SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Creation Date 12-Nov-2009 **Revision Date** 24-Mar-2024 **Revision Number** 2

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product Description:	**1-Methyl-2-pyrrolidinone**
Cat No. :	**C12763**
Synonyms	1-Methyl-2-pyrrolidone; N-Methylpyrrolidone; NMP
Index No	606-021-00-7
CAS No	872-50-4
EC No	212-828-1
Molecular Formula	C5 H9 N O

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended Use	Laboratory chemicals.
Sector of use	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites
Product category	PC21 - Laboratory chemicals
Process categories	PROC15 - Use as a laboratory reagent
Environmental release category	ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)
Uses advised against	No Information available

1.3. Details of the supplier of the safety data sheet

Company

Thermo Fisher (Kandel) GmbH
Erlenbachweg 2, 76870 Kandel, Germany
Tel: +49 (0) 721 84007 280
Fax: +49 (0) 721 84007 300

Swiss distributor - Fisher Scientific AG
Neuhofstrasse 11, CH 4153 Reinach
Tel: +41 (0) 56 618 41 11
https://www.fishersci.ch/ch/en/customer-help-support/forms/email-us.html

E-mail address begel.sdsdesk@thermofisher.com

1.4. Emergency telephone number

For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

customers in Switzerland:
Tox Info Suisse Emergency Number: **145 (24hr)**
Tox Info Suisse: +41-44 251 51 51 (Emergency number from abroad)
Chemtrec (24h) Toll-Free: 0800 564 402
Chemtrec Local: +41-43 508 20 11 (Zurich)

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

CLP Classification - Regulation (EC) No 1272/2008

Physical hazards

Based on available data, the classification criteria are not met

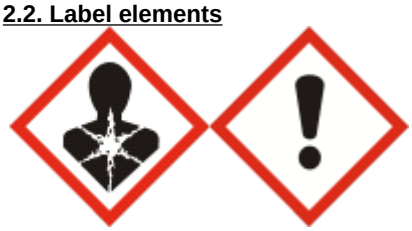
Health hazards

Skin Corrosion/Irritation	Category 2 (H315)
Serious Eye Damage/Eye Irritation	Category 2 (H319)
Reproductive Toxicity	Category 1B (H360D)
Specific target organ toxicity - (single exposure)	Category 3 (H335)

Environmental hazards
Based on available data, the classification criteria are not met

Full text of Hazard Statements: see section 16

2.2. Label elements



Signal Word **Danger**

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

Precautionary Statements
- P280 - Wear protective gloves/protective clothing/eye protection/face protection
- P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
- P332 + P313 - If skin irritation occurs: Get medical advice/attention
- P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing
- P312 - Call a POISON CENTER or doctor if you feel unwell
- P337 + P313 - If eye irritation persists: Get medical advice/attention

Additional EU labelling
Restricted to professional users

2.3. Other hazards

Substance is not considered persistent, bioaccumulative and toxic (PBT) / very persistent and very bioaccumulative (vPvB)

This product does not contain any known or suspected endocrine disruptors

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Component	CAS No	EC No	Weight %	CLP Classification - Regulation (EC) No 1272/2008
1-Methyl-2-pyrrolidone	872-50-4	EEC No. 212-828-1	99	Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) Repr. 1B (H360D) STOT SE 3 (H335)

Component	Specific concentration limits (SCL's)	M-Factor	Component notes
1-Methyl-2-pyrrolidone	STOT SE 3 (H335) :: C>=10%	-	-

Full text of Hazard Statements: see section 16

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

General Advice May damage the unborn child. Immediate medical attention is required. Show this safety data sheet to the doctor in attendance.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

Ingestion Do NOT induce vomiting. Call a physician or poison control center immediately.

Inhalation Remove to fresh air. If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

Self-Protection of the First Aider Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

4.2. Most important symptoms and effects, both acute and delayed

. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting, Central nervous system disorders

4.3. Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically. Symptoms may be delayed.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable Extinguishing Media
Water spray, carbon dioxide (CO2), dry chemical, alcohol-resistant foam. Water mist may be used to cool closed containers.

Extinguishing media which must not be used for safety reasons
No information available.

