

# SAFETY DATA SHEET



Revision date: 07-Aug-2024

Revision Number 7

## Section 1: Identification

### Product identifier

**Product Name** N-METHYL-2-PYRROLIDONE

**Product Code(s)** 000000014786

### Other means of identification

**CAS No.** 872-50-4

**Synonyms** 1-Methyl-2-pyrrolidone; 1-Methylpyrrolidone; N-Methyl pyrrolidinone; 1-Methylazacyclopentan-2-one; NMP; METAL CLEANER 800; ZIP CLEAN 800.

### Recommended use of the chemical and restrictions on use

**Recommended use** Solvent.

**Uses advised against** Cosmetics; Toiletries; Personal care products; Carrier solvent (or excipient) in veterinary medicines/drugs; Pharmaceutical excipient.

### Details of manufacturer or importer

#### Supplier

IXOM Operations Pty Ltd  
ABN: 51 600 546 512  
Level 8, 1 Nicholson Street  
Melbourne 3000  
Australia

Telephone Number: +61 3 9906 3000

### Emergency telephone number

Emergency telephone number **1 800 033 111 (ALL HOURS)**

Please ensure you refer to the limitations of this Safety Data Sheet as set out in the "Other Information" section at the end of this Data Sheet.

## Section 2: Hazard identification

Classified as a hazardous substance in accordance with the criteria of Safe Work Australia - Globally Harmonized System (GHS).  
Not classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail; NON-DANGEROUS GOODS.

### GHS Classification

<b>Flammable liquids</b>	Category 4
<b>Skin corrosion/irritation</b>	Category 2
<b>Serious eye damage/eye irritation</b>	Category 2
<b>Reproductive toxicity</b>	Category 1B
<b>Specific target organ toxicity (single exposure)</b>	Category 3

### Label elements

Health hazard

Exclamation mark



**Signal word**  
DANGER

**Hazard statements**

H227 - Combustible liquid  
 H315 - Causes skin irritation  
 H319 - Causes serious eye irritation  
 H335 - May cause respiratory irritation  
 H360D - May damage the unborn child

**Precautionary Statements - Prevention**

Obtain special instructions before use.  
 Do not handle until all safety precautions have been read and understood.  
 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
 Avoid breathing dust/fume/gas/mist/vapors/spray.  
 Wash hands thoroughly after handling.  
 Wash eyes thoroughly after handling.  
 Use only outdoors or in a well-ventilated area.  
 Wear protective gloves/clothing and eye/face protection.  
 Use personal protective equipment as required.

**Precautionary Statements - Response**

IF exposed or concerned: Get medical advice/attention.  
 Specific treatment (see First aid on this SDS).  
 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 ON SKIN: Wash with plenty of soap and water.  
 If skin irritation occurs: Get medical advice/attention.  
 Take off contaminated clothing and wash before reuse.  
 IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
 Call a POISON CENTER or doctor/physician if you feel unwell.  
 In case of fire: Use extinguishing media as outlined in Section 5 of this Safety Data Sheet to extinguish..

**Precautionary Statements - Storage**

Store in a well-ventilated place. Keep container tightly closed.  
 Store in a well-ventilated place. Keep cool.  
 Store locked up.

**Precautionary Statements - Disposal**

Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable.

**Other hazards which do not result in classification****Section 3: Composition and information on ingredients**

Chemical name	CAS No.	Weight-%
N-methyl-2-pyrrolidone	872-50-4	>=99.0

**Section 4: First aid measures****Description of first aid measures**

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<b>General advice</b>	Show this safety data sheet to the doctor in attendance. For advice, contact a Poisons Information Centre (e.g. phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor.
<b>Inhalation</b>	IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. If breathing is difficult, (trained personnel should) give oxygen. If breathing has stopped, give artificial respiration. Get medical attention immediately.
<b>Eye contact</b>	Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.
<b>Skin contact</b>	Wash skin with soap and water. Get medical attention immediately if symptoms occur.
<b>Ingestion</b>	Clean mouth with water. Do NOT induce vomiting. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

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

<b>Symptoms</b>	May cause redness and tearing of the eyes. Swelling of tissue. Erythema (skin redness). Coughing and/ or wheezing. Difficulty in breathing. Irritation.
<b>Effects of Exposure</b>	No information available.

