse affected areas with water or shower.

If experiencing skin: Get emergency medical help immediately.
If you observe unusual symptom, have irritation/pain and/or feel unwell, seek medical advice.

IF IN EYES

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Rinse in order to better reach all parts of eyes.
Remove all chemicals from contact with the victim's eyes immediately. A delay of only seconds may increase the injury.
If experiencing eye: Get medical help.

IF SWALLOWED

Rinse mouth.
IF SWALLOWED: Get emergency medical help immediately.

## Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

Use appropriate extinguishing media suitable for surrounding facilities.
In case of fire, use spraying loaded liquid, foam (water-soluble liquid: alcohol-resistant foam), inactive gases, dry powder, dry sand to extinguish.
*Fire Service Act Group 4 Hazardous Materials

Unsuitable extinguishing media

Indoor Fire Plug System or Outdoor Fire Plug System
Sprinkler System
Dry Chemical Extinguishing System-Others (except for phosphates etc., Hydrogen Carbonates etc.)
Fire Extinguisher Discharging Jet Water/Spraying Water
Fire Extinguisher Discharging Jet Loaded Liquid
Fire Extinguisher Discharging Dry Extinguishing agents-Others (except for phosphates etc., Hydrogen Carbonates etc.)
Water Bucket or Water Tank
*Cabinet Order Concerning the Control of Hazardous Materials (Attached Table 5) Group 4 Hazardous Materials

Specific hazards arising from the substance or mixture

Fire may produce irritating, corrosive and/or toxic gases.
Runoff from fire control or dilution water may cause pollution.
See "10.Stability and Reactivity".

Advice for firefighters

Special extinguishing method

Evacuate non-essential personnel to safe area.

Special protective equipment and precautions for fire-fighters

Wear fire resistant or flame retardant clothing.
Wear protective gloves/protective clothing/eye protection/face protection.
Firefighters should wear self-contained breathing apparatus with a full facepiece operated in the positive pressure mode.

## Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Keep unauthorized personnel away.
Ventilate area until material pick up is complete.
Wear proper protective equipment.

Environmental precautions

Prevent spills from entering sewers, watercourses, low areas or rivers. To be careful not discharged to the environment without being properly handled waste water contaminated.

Methods and materials for containment and cleaning up

Liquid: Absorb spill with inert material (dry sand, earth, et al), then place in a chemical waste container.
Solid: Sweep up, place in a bag and hold for waste disposal.

Preventive measures for secondary accident

Collect spillage.

## Section 7. Handling and storage

Handling

Engineering measures

(Measures to prevent operator exposure)

Do not breathe dust/fume/gas/mist/vapors/spray.

(Measures to prevent fire and explosion)

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

(Local ventilation/general ventilation)

Use adequate general or local exhaust ventilation.

(Precautions)

Avoid contact with skin.
Avoid contact with eyes.

Advice on safe handling

Obtain, read and follow all safety instructions before use.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.
Wash hands and contaminated parts thoroughly after handling.
When using do not eat, drink or smoke.

Avoidance of contact

See Section 10: Stability and Reactivity.

Advice on general occupational hygiene

Wash hands thoroughly after handling. Do not touch eyes.
Take off contaminated clothing and wash it before reuse.

Storage

Conditions for safe storage

Keep container tightly closed.
Store locked up. (P405)
Store in a cool, dry place. Do not store in direct sunlight.
Storage in accordance with local/national regulation.

Safe packaging material

Use closed unbreakable containers.

## Section 8. Exposure controls/personal protection

Permissible concentration

Administrative Control Levels and Concentration standard value
Concentration standard value TWA: 1ppm (effective from 1 October 2026)
Occupational exposure limit values
The Japan Society for Occupational Health
1ppm; 4mg/m3 (skin)
Appropriate engineering controls
Do not use in areas without adequate ventilation.
Washing facilities should be available.
Personal protective equipment
Recommend to use protective equipment in conformity with the standards.
Use appropriate protective equipment in accordance with local/national regulation.
Respiratory protection
Wear respiratory protection (dust-proof mask/gas mask). Select chemical cartridge corresponding to type of gases when using a gas mask.
Hand protection
Wear impervious protective glove.
Consult with your glove and/or personnel equipment manufacturer for selection of appropriate compatible materials as needed.
Inspect before use and replace worn or damaged gloves.
Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions as needed.
Eye/face protection
Wear eye/face protection. Wear safety goggles in cases gas is generated.
Skin and body protection
Wear protective clothing.
Personal protective equipment for the body and skin should be selected based on the task being performed and the risks involved.

## Section 9. Physical and Chemical Properties

Physical state: Liquid
Color: Colorless to practically colorless
Odor: Practically characteristic odour
Melting point/Freezing point: -24.4℃
Boiling point or initial boiling point and boiling range: (N-Methyl-2-pyrrolidone)202℃
Flammability data is not available.
Lower and upper explosion limit/flammability limit:
Lower explosion limit: 1.3 vol %
Upper explosion limit: 9.5 vol %
Flash point: (N-Methyl-2-pyrrolidone)(C.C.) 86℃
Auto-ignition temperature: (N-Methyl-2-pyrrolidone)245℃
Decomposition temperature data is not available.
pH data is not available.
Kinematic viscosity: 1.62mm2/s(25℃)
Solubility:
Solubility in water: Miscible
Solubility in solvent data is not available.
Partition coefficient n-octanol/water (log value): -0.38
Vapor pressure: 39 Pa(25℃)
Density and/or relative density: 1.03

Relative vapor density (Air=1): 3.4
Relative density of the Vapor/air - mixture at 20℃ (Air = 1): 1
Particle characteristics data is not available.
Other information
Other information is not available.