5.2. Special hazards arising from the substance or mixture

Combustible material. Containers may explode when heated. Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products
Carbon monoxide (CO), Carbon dioxide (CO_2), Nitrogen oxides (NOx), peroxides.

5.3. Advice for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Not to be used by pregnant workers and workers who have recently given birth or who are breastfeeding. Ensure adequate ventilation. Use personal protective equipment as required. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas. Remove all sources of ignition. Take precautionary measures against static discharges.

6.2. Environmental precautions

Should not be released into the environment.

6.3. Methods and material for containment and cleaning up

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Remove all sources of ignition.

6.4. Reference to other sections

Refer to protective measures listed in Sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Do not get in eyes, on skin, or on clothing. Not to be used by pregnant workers and workers who have recently given birth or who are breastfeeding. Wear personal protective equipment/face protection. Use only under a chemical fume hood. Do not breathe mist/vapors/spray. Do not ingest. If swallowed then seek immediate medical assistance. Keep away from open flames, hot surfaces and sources of ignition.

Hygiene Measures
Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash hands before breaks and after work.

7.2. Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat, sparks and flame. Protect from light.

Technical Rules for Hazardous Substances (TRGS) 510 Storage Class (LGK) (Germany) Storage Class/LGK 6.1C

Switzerland - Storage of hazardous substances

https://www.kvu.ch/de/themen/stoffe-und-produkte
https://www.kvu.ch/fr/themes/substances-et-produits
https://www.kvu.ch/it/temi/sostanze-e-prodotti Storage class - SC 6.1

7.3. Specific end use(s)

Use in laboratories

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Exposure limits
List source(s): **EU** - Commission Directive (EU) 2019/1831 of 24 October 2019 establishing a fifth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC and amending Commission Directive 2000/39/EC **UK** - EH40/2005 Work Exposure Limits, Forth edition. Published 2020. **IRE -** 2010 Code of Practice for the Safety, Health and Welfare at Work (Chemical Agents) Regulations 2001. Published by the Health and Safety Authority. **CH** - The Government of Switzerland has set a directive on limit values for working materials (Grenzwerte am Arbeitsplatz) which is based on the Swiss Federal Regulation "Verordnung über die Verhütung von Unfällen und Berufskrankheiten". This directive is administered, periodically revised and enforced by SUVA (Swiss National Accident Insurance Fund).

Component	European Union	The United Kingdom	France	Belgium	Spain
1-Methyl-2-pyrrolidone	TWA: 40 mg/m³ (8h) TWA: 10 ppm (8h) Skin STEL: 20 ppm (15min) STEL: 80 mg/m³ (15min) STEL: 80 mg/m³ (8h) STEL: 20 ppm (8h)	STEL: 20 ppm 15 min STEL: 80 mg/m³ 15 min TWA: 10 ppm 8 hr TWA: 40 mg/m³ 8 hr Skin	TWA / VME: 40 mg/m³ (8 heures). indicative limit TWA / VME: 10 ppm (8 heures). indicative limit STEL / VLCT: 80 mg/m³. indicative limit STEL / VLCT: 20 ppm. indicative limit Peau	TWA: 10 ppm 8 uren TWA: 40 mg/m³ 8 uren STEL: 20 ppm 15 minuten STEL: 80 mg/m³ 15 minuten Huid	STEL / VLA-EC: 20 ppm (15 minutos). STEL / VLA-EC: 80 mg/m³ (15 minutos). TWA / VLA-ED: 10 ppm (8 horas) TWA / VLA-ED: 40 mg/m³ (8 horas) Piel

Component	Italy	Germany	Portugal	The Netherlands	Finland
1-Methyl-2-pyrrolidone	TWA: 10 ppm 8 ore. Time Weighted Average TWA: 40 mg/m³ 8 ore. Time Weighted Average STEL: 20 ppm 15 minuti. Short-term STEL: 80 mg/m³ 15 minuti. Short-term Pelle	TWA: 20 ppm (8 Stunden). AGW - exposure factor 2 TWA: 82 mg/m³ (8 Stunden). AGW - exposure factor 2 TWA: 20 ppm (8 Stunden). MAK can occur as vapor and aerosol at the same time TWA: 82 mg/m³ (8 Stunden). MAK can occur as vapor and aerosol at the same time Höhepunkt: 40 ppm Höhepunkt: 164 mg/m³ Haut	STEL: 20 ppm 15 minutos STEL: 80 mg/m³ 15 minutos TWA: 10 ppm 8 horas TWA: 40 mg/m³ 8 horas Pele	huid STEL: 80 mg/m³ 15 minuten TWA: 40 mg/m³ 8 uren	TWA: 3.5 ppm 8 tunteina TWA: 14 mg/m³ 8 tunteina STEL: 20 ppm 15 minuutteina STEL: 80 mg/m³ 15 minuutteina Iho