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

<b>Note to physicians</b>	Treat symptomatically.
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**Section 5: Firefighting measures****Suitable Extinguishing Media**

**Suitable extinguishing media** Dry chemical, CO<sub>2</sub>, water spray or regular foam.

**Unsuitable extinguishing media** High volume water jet.

**Specific hazards arising from the chemical**

**Specific hazards arising from the chemical** Most vapors are heavier than air. Vapors may spread along ground and collect in low or confined areas (sewers, basements, tanks). Flash back possible over considerable distance. Combustible liquid. Vapours can form an explosive mixture with air.

**Hazardous combustion products** Carbon oxides. Nitrogen oxides.

**Special protective actions for fire-fighters**

**Special protective equipment and precautions for fire-fighters** Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out.

**Section 6: Accidental release measures****Personal precautions, protective equipment and emergency procedures**

**Personal precautions** Stop leak if you can do it without risk. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Avoid contact with skin, eyes and inhalation of vapors.

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Evacuate personnel to safe areas. Do not touch or walk through spilled material. Use personal protective equipment as required. Wash thoroughly after handling.

**For emergency responders** Use personal protection recommended in Section 8.

#### Environmental precautions

**Environmental precautions** See Section 12 for additional Ecological Information.

#### Methods and material for containment and cleaning up

**Methods for containment** Prevent further leakage or spillage if safe to do so.

**Methods for cleaning up** Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. After cleaning, flush away traces with water. Never return spill or leaks to original containers for re-use.

### Section 7: Handling and storage

#### Precautions for safe handling

**Advice on safe handling** Avoid contact with skin and eyes. Avoid breathing vapors or mists. Ensure adequate ventilation. Use personal protection equipment. Wash thoroughly after handling. Ground and bond all lines and equipment associated with product system. All equipment should be non-sparking. All equipment may need to be explosion-proof based on a risk assessment. Not to be used by pregnant workers and workers who have recently given birth or who are breastfeeding.

#### Conditions for safe storage, including any incompatibilities

**Storage Conditions** Keep containers tightly closed in a dry, cool and well-ventilated place. Keep in an area equipped with sprinklers. Keep container closed when not in use.

Classified as a C1 (COMBUSTIBLE LIQUID) for the purpose of storage and handling, in accordance with the requirements of AS 1940. Refer to State Regulations for storage and transport requirements. Protect from direct sunlight. Store away from sources of heat or ignition.

**Incompatible materials** Strong oxidizing agents. Strong reducing agents. Moisture. Humidity.

### Section 8: Exposure controls and personal protection

#### Control parameters

#### Exposure Limits

Chemical name	Australia	New Zealand	ACGIH TLV
N-methyl-2-pyrrolidone 872-50-4	TWA: 25 ppm TWA: 103 mg/m <sup>3</sup> STEL: 75 ppm STEL: 309 mg/m <sup>3</sup>	TWA: 25 ppm TWA: 103 mg/m <sup>3</sup> STEL: 75 ppm STEL: 309 mg/m <sup>3</sup> Sk*	-

Chemical name	European Union	United Kingdom	Germany DFG
N-methyl-2-pyrrolidone 872-50-4	TWA: 40 mg/m <sup>3</sup> TWA: 10 ppm *	TWA: 10 ppm TWA: 40 mg/m <sup>3</sup> STEL: 20 ppm	TWA: 20 ppm TWA: 82 mg/m <sup>3</sup> Peak: 40 ppm

	STEL: 20 ppm STEL: 80 mg/m <sup>3</sup>	STEL: 80 mg/m <sup>3</sup> Sk*	Peak: 164 mg/m <sup>3</sup> Sk*
Chemical name	Australia	ACGIH	European Union
N-methyl-2-pyrrolidone 872-50-4	-	100 mg/L	-

1-Methyl-2-pyrrolidone: 8hr TWA = 103 mg/m<sup>3</sup> (25 ppm), 15 min STEL = 309 mg/m<sup>3</sup> (75 ppm), Sk

As published by Safe Work Australia Workplace Exposure Standards for Airborne Contaminants.

TWA - The time-weighted average airborne concentration of a particular substance when calculated over an eight-hour working day, for a five-day working week.