## Section 10. Stability and Reactivity

Reactivity
Not available.
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

## Section 11. Toxicological Information

Information on toxicological effects
Acute toxicity
Acute toxicity (Oral)
[Data for components of the product]
[NITE-CHRIP]
rat LD50: 3500 mg/kg (source: NITE)
Acute toxicity (Dermal)
[Data for components of the product]
[NITE-CHRIP]
rat LD50: > 5000 mg/kg (source: NITE)
Acute toxicity (Inhalation)
[Data for components of the product]
[NITE-CHRIP]
aerosol: rat LC50: > 5.1 mg/L (4-hour) (source: NITE)
Skin corrosion/irritation
[Product]
Category 2, Causes skin irritation
[Data for components of the product]
[NITE-CHRIP]
Category 2 (source: NITE)
Serious eye damage/irritation
[Product]
Category 2A, Causes serious eye irritation
[Data for components of the product]

[NITE-CHRIP]
Category 2A (source: NITE)

Allergenic and sensitizing effects data is not available.
Mutagenic effects data is not available.
Carcinogenic effects data is not available.
Reproductive toxicity
[Product]
Category 1B, May damage fertility or the unborn child
[Data for components of the product]
[NITE-CHRIP]
Category 1B (source: NITE)
Specific target organ toxicity – single exposure
[Product]
Category 3, May cause drowsiness or dizziness
[Data for components of the product]
[NITE-CHRIP]
Category 3 (Narcotic effects) (source: NITE)
Specific target organ toxicity – repeated exposure
[Product]
Category 2, May cause damage to organs through prolonged or repeated exposure
[Data for components of the product]
[NITE-CHRIP]
Category 2 (bone marrow, liver, nervous system, lungs) (source: NITE)
Aspiration hazard data is not available.

## Section 12. Ecological Information

Toxicity
Aquatic toxicity
[Data for components of the product]
Hazardous to the aquatic environment, short-term (acute)
[NITE-CHRIP]
Algae (Desmodesmus subspicatus) 72-hour EC50: > 500 mg/L (source: NITE)
Crustacea (Daphnia magna) 24-hour EC50: > 1000 mg/L (source: NITE)
Fish (Oncorhynchus mykiss) 96-hour LC50: > 500 mg/L (source: NITE)
Hazardous to the aquatic environment, long-term (chronic)
[NITE-CHRIP]
Crustacea (Daphnia magna) 21-day NOEC (reproduction, lethal): 12.5 mg/L (source: NITE)
Water solubility
not poorly water-soluble (100000 mg/L) (source: NITE)
Persistence and degradability
[Data for components of the product]
Rapidly degradable (Degradation rate: 73%, 94% (by BOD); 96% (by TOC); 100% (by GC))
(source: NITE)
Bioaccumulative potential
[Data for components of the product]
log Pow: -0.38 (source: ICSC, 2014)
Mobility in soil
Mobility in soil data is not available.
Other adverse effects

Ozone depleting chemical data is not available.

## Section 13. Disposal considerations

Waste from residues, Contaminated packing

Avoid release to the environment.

Dispose of contents/container as industrial waste. Accordance with local/national regulation.

## Section 14. Transport Information

UNRTDG

UN number : Not regulated

IMDG Code (International Maritime Dangerous Goods Regulations)

UN number : Not regulated

IATA (Dangerous Goods Regulations)

UN number : Not regulated

Marine pollutants (yes/no) : no

## Section 15. Regulatory Information

Applicable laws and regulations

U.S. Toxic Substances Control Act (TSCA) Inventory

Chemicals listed in TSCA Inventory

Applicable

Other regulatory information

Ensure this material in compliance with federal requirements and ensure conformity to local regulations.

## Section 16. Other information

References and sources for data

Globally Harmonized System of classification and labelling of chemicals, UN
Recommendations on the TRANSPORT OF DANGEROUS GOODS 23rd edit., 2023 UN
IMDG Code, 2024 Edition (Incorporating Amendment 42-24)
IATA Dangerous Goods Regulations (67th Edition) 2026
2024 EMERGENCY RESPONSE GUIDEBOOK (US DOT)
2026 TLVs and BEIs. (ACGIH)
JIS Z 7252 : 2025
JIS Z 7253 : 2025
Recommendation of occupational exposure limits (2024-2025) (JSOH)
Supplier's data/information

General Disclaimer

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Please provide SDS to customers for selling or transferring.

All chemicals have unknown hazard. Handle the product with care.

This data sheet was created based on the information we currently have and may be revised according to new information. In addition, the precautions apply only to normal handling, and in the case of special handling, please make adequate countermeasure to maintain your

safety.
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 Data published in Japan (National Institute of Technology and Evaluation (NITE) Chemical Risk Information Platform (NITE-CHRIP), up to FY2024).