Component	Austria	Denmark	Switzerland	Poland	Norway
1-Methyl-2-pyrrolidone	Haut MAK-KZGW: 7.2 ppm 15 Minuten MAK-KZGW: 28.8 mg/m³ 15 Minuten MAK-TMW: 3.6 ppm 8 Stunden MAK-TMW: 14.4 mg/m³	TWA: 5 ppm 8 timer TWA: 20 mg/m³ 8 timer STEL: 80 mg/m³ 15 minutter STEL: 20 ppm 15 minutter Hud	Haut/Peau STEL: 40 ppm 15 Minuten STEL: 160 mg/m³ 15 Minuten TWA: 20 ppm 8 Stunden TWA: 80 mg/m³ 8	STEL: 80 mg/m³ 15 minutach TWA: 40 mg/m³ 8 godzinach	TWA: 5 ppm 8 timer TWA: 20 mg/m³ 8 timer STEL: 20 ppm 15 minutter. value from the regulation STEL: 80 mg/m³ 15 minutter. value from the regulation

	8 Stunden		Stunden		Hud

Component	Bulgaria	Croatia	Ireland	Cyprus	Czech Republic
1-Methyl-2-pyrrolidone	TWA: 10 ppm TWA: 40 mg/m³ STEL : 20 ppm STEL : 80 mg/m³ Skin notation	kože TWA-GVI: 10 ppm 8 satima. TWA-GVI: 40 mg/m³ 8 satima. STEL-KGVI: 20 ppm 15 minutama. STEL-KGVI: 80 mg/m³ 15 minutama.	TWA: 10 ppm 8 hr. TWA: 40 mg/m³ 8 hr. STEL: 20 ppm 15 min STEL: 80 mg/m³ 15 min Skin	Skin-potential for cutaneous absorption STEL: 80 mg/m³ STEL: 20 ppm TWA: 40 mg/m³ TWA: 10 ppm	TWA: 40 mg/m³ 8 hodinách. Potential for cutaneous absorption Ceiling: 80 mg/m³ toxic for reproduction

Component	Estonia	Gibraltar	Greece	Hungary	Iceland
1-Methyl-2-pyrrolidone	Nahk TWA: 10 ppm 8 tundides. TWA: 40 mg/m³ 8 tundides. STEL: 20 ppm 15 minutites. STEL: 80 mg/m³ 15 minutites.	Skin notation TWA: 40 mg/m³ 8 hr TWA: 10 ppm 8 hr STEL: 80 mg/m³ 15 min STEL: 20 ppm 15 min	skin - potential for cutaneous absorption STEL: 20 ppm STEL: 80 mg/m³ TWA: 10 ppm TWA: 40 mg/m³	STEL: 80 mg/m³ 15 percekben. CK TWA: 40 mg/m³ 8 órában. AK lehetséges borön keresztüli felszívódás	STEL: 20 ppm STEL: 80 mg/m³ TWA: 10 ppm 8 klukkustundum. TWA: 40 mg/m³ 8 klukkustundum.