STEL (Short Term Exposure Limit) - the airborne concentration of a particular substance calculated as a time-weighted average over 15 minutes, which should not be exceeded at any time during a normal eight hour work day. According to current knowledge this concentration should neither impair the health of, nor cause undue discomfort to, nearly all workers.

`Sk' (skin) Notice - absorption through the skin may be a significant source of exposure. The exposure standard is invalidated if such contact should occur.

These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

### Appropriate engineering controls

#### Engineering controls

Ensure adequate ventilation, especially in confined areas. Apply technical measures to comply with the occupational exposure limits.

If in the handling and application of this material, safe exposure levels could be exceeded, the use of engineering controls such as local exhaust ventilation must be considered and the results documented. If achieving safe exposure levels does not require engineering controls, then a detailed and documented risk assessment using the relevant Personal Protective Equipment (PPE) (refer to PPE section below) as a basis must be carried out to determine the minimum PPE requirements.

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

The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors.

OVERALLS, SAFETY SHOES, CHEMICAL GOGGLES, GLOVES, RESPIRATOR.



#### Eye/face protection

Goggles.

#### Skin and body protection

Overalls. Boots. Wear suitable protective clothing.

#### Hand protection

Impervious gloves.

#### Respiratory protection

If determined by a risk assessment an inhalation risk exists, wear an organic vapour/particulate respirator or an air supplied mask meeting the requirements of AS/NZS 1715 and AS/NZS 1716.

#### Environmental exposure controls

No information available.

Thermal hazards No information available.

## Section 9: Physical and chemical properties

### Information on basic physical and chemical properties

Physical state	Liquid
Appearance	Clear
Color	Colourless
Odor	Amine -like
Odor threshold	No information available

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	No data available	None known
pH (as aqueous solution)	No data available	None known
Melting point / freezing point	-24.2°C at 1013 hPa	None known
Boiling point / boiling range	204°C at 1013 hPa	None known
Flash point	91°C	CC (closed cup)
Evaporation rate	No data available	None known
Flammability (solid, gas)	No data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	~9.5 vol%	
Lower flammability or explosive limits	~1.3 vol%	
Vapor pressure	0.32 hPa at 20°C	None known
Vapor density	~3.4 at 15.5-32.2°C (air=1.0)	None known
Relative density	1.03 g/cm <sup>3</sup> at 25°C	None known
Water solubility	No data available	None known
Solubility(ies)	1,000 g/L at 20°C; completely miscible in water	None known
Partition coefficient	log Pow: -0.46 at 25°C	None known
Autoignition temperature	245°C at 1013 hPa	None known
Decomposition temperature	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known

### Other information

## Section 10: Stability and reactivity

### Reactivity

**Reactivity** Hygroscopic: absorbs moisture or water from surrounding air. Non-reactive under normal conditions of use, storage and transport.

### Chemical stability

**Stability** Stable under normal ambient and anticipated storage and handling conditions of temperature and pressure. On exposure to air, NMP is slowly oxidized with the formation of hydroperoxides; this process is accelerated by sunlight.

### Explosion data

Sensitivity to mechanical impact None.  
Sensitivity to static discharge None.

### Possibility of hazardous reactions

**Possibility of hazardous reactions** None under normal processing.

**Conditions to avoid**

**Conditions to avoid** Heat, flames and sparks. Humidity. Moisture.

**Incompatible materials**

**Incompatible materials** Strong oxidizing agents. Strong reducing agents. Moisture. Humidity.

**Hazardous decomposition products**

**Hazardous decomposition products** Carbon oxides. Nitrogen oxides.

## Section 11: Toxicological information

**Information on likely routes of exposure**

**Product Information** No adverse health effects expected if the chemical is handled in accordance with this Safety Data Sheet and the chemical label. Symptoms or effects that may arise if the chemical is mishandled and overexposure occurs are:

**Inhalation** Irritating to respiratory system. In confined or poorly ventilated areas, vapors can readily accumulate and can cause unconsciousness and death.

**Eye contact** Causes serious eye irritation.

**Skin contact** Causes skin irritation. Repeated exposure may cause skin dryness or cracking.

**Ingestion** Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

**Symptoms** May cause redness and tearing of the eyes. Swelling of tissue. Erythema (skin redness). Coughing and/ or wheezing. Difficulty in breathing. Irritation.

