

# SAFETY DATA SHEET

## 1. Identification

**Product identifier:** 1-Methyl-2-pyrrolidone

### Other means of identification

**Synonyms:** NMP  
**Product No.:** 6392, 639R, 9261, R053, 12256, 12910, 72237

### Recommended use and restriction on use

**Recommended use:** For Laboratory, Research or Manufacturing Use.  
**Restrictions on use:** Not determined.

### Details of the supplier of the safety data sheet

Avantor Performance Materials, LLC  
100 Matsonford Rd, Suite 200  
Radnor, PA 19087

Telephone: Customer Service: 855-282-6867

Fax: Product Information Compliance  
Contact Person: info@avantormaterials.com  
E-mail:

### Emergency telephone number:

CHEMTREC: 1-800-424-9300 within US and Canada (24 hrs/day, 7 days/week)

## 2. Hazard identification

### Hazard Classification

#### Health Hazards

Skin Corrosion/Irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 2A
Toxic to reproduction	Category 1B
Specific Target Organ Toxicity - Single Exposure	Category 3 <sup>1</sup>

#### Target Organs

1. Respiratory tract irritation.

### Label Elements

#### Hazard Symbol:



<b>Signal Word:</b>	Danger
<b>Hazard Statement:</b>	Causes skin irritation. Causes serious eye irritation. May cause respiratory irritation. May damage fertility or the unborn child.
<b>Precautionary Statements</b>	
<b>Prevention:</b>	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wash hands thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. Avoid breathing dust/fume/gas/mist/vapors/spray. Use only outdoors or in a well-ventilated area.
<b>Response:</b>	Call a POISON CENTER/doctor if you feel unwell. 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 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. IF INHALED: Remove person to fresh air and keep comfortable for breathing.
<b>Storage:</b>	Store locked up. Store in a well-ventilated place. Keep container tightly closed.
<b>Disposal:</b>	Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.
<b>Other hazards which do not result in GHS classification:</b>	None.

### 3. Composition/information on ingredients

#### Substances

Chemical name	Common name and synonyms	CAS number	Content in percent (%)*
1-Methyl-2-pyrrolidone	NMP	872-50-4	99,0 - 100,0%

\* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

### 4. First-aid measures

<b>General information:</b>	Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in attendance.
<b>Ingestion:</b>	Rinse mouth. Call a POISON CENTER/doctor if you feel unwell.
<b>Inhalation:</b>	Move to fresh air. Get medical attention if symptoms persist.
<b>Skin Contact:</b>	Wash skin thoroughly with soap and water. Get medical attention if irritation persists after washing. Wash contaminated clothing before reuse.
<b>Eye contact:</b>	Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention.

**Most important symptoms/effects, acute and delayed**

**Symptoms:** Irritating to eyes, respiratory system and skin. May cause reproductive effects.

**Hazards:** None known.

**Indication of immediate medical attention and special treatment needed**

**Treatment:** Treat symptomatically. Symptoms may be delayed.

**5. Fire-fighting measures**

**General Fire Hazards:** May ignite at high temperature.

**Suitable (and unsuitable) extinguishing media**

**Suitable extinguishing media:** Water spray, fog, CO2, dry chemical, or alcohol resistant foam.

**Unsuitable extinguishing media:** None.

**Specific hazards arising from the chemical:** This product is not flammable. May burn, but does not ignite readily.

**Special protective equipment and precautions for firefighters**

**Special fire fighting procedures:** Move containers from fire area if you can do so without risk. Use water spray to keep fire-exposed containers cool. Cool containers exposed to flames with water until well after the fire is out.

**Special protective equipment for fire-fighters:** Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

**6. Accidental release measures**

**Personal precautions, protective equipment and emergency procedures:** Keep unauthorized personnel away. Ventilate closed spaces before entering them. Ensure suitable personal protection (including respiratory protection) during removal of spillages in a confined area. See Section 8 of the SDS for Personal Protective Equipment.