Component	Latvia	Lithuania	Luxembourg	Malta	Romania
1-Methyl-2-pyrrolidone	skin - potential for cutaneous exposure STEL: 20 ppm STEL: 80 mg/m³ TWA: 10 ppm TWA: 40 mg/m³	TWA: 10 ppm IPRD TWA: 40 mg/m³ IPRD Oda STEL: 20 ppm STEL: 80 mg/m³	Possibility of significant uptake through the skin TWA: 40 mg/m³ 8 Stunden TWA: 10 ppm 8 Stunden STEL: 80 mg/m³ 15 Minuten STEL: 20 ppm 15 Minuten	possibility of significant uptake through the skin TWA: 40 mg/m³ TWA: 10 ppm STEL: 80 mg/m³ 15 minuti STEL: 20 ppm 15 minuti	Skin notation TWA: 10 ppm 8 ore TWA: 40 mg/m³ 8 ore STEL: 20 ppm 15 minute STEL: 80 mg/m³ 15 minute

Component	Russia	Slovak Republic	Slovenia	Sweden	Turkey
1-Methyl-2-pyrrolidone	MAC: 100 mg/m³	Ceiling: 80 mg/m³ Potential for cutaneous absorption TWA: 40 mg/m³ TWA: 10 ppm	TWA: 10 ppm 8 urah vapor TWA: 40 mg/m³ 8 urah vapor Kože STEL: 20 ppm 15 minutah vapor STEL: 80 mg/m³ 15 minutah vapor	Binding STEL: 20 ppm 15 minuter Binding STEL: 80 mg/m³ 15 minuter TLV: 3.6 ppm 8 timmar. NGV TLV: 14.4 mg/m³ 8 timmar. NGV Hud	Deri TWA: 10 ppm 8 saat TWA: 40 mg/m³ 8 saat STEL: 20 ppm 15 dakika STEL: 80 mg/m³ 15 dakika

Biological limit values

List source(s):

Component	European Union	United Kingdom	France	Spain	Germany
1-Methyl-2-pyrrolidone				2-Hydroxy-N-methylsuccinimide: 20 mg/g Creatinine urine pre-shift 5-Hydroxy-N-methyl-2-pyrrolidone: 70 mg/g Creatinine urine between 2-4 hours after the final exposure	5-Hydroxy-N-methyl-2-pyrrolidone: 150 mg/L urine (end of shift)

Component	Italy	Finland	Denmark	Bulgaria	Romania
1-Methyl-2-pyrrolidone		5-Hydroxy-N-methyl-2-pyrrolidone: 8 µmol/mol Creatinine urine in the morning after a working day.			

		2-Hydroxy-N-methyl-succinimide: 5 µmol/mol Creatinine urine after the shift.			

Monitoring methods
BS EN 14042:2003 Title Identifier: Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents.
MDHS70 General methods for sampling airborne gases and vapours

Derived No Effect Level (DNEL) / Derived Minimum Effect Level (DMEL)
See table for values

Component	Acute effects local (Dermal)	Acute effects systemic (Dermal)	Chronic effects local (Dermal)	Chronic effects systemic (Dermal)
1-Methyl-2-pyrrolidone 872-50-4 (99)				DNEL = 4.8mg/kg bw/day

Component	Acute effects local (Inhalation)	Acute effects systemic (Inhalation)	Chronic effects local (Inhalation)	Chronic effects systemic (Inhalation)
1-Methyl-2-pyrrolidone 872-50-4 (99)			DNEL = 40mg/m^3	DNEL = 14.4mg/m^3

Predicted No Effect Concentration (PNEC)
See values below.

Component	Fresh water	Fresh water sediment	Water Intermittent	Microorganisms in sewage treatment	Soil (Agriculture)
1-Methyl-2-pyrrolidone 872-50-4 (99)	PNEC = 0.25mg/L	PNEC = 1.09mg/kg sediment dw	PNEC = 5mg/L	PNEC = 10mg/L	PNEC = 0.0701mg/kg soil dw

Component	Marine water	Marine water sediment	Marine water Intermittent	Food chain	Air
1-Methyl-2-pyrrolidone 872-50-4 (99)	PNEC = 0.025mg/L	PNEC = 0.109mg/kg sediment dw			

8.2. Exposure controls

Engineering Measures
Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.
Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

Personal protective equipment

Eye Protection Goggles (European standard - EN 166)

Hand Protection Protective gloves

Glove material	Breakthrough time	Glove thickness	EU standard	Glove comments
Nitrile rubber	< 30 minutes	0.38 mm	Level 2	
Neoprene	< 140 minutes	0.66 mm	Level 4	

			EN 374	Permeation rate 43 µg/cm2/min Permeation rate 19 µg/cm2/min As tested under EN374-3 Determination of Resistance to Permeation by Chemicals
Butyl rubber	> 480 minutes	0.50 mm		

Skin and body protection Long sleeved clothing.