**Acute toxicity**

**Numerical measures of toxicity - Product Information**

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
N-methyl-2-pyrrolidone	= 3914 mg/kg ( Rat )	= 8 g/kg ( Rabbit )	> 5.1 mg/L ( Rat ) 4 h

See section 16 for terms and abbreviations

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

**Skin corrosion/irritation** Causes skin irritation.

**Serious eye damage/eye irritation** Causes serious eye irritation.

**Respiratory or skin sensitization** No information available.

**Germ cell mutagenicity** No information available.

<b>Carcinogenicity</b>	Not listed as carcinogenic according to IARC. (IARC - International Agency for Research on Cancer).
<b>Reproductive toxicity</b>	May damage the unborn child.
<b>STOT - single exposure</b>	May cause respiratory irritation.
<b>STOT - repeated exposure</b>	No information available.
<b>Aspiration hazard</b>	No information available.
<b>Chronic effects:</b>	For N-Methyl-2-pyrrolidone: In a two-year rat feeding study, males showed signs of chronic progressive nephropathy; no treatment related tumors were seen. At very high repeated inhalation doses (1.0 mg/L), NMP caused focal pneumonia, bone marrow hypoplasia and atrophy of lymphoid tissue, 0.5 mg/L was the no effect level.

## Section 12: Ecological information

### Ecotoxicity

**Aquatic ecotoxicity** Keep out of waterways.

Chemical name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
N-methyl-2-pyrrolidone	EC50: >500mg/L (72h, <i>Desmodesmus subspicatus</i> )	LC50: =832mg/L (96h, <i>Lepomis macrochirus</i> ) LC50: =1072mg/L (96h, <i>Pimephales promelas</i> ) LC50: =1400mg/L (96h, <i>Poecilia reticulata</i> )	-	EC50: =4897mg/L (48h, <i>Daphnia magna</i> )

**Terrestrial ecotoxicity** There is no data for this product.

Chemical name	Earthworm	Avian	Honeybees
N-methyl-2-pyrrolidone	-	Acute Oral Toxicity: LD50 = 2212 mg/kg ( <i>Colinus virginianus</i> ) Source: IUCLID	-

### Persistence and degradability

**Persistence and degradability** Readily biodegradable.

### Bioaccumulative potential

**Bioaccumulation** There is no data for this product.



**Component Information**

Chemical name	Partition coefficient
N-methyl-2-pyrrolidone	-0.46

**Mobility**

**Mobility** No information available.

**Other adverse effects**

**Other adverse effects** No information available.

**Section 13: Disposal considerations****Waste treatment methods**

**Waste from residues/unused products** Refer to Waste Management Authority. Dispose of material through a licensed waste contractor.

**Contaminated packaging** Empty containers pose a potential fire and explosion hazard. Do not cut, puncture or weld containers. Empty containers should be taken to an approved waste handling site for recycling or disposal.

See section 8 for more information

**Section 14: Transport information**

**ADG** Not classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail; NON-DANGEROUS GOODS.

**IATA** Not classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air; NON-DANGEROUS GOODS.

**IMDG** Not classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea; NON-DANGEROUS GOODS.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

No information available

**Section 15: Regulatory information****Safety, health and environmental regulations/legislation specific for the substance or mixture****National regulations****Australia**

Classified as a hazardous substance in accordance with the criteria of Safe Work Australia - Globally Harmonized System (GHS). Not classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail; NON-DANGEROUS GOODS.

See section 8 for national exposure control parameters

**Standard for Uniform Scheduling of Medicines and Poisons (SUSMP)**

Classified as a scheduled poison according to the Standard for Uniform Scheduling of Medicines and Poisons (SUSMP)

**Poison Schedule Number** 6

**Australian Industrial Chemicals Introduction Scheme (AICIS)**

Contact supplier for inventory compliance status

Chemical name	Australian Industrial Chemicals Introduction Scheme (AICIS)	Additional information
N-methyl-2-pyrrolidone - 872-50-4	Present	-

**Illicit Drug Precursors/Reagents**

This product does not contain any substance(s) on the Illicit Drug Precursors/Reagents list.