**Methods and material for containment and cleaning up:** Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Dike far ahead of larger spill for later recovery and disposal.

**Notification Procedures:** Inform authorities if large amounts are involved.

**Environmental Precautions:** Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so.

**7. Handling and storage**

**Precautions for safe handling:** Use personal protective equipment as required. Avoid contact with eyes, skin, and clothing. Do not eat, drink or smoke when using the product. Wash hands thoroughly after handling.

**Conditions for safe storage, including any incompatibilities:**

Store at moderate temperatures in dry, well ventilated area. Keep container tightly closed.

## 8. Exposure controls/personal protection

### Control Parameters

#### Occupational Exposure Limits

Chemical Identity	Type	Exposure Limit Values	Source
1-Methyl-2-pyrrolidone	TWA	400 mg/m <sup>3</sup>	Canada, Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)

#### Biological Limit Values

Chemical Identity	Exposure Limit Values	Source
1-Methyl-2-pyrrolidone (5-Hydroxy-N-methyl-2-pyrrolidone: Sampling time: End of shift.)	100 mg/l (Urine)	ACGIH BEI (03 2013)

**Appropriate Engineering Controls**

No data available.

### Individual protection measures, such as personal protective equipment

**General information:** Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

**Eye/face protection:** Wear safety glasses with side shields (or goggles).

#### Skin Protection

**Hand Protection:** Chemical resistant gloves

**Other:** Wear suitable protective clothing.

**Respiratory Protection:** Wear suitable respiratory protection. Chemical respirator with organic vapor cartridge.

**Hygiene measures:** Provide eyewash station and safety shower. Observe good industrial hygiene practices. Wash hands before breaks and immediately after handling the product. Wash contaminated clothing before reuse.

## 9. Physical and chemical properties

### Appearance

**Physical state:** Liquid

**Form:** Liquid

**Color:** Colorless

**Odor:** Mild amine odor

**Odor threshold:** No data available.

**pH:** 8,0 - 9,5 (50 g/l, 20 °C)

**Melting point/freezing point:** -25 °C

**Initial boiling point and boiling range:** 201,7 - 204,3 °C

**Flash Point:** 91 °C (Closed Cup)

<b>Evaporation rate:</b>	0,06 (butyl acetate=1)
<b>Flammability (solid, gas):</b>	No data available.
<b>Upper/lower limit on flammability or explosive limits</b>	
<b>Flammability limit - upper (%):</b>	No data available.
<b>Flammability limit - lower (%):</b>	No data available.
<b>Explosive limit - upper (%):</b>	No data available.
<b>Explosive limit - lower (%):</b>	No data available.
<b>Vapor pressure:</b>	0,46 hPa (25 °C) 0,32 hPa (20 °C)
<b>Vapor density:</b>	3,4 (Air=1)
<b>Density:</b>	1,03 g/ml (20 °C) 1,03 g/cm <sup>3</sup> (25 °C)
<b>Relative density:</b>	1,03 (25 °C)
<b>Solubility(ies)</b>	
<b>Solubility in water:</b>	Completely soluble
<b>Solubility (other):</b>	alcohol: Miscible ethyl ether: Miscible acetone: Miscible chloroform: Miscible
<b>Partition coefficient (n-octanol/water):</b>	-0,54
<b>Auto-ignition temperature:</b>	245 °C
<b>Decomposition temperature:</b>	At elevated temperature may liberate toxic gas.
<b>Viscosity:</b>	1,74 mm <sup>2</sup> /s (20 °C)
<b>Other information</b>	
<b>Liquid conductivity:</b>	0,2 µS/cm
<b>Molecular weight:</b>	99,13 g/mol (C <sub>5</sub> H <sub>9</sub> NO)

## 10. Stability and reactivity

<b>Reactivity:</b>	No dangerous reaction known under conditions of normal use.
<b>Chemical Stability:</b>	Material is stable under normal conditions.
<b>Possibility of hazardous reactions:</b>	Hazardous polymerization does not occur.
<b>Conditions to avoid:</b>	Excessive heat.
<b>Incompatible Materials:</b>	Strong oxidizing agents. Strong acids. Amines.
<b>Hazardous Decomposition Products:</b>	Thermal decomposition may produce oxides of carbon and nitrogen.