Inspect gloves before use. observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information) gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion. gloves with care avoiding skin contamination.

Respiratory Protection When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

Large scale/emergency use Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced
Recommended Filter type: Organic gases and vapours filter Type A Brown conforming to EN14387

Small scale/Laboratory use Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Recommended half mask:- Valve filtering: EN405; or; Half mask: EN140; plus filter, EN 141
When RPE is used a face piece Fit Test should be conducted

Environmental exposure controls No information available.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical State	Liquid	
Appearance	Colorless	
Odor	Mild amine	
Odor Threshold	No data available	
Melting Point/Range	-24 °C / -11.2 °F	
Softening Point	No data available	
Boiling Point/Range	202 °C / 395.6 °F	@ 760 mmHg
Flammability (liquid)	Combustible liquid	On basis of test data
Flammability (solid,gas)	Not applicable	Liquid
Explosion Limits	**Lower** 1.3 vol % **Upper** 9.5 vol %	
Flash Point	91 °C / 195.8 °F	**Method -** No information available
Autoignition Temperature	346 °C / 654.8 °F	
Decomposition Temperature	No data available	
pH	7.7-8.0	100 g/L aq.sol
Viscosity	1.67 mPa s at 20 °C	
Water Solubility	Miscible	
Solubility in other solvents	No information available	
Partition Coefficient (n-octanol/water)		
Component	**log Pow**	
1-Methyl-2-pyrrolidone	-0.46	
Vapor Pressure	0.7 mbar @ 25 °C	
Density / Specific Gravity	1.030	
Bulk Density	Not applicable	Liquid
Vapor Density	3.4	(Air = 1.0)
Particle characteristics	Not applicable (liquid)	

9.2. Other information

Molecular Formula	C5 H9 N O
Molecular Weight	99.13
Explosive Properties	explosive air/vapour mixtures possible

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

None known, based on information available

10.2. Chemical stability

Hygroscopic. Air sensitive. Light sensitive.

10.3. Possibility of hazardous reactions

Hazardous Polymerization	No information available.
Hazardous Reactions	None under normal processing.

10.4. Conditions to avoid

Incompatible products. Heat, flames and sparks. Exposure to air. Exposure to moist air or water. Exposure to light. Keep away from open flames, hot surfaces and sources of ignition.

10.5. Incompatible materials

Strong oxidizing agents. Strong acids. Strong bases.

10.6. Hazardous decomposition products

Carbon monoxide (CO). Carbon dioxide (CO_2). Nitrogen oxides (NOx). peroxides.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Product Information

(a) acute toxicity;

Oral	Based on available data, the classification criteria are not met
Dermal	Based on available data, the classification criteria are not met
Inhalation	Based on available data, the classification criteria are not met

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
1-Methyl-2-pyrrolidone	LD50 = 3914 mg/kg (Rat)	LD50 = 8 g/kg (Rabbit)	LC50 > 5.1 mg/L (Rat) 4 h

(b) skin corrosion/irritation; Category 2

(c) serious eye damage/irritation; Category 2

(d) respiratory or skin sensitization;

Respiratory	Based on available data, the classification criteria are not met
Skin	Based on available data, the classification criteria are not met

(e) germ cell mutagenicity;

Mutagenic effects have occured in microorganisms

(f) carcinogenicity; Based on available data, the classification criteria are not met

There are no known carcinogenic chemicals in this product

(g) reproductive toxicity; Category 1B

Reproductive Effects Experiments have shown reproductive toxicity effects on laboratory animals.

Developmental Effects Substances known to cause developmental toxicity in humans. May cause harm to the unborn child.

Teratogenicity Teratogenic effects have occurred in experimental animals.

(h) STOT-single exposure; Category 3

Results / Target organs Respiratory system.

(i) STOT-repeated exposure; Based on available data, the classification criteria are not met

Target Organs None known.

(j) aspiration hazard; Based on available data, the classification criteria are not met

Other Adverse Effects Tumorigenic effects have been reported in experimental animals.