**National pollutant inventory**

Subject to reporting requirement

Chemical name	National pollutant inventory
N-methyl-2-pyrrolidone - 872-50-4	20 MW Threshold category 2b total 60000 MWH Threshold category 2b total 1 tonne/h Threshold category 2a total 25 tonne/yr Threshold category 1a total 400 tonne/yr Threshold category 2a total 2000 tonne/yr Threshold category 2b total

**International Inventories**

<b>AIIC</b>	This material is listed on the Australian Inventory of Industrial Chemicals.
<b>NZIoC</b>	This material is listed on the New Zealand Inventory of Chemicals.
<b>TSCA</b>	Contact supplier for inventory compliance status.
<b>DSL/NDSL</b>	Contact supplier for inventory compliance status.
<b>EINECS/ELINCS</b>	Contact supplier for inventory compliance status.
<b>ENCS</b>	Contact supplier for inventory compliance status.
<b>IECSC</b>	Contact supplier for inventory compliance status.
<b>KECL</b>	Contact supplier for inventory compliance status.
<b>PICCS</b>	Contact supplier for inventory compliance status.

**Legend:****AIIC**- Australian Inventory of Industrial Chemicals**NZIoC** - New Zealand Inventory of Chemicals**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List**EINECS/ELINCS** - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances**ENCS** - Japan Existing and New Chemical Substances**IECSC** - China Inventory of Existing Chemical Substances**KECL** - Korean Existing and Evaluated Chemical Substances**PICCS** - Philippines Inventory of Chemicals and Chemical Substances**International Regulations****The Montreal Protocol on Substances that Deplete the Ozone Layer** Not applicable**The Stockholm Convention on Persistent Organic Pollutants** Not applicable**The Rotterdam Convention** Not applicable**Section 16: Other information**

Supplier Safety Data Sheet 10/ 2019

**Reason(s) For Issue:** 5 Yearly Revised Primary SDS

**Prepared By** This Safety Data Sheet has been prepared by IXOM Operations Pty Ltd (Toxicology and SDS Services).

**Revision date:** 07-Aug-2024

**Revision Note:**

The symbol (\*) in the margin of this SDS indicates that this line has been revised.

**Key or legend to abbreviations and acronyms used in the safety data sheet****Legend**

SVHC: Substances of Very High Concern for Authorization:  
 PBT: Persistent, Bioaccumulative, and Toxic (PBT) Substances  
 vPvB: Very Persistent and very Bioaccumulative (vPvB) Substances  
 STOT: Specific Target Organ Toxicity  
 ATE: Acute Toxicity Estimate  
 LC50: 50% Lethal Concentration  
 LD50: 50% Lethal Dose

**Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation
C	Carcinogen		

**Key literature references and sources for data used to compile the SDS**

Agency for Toxic Substances and Disease Registry (ATSDR)  
 U.S. Environmental Protection Agency ChemView Database  
 European Food Safety Authority (EFSA)  
 Environmental Protection Agency  
 Acute Exposure Guideline Level(s) (AEGl(s))  
 U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act  
 U.S. Environmental Protection Agency High Production Volume Chemicals  
 Food Research Journal  
 Hazardous Substance Database  
 International Uniform Chemical Information Database (IUCLID)  
 National Institute of Technology and Evaluation (NITE)  
 Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS)  
 Australian Industrial Chemicals Introduction Scheme (AICIS)  
 NIOSH (National Institute for Occupational Safety and Health)  
 National Library of Medicine's ChemID Plus (NLM CIP)  
 National Library of Medicine's PubMed database (NLM PUBMED)  
 U.S. National Toxicology Program (NTP)  
 New Zealand's Chemical Classification and Information Database (CCID)  
 Organization for Economic Co-operation and Development Environment, Health, and Safety Publications  
 Organization for Economic Co-operation and Development High Production Volume Chemicals Program  
 Organization for Economic Co-operation and Development Screening Information Data Set  
 World Health Organization

**Disclaimer**

**This SDS summarises to our best knowledge at the date of issue, the chemical health and safety hazards of the material and general guidance on how to safely handle the material in the workplace. Since IXOM Operations Pty Ltd cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, assess and control the risks arising from its use of the material.**

**If clarification or further information is needed, the user should contact their IXOM representative or IXOM Operations Pty Ltd at the contact details on page 1.**

IXOM Operations Pty Ltd's responsibility for the material as sold is subject to the terms and conditions of sale, a copy of which is available upon request.

**End of Safety Data Sheet**