## 11. Toxicological information

### Information on likely routes of exposure

<b>Inhalation:</b>	Spray mists irritate the respiratory system, and cause coughing and difficulties in breathing.
<b>Skin Contact:</b>	Causes skin irritation.
<b>Eye contact:</b>	Causes serious eye irritation.
<b>Ingestion:</b>	May be harmful if swallowed.

## Information on toxicological effects

### Acute toxicity (list all possible routes of exposure)

#### Oral

**Product:** LD 50 (Rat): 3.910 - 4.320 mg/kg

#### Dermal

**Product:** LD 50 (Rabbit): 8.000 mg/kg

#### Inhalation

**Product:** LC 50 (Rat): > 5,1 mg/l

### Repeated dose toxicity

**Product:** Not known.

### Skin Corrosion/Irritation

**Product:** Causes skin irritation.

### Serious Eye Damage/Eye Irritation

**Product:** Causes serious eye irritation.

### Respiratory or Skin Sensitization

**Product:** Not a skin nor a respiratory sensitizer.

### Carcinogenicity

**Product:** This substance has no evidence of carcinogenic properties.

### IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

No carcinogenic components identified

### US. National Toxicology Program (NTP) Report on Carcinogens:

No carcinogenic components identified

### ACGIH Carcinogen List:

No carcinogenic components identified

### Germ Cell Mutagenicity

#### In vitro

**Product:** No mutagenic components identified

#### In vivo

**Product:** No mutagenic components identified

### Reproductive toxicity

**Product:** May cause harm to the unborn child.

### Specific Target Organ Toxicity - Single Exposure

**Product:** Respiratory tract irritation.

### Specific Target Organ Toxicity - Repeated Exposure

**Product:** None known.

### Aspiration Hazard

**Product:** Not classified

### Other effects:

Not known.

## 12. Ecological information

### Ecotoxicity:

#### Acute hazards to the aquatic environment:

##### Fish

**Product:** No data available.

##### Aquatic Invertebrates

**Product:** No data available.

#### Chronic hazards to the aquatic environment:

##### Fish

**Product:** No data available.

##### Aquatic Invertebrates

**Product:** No data available.

##### Toxicity to Aquatic Plants

**Product:** No data available.

### Persistence and Degradability

#### Biodegradation

**Product:** Expected to be readily biodegradable.

#### BOD/COD Ratio

**Product:** Not available.

### Bioaccumulative potential

#### Bioconcentration Factor (BCF)

**Product:** The product does not contain any substances expected to be bioaccumulating.

### Partition Coefficient n-octanol / water (log Kow)

**Product:** Log Kow: -0,54

**Mobility in soil:** The product is water soluble and may spread in water systems.

**Other adverse effects:** 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.

## 13. Disposal considerations

**Disposal instructions:** Discharge, treatment, or disposal may be subject to national, state, or local laws.

**Contaminated Packaging:** Since emptied containers retain product residue, follow label warnings even after container is emptied.

## 14. Transport information

### TDG

Not regulated.

**IMDG**

Not regulated.

**IATA**

Not regulated.