Symptoms / effects,both acute and delayed Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting, Central nervous system disorders.

11.2. Information on other hazards

Endocrine Disrupting Properties Assess endocrine disrupting properties for human health. This product does not contain any known or suspected endocrine disruptors.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecotoxicity effects .

Component	Freshwater Fish	Water Flea	Freshwater Algae
1-Methyl-2-pyrrolidone	LC50: = 1400 mg/L, 96h static (Poecilia reticulata) LC50: = 1072 mg/L, 96h static (Pimephales promelas) LC50: = 832 mg/L, 96h static (Lepomis macrochirus)	EC50: = 4897 mg/L, 48h (Daphnia magna)	EC50: > 500 mg/L, 72h (Desmodesmus subspicatus)

12.2. Persistence and degradability

Persistence Persistence is unlikely.

Component	Degradability
1-Methyl-2-pyrrolidone 872-50-4 (99)	water: 73% 28 days OECD 301C soil: >=90% 21 days

12.3. Bioaccumulative potential

Bioaccumulation is unlikely

Component	log Pow	Bioconcentration factor (BCF)

1-Methyl-2-pyrrolidone	-0.46	No data available

12.4. Mobility in soil

The product is water soluble, and may spread in water systems . Will likely be mobile in the environment due to its water solubility. Highly mobile in soils

12.5. Results of PBT and vPvB assessment

Substance is not considered persistent, bioaccumulative and toxic (PBT) / very persistent and very bioaccumulative (vPvB).

12.6. Endocrine disrupting properties

Endocrine Disruptor Information This product does not contain any known or suspected endocrine disruptors

12.7. Other adverse effects

Persistent Organic Pollutant This product does not contain any known or suspected substance

Ozone Depletion Potential This product does not contain any known or suspected substance

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste from Residues/Unused Products Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.

Contaminated Packaging Dispose of this container to hazardous or special waste collection point.

European Waste Catalogue (EWC) According to the European Waste Catalog, Waste Codes are not product specific, but application specific.

Other Information Waste codes should be assigned by the user based on the application for which the product was used. Do not empty into drains.

Switzerland - Waste Ordinance Disposal should be in accordance with applicable regional, national and local laws and regulations. Ordinance on the Avoidance and the Disposal of Waste (Waste Ordinance, ADWO) SR 814.600
https://www.fedlex.admin.ch/eli/cc/2015/891/en

SECTION 14: TRANSPORT INFORMATION

IMDG/IMO Not regulated

14.1. UN number
14.2. UN proper shipping name
14.3. Transport hazard class(es)
14.4. Packing group

ADR Not regulated

14.1. UN number
14.2. UN proper shipping name
14.3. Transport hazard class(es)
14.4. Packing group

IATA Not regulated

14.1. UN number

14.2. UN proper shipping name
14.3. Transport hazard class(es)
14.4. Packing group

14.5. Environmental hazards No hazards identified

14.6. Special precautions for user No special precautions required.

14.7. Maritime transport in bulk according to IMO instruments Not applicable, packaged goods

SECTION 15: REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

International Inventories
Europe (EINECS/ELINCS/NLP), China (IECSC), Taiwan (TCSI), Korea (KECL), Japan (ENCS), Japan (ISHL), Canada (DSL/NDSL), Australia (AICS), New Zealand (NZIoC), Philippines (PICCS). US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

Component	CAS No	EINECS	ELINCS	NLP	IECSC	TCSI	KECL	ENCS	ISHL
1-Methyl-2-pyrrolidone	872-50-4	212-828-1	-	-	X	X	KE-25324	X	X

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	DSL	NDSL	AICS	NZIoC	PICCS
1-Methyl-2-pyrrolidone	872-50-4	X	ACTIVE	X	-	X	X	X

Legend: X - Listed '-' - Not Listed **KECL** - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

Authorisation/Restrictions according to EU REACH

Component	CAS No	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
1-Methyl-2-pyrrolidone	872-50-4	-	Use restricted. See item 72. (see link for restriction details) Use restricted. See item 30. (see link for restriction details) Use restricted. See item 71. (see link for restriction details) Use restricted. See item 75. (see link for restriction details)	SVHC Candidate list - 212-828-1 - Toxic for reproduction, Article 57c

After the sunset date the use of this substance requires either an authorization or can only be used for exempted uses, e.g. use in scientific research and development which includes routine analytics or use as intermediate.

REACH links
https://echa.europa.eu/authorisation-list
https://echa.europa.eu/substances-restricted-under-reach
https://echa.europa.eu/candidate-list-table

Seveso III Directive (2012/18/EC)

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements
1-Methyl-2-pyrrolidone	872-50-4	Not applicable	Not applicable

Regulation (EC) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of dangerous chemicals
Not applicable

Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?
Not applicable

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work .
Take note of Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values
Take note of Directive 94/33/EC on the protection of young people at work
Take note of Dir 92/85/EC on the protection of pregnant and breastfeeding women at work

National Regulations

UK - Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment

WGK Classification See table for values

Component	Germany - Water Classification (AwSV)	Germany - TA-Luft Class
1-Methyl-2-pyrrolidone	WGK1	

Component	France - INRS (Tables of occupational diseases)
1-Methyl-2-pyrrolidone	Tableaux des maladies professionnelles (TMP) - RG 84

Swiss Regulations
Article 4 para. 4 of the Ordinance on the protection of young people in the workplace (SR 822.115) and Article 1 lit. f of the EAER regulation on hazardous work and young people (SR 822.115.2).
Take note on Article 13 Maternity Ordinance (SR 822.111.52) with regards expectant and nursing mothers.

Component	Switzerland - Ordinance on the Reduction of Risk from handling of hazardous substances preparation (SR 814.81)	Switzerland - Ordinance on Incentive Taxes on Volatile Organic Compounds (OVOC)	Switzerland - Ordinance of the Rotterdam Convention on the Prior Informed Consent Procedure
1-Methyl-2-pyrrolidone 872-50-4 (99)		Group I	

15.2. Chemical safety assessment

A Chemical Safety Assessment/Report (CSA/CSR) has been conducted

SECTION 16: OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H335 - May cause respiratory irritation
H360D - May damage the unborn child

Legend

CAS - Chemical Abstracts Service
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
IECSC - Chinese Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
ENCS - Japanese Existing and New Chemical Substances
AICS - Australian Inventory of Chemical Substances
NZIoC - New Zealand Inventory of Chemicals

WEL - Workplace Exposure Limit
ACGIH - American Conference of Governmental Industrial Hygienists
DNEL - Derived No Effect Level
RPE - Respiratory Protective Equipment
LC50 - Lethal Concentration 50%
NOEC - No Observed Effect Concentration
PBT - Persistent, Bioaccumulative, Toxic
TWA - Time Weighted Average
IARC - International Agency for Research on Cancer
Predicted No Effect Concentration (PNEC)
LD50 - Lethal Dose 50%
EC50 - Effective Concentration 50%
POW - Partition coefficient Octanol:Water
vPvB - very Persistent, very Bioaccumulative

ADR - European Agreement Concerning the International Carriage of Dangerous Goods by Road
IMO/IMDG - International Maritime Organization/International Maritime Dangerous Goods Code
OECD - Organisation for Economic Co-operation and Development
BCF - Bioconcentration factor
ICAO/IATA - International Civil Aviation Organization/International Air Transport Association
MARPOL - International Convention for the Prevention of Pollution from Ships
ATE - Acute Toxicity Estimate
VOC - (volatile organic compound)

Key literature references and sources for data
https://echa.europa.eu/information-on-chemicals
Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

Training Advice
Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.
Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.
First aid for chemical exposure, including the use of eye wash and safety showers.
Chemical incident response training.
Fire prevention and fighting, identifying hazards and risks, static electricity, explosive atmospheres posed by vapours and dusts.

Prepared By	Health, Safety and Environmental Department
Creation Date	12-Nov-2009
Revision Date	24-Mar-2024
Revision Summary	New emergency telephone response service provider.

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006. COMMISSION REGULATION (EU) 2020/878 amending Annex II to Regulation (EC) No 1907/2006 .

For Switzerland - Compiled in accordance with the technical provisions referred to in Annex 2, Number 3, ChemO (SR 813.11 - Ordinance on Protection against Dangerous Substances and Preparations).

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of Safety Data Sheet