**Transport in bulk according to Annex II of MARPOL and the IBC Code:** Not applicable

<b>15. Regulatory information</b>
-----------------------------------

**Canada Federal Regulations**

**List of Toxic Substances (CEPA, Schedule 1)**

Not Regulated

**Export Control List (CEPA 1999, Schedule 3)**

Not Regulated

**National Pollutant Release Inventory (NPRI)**

**Canada. National Pollutant Release Inventory (NPRI) Substances, Part 5, VOCs with Additional Reporting Requirements**

NPRI PT5	Not Regulated
----------	---------------

**Canada. National Pollutant Release Inventory (NPRI) (Schedule 1, Parts 1-4)**

NPRI	1-Methyl-2-pyrrolidone
------	------------------------

**Greenhouse Gases**

Not Regulated

**Controlled Drugs and Substances Act**

CA CDSI	Not Regulated
---------	---------------

CA CDSII	Not Regulated
----------	---------------

CA CDSIII	Not Regulated
-----------	---------------

CA CDSIV	Not Regulated
----------	---------------

CA CDSV	Not Regulated
---------	---------------

CA CDSVII	Not Regulated
-----------	---------------

CA CDSVIII	Not Regulated
------------	---------------

**Precursor Control Regulations**

Not Regulated

**International regulations**

**Montreal protocol**

Not applicable

**Stockholm convention**

Not applicable

**Rotterdam convention**

Not applicable

**Kyoto protocol**

Not applicable



**Inventory Status:**

Australia AICS:	On or in compliance with the inventory
Canada DSL Inventory List:	On or in compliance with the inventory
China Inv. Existing Chemical Substances:	On or in compliance with the inventory
Japan (ENCS) List:	On or in compliance with the inventory
Japan ISHL Listing:	On or in compliance with the inventory
Korea Existing Chemicals Inv. (KECI):	On or in compliance with the inventory
Mexico INSQ:	On or in compliance with the inventory
New Zealand Inventory of Chemicals:	On or in compliance with the inventory
Philippines PICCS:	On or in compliance with the inventory
Taiwan Chemical Substance Inventory:	On or in compliance with the inventory
US TSCA Inventory:	On or in compliance with the inventory
EINECS, ELINCS or NLP:	On or in compliance with the inventory

**16. Other information**

**Revision Date:** 26.04.2021

**Version #:** 1.3

**Source of information:** Sources of information used in preparing this SDS included one or more of the following: results from in house or supplier toxicology studies, information from the Toxicology Data Network (TOXNET), European Chemical Agency (ECHA) substance dossiers, IARC Monographs, US National Toxicology Program data, the Agency for Toxic Substances and Disease Registry, other manufacturer's SDSs and other sources, as appropriate.

**Further Information:** No data available.

**Disclaimer:** The information provided in this Safety Data Sheet (SDS) was prepared based on data believed to be accurate as of the date of this SDS. TO THE GREATEST EXTENT PERMITTED BY LAW, AVANTOR PERFORMANCE MATERIALS ("AVANTOR") EXPRESSLY DISCLAIMS ANY AND ALL REPRESENTATIONS AND WARRANTIES REGARDING THE INFORMATION CONTAINED HEREIN INCLUDING, WITHOUT LIMITATION, AS TO ACCURACY, COMPLETENESS, FITNESS FOR PURPOSE OR USE, MERCHANTABILITY, NON-INFRINGEMENT, PERFORMANCE, SAFETY, SUITABILITY AND STABILITY. This SDS is intended as a guide to the appropriate use, handling, storage and disposal of the product to which it relates by properly trained personnel, and is not intended to be comprehensive. Users of Avantor's products are advised to perform their own tests and to exercise their own judgment to determine the safety, suitability and appropriate use, handling, storage and disposal of each product and product combination for their own purposes and uses. TO THE GREATEST EXTENT PERMITTED BY LAW, AVANTOR DISCLAIMS LIABILITY FOR, AND BY USING AVANTOR'S PRODUCTS PURCHASER AGREES THAT UNDER NO CIRCUMSTANCES SHALL AVANTOR BE LIABLE FOR, SPECIAL, INDIRECT, INCIDENTAL, PUNITIVE OR CONSEQUENTIAL DAMAGES OF ANY TYPE OR KIND, INCLUDING WITHOUT LIMITATION, FOR LOSS OF PROFITS, REPUTATIONAL DAMAGE, PRODUCT RECALL OR BUSINESS INTERRUPTION.