OTTO CHEMIE PVT LTD

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----------ISO 9001: 2015----------

MATERIAL SAFETY DATA SHEET

1. Identification
Product Name 1-Methyl 2-pyrrollidone, 99%
Cat No. : M 2215
CAS-No 872-50-4
Synonyms 1-Methyl-2-pyrrolidone; N-Methylpyrrolidone; NMP
Recommended Use Laboratory chemicals. Uses advised against Food, drug, pesticide or biocidal product use.

2. Hazard(s) identification
Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)
Flammable liquids Category 4
Skin Corrosion/Irritation Category 2
Serious Eye Damage/Eye Irritation Category 2
Reproductive Toxicity Category 1B
Specific target organ toxicity (single exposure) Category 3
Target Organs - Respiratory system. Specific target organ toxicity - (repeated exposure) Category 2
Target Organs - Kidney, Liver, spleen, Blood.
Label Elements
Signal Word
Danger
Hazard Statements
Combustible liquid
Causes skin irritation
Causes serious eye irritation
May cause respiratory irritation
May damage the unborn child
May cause damage to organs through prolonged or repeated exposure
Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Wear eye/face protection
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep cool
Response
IF exposed or concerned: Get medical attention/advice
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Skin
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
Eyes
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
Fire
In case of fire: Use CO2, dry chemical, or foam for extinction
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
WARNING. Reproductive Harm - https://www.p65warnings.ca.gov/.

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
1-Methyl-2-pyrrolidone	872-50-4	99

4. 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.
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.
Ingestion Do NOT induce vomiting. Call a physician or poison control center immediately. Most important symptoms and effects
None reasonably foreseeable. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting, Central nervous system disorders
Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Water spray, carbon dioxide (CO2), dry chemical, alcohol-resistant foam. Water mist may be used to cool closed containers. Unsuitable Extinguishing Media No information available
Flash Point 91 °C / 195.8 °F
Method - No information available
Autoignition Temperature 346 °C / 654.8 °F
Explosion Limits
Upper 9.5 vol %
Lower 1.3 vol %
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available
Specific Hazards Arising from the Chemical
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 (CO2). Nitrogen oxides (NOx). peroxides. Protective Equipment and Precautions 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.
NFPA

Health	Flammability	Instability	Physical hazards
2	2	1	N/A

6. Accidental release measures

Personal Precautions 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.
Environmental Precautions Should not be released into the environment.
Methods for Containment and Clean Up Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Remove all sources of ignition.

7. Handling and storage

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

8. Exposure controls / personal protection

Exposure Guidelines

9. Physical and chemical properties

Physical State Liquid
Appearance Colorless
Odor Mild amine
Odor Threshold No information available
pH 7.7-8.0 100 g/L aq.sol
Melting Point/Range -24 °C / -11.2 °F
Boiling Point/Range 202 °C / 395.6 °F @ 760 mmHg
Flash Point 91 °C / 195.8 °F

Evaporation Rate No information available
Flammability (solid,gas) Not applicable
Flammability or explosive limits
Upper 9.5 vol %
Lower 1.3 vol %
Vapor Pressure 0.7 mbar @ 25 °C
Vapor Density 3.4
Specific Gravity 1.030
Solubility miscible
Partition coefficient; n-octanol/water No data available
Autoignition Temperature 346 °C / 654.8 °F
Decomposition Temperature No information available
Viscosity 1.67 mPa s at 20 °C
Molecular Formula C5 H9 N O
Molecular Weight 99.13
Engineering Measures Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location. Personal Protective Equipment
Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure. Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced. Hygiene Measures
Handle in accordance with good industrial hygiene and safety practice.

10. Stability and reactivity

Reactive Hazard None known, based on information available
Stability Hygroscopic. Air sensitive. Light sensitive. 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.
Incompatible Materials Strong oxidizing agents, Strong acids, Strong bases
Hazardous Decomposition Products Carbon monoxide (CO), Carbon dioxide (CO_2), Nitrogen oxides (NOx), peroxides
Hazardous Polymerization Hazardous polymerization does not occur. Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity
Product Information
Component Information

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

Toxicologically Synergistic Products
No information available
Delayed and immediate effects as well as chronic effects from short and long-term exposure
Irritation Irritating to eyes, respiratory system and skin
Sensitization No information available
Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
1-Methyl-2-pyrrolidone	872-50-4	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects Mutagenic effects have occured in microorganisms.
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.
STOT - single exposure Respiratory system
STOT - repeated exposure Kidney Liver spleen Blood
Aspiration hazard No information available
Symptoms / effects,both acute and delayed
Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting, Central nervous system disorders
Endocrine Disruptor Information No information available
Other Adverse Effects Tumorigenic effects have been reported in experimental animals.
Ecotoxicity

12. Ecological information

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
1-Methyl-2-pyrrolidone	EC50: > 500 mg/L, 72h (Desmodesmus subspicatus)	LC50: = 1400 mg/L, 96h static (Poecilia reticulata) LC50: = 4000 mg/L, 96h static (Leuciscus idus) LC50: = 1072 mg/L, 96h static (Pimephales promelas) LC50: = 832 mg/L, 96h static (Lepomis macrochirus)	Not listed	EC50: = 4897 mg/L, 48h (Daphnia magna)

Persistence and Degradability Persistence is unlikely
Bioaccumulation/ Accumulation No information available.
Mobility . Will likely be mobile in the environment due to its water solubility

Component	log Pow
1-Methyl-2-pyrrolidone	-0.46

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT Not regulated
TDG Not regulated
IATA Not regulated
IMDG/IMO Not regulated

15. Regulatory information

United States of America Inventory

Component	CAS-No	TSCA	TSCA Inventory notification - Active/Inactive	TSCA - EPA Regulatory Flags
1-Methyl-2-pyrrolidone	872-50-4	X	ACTIVE	R

Legend:
TSCA - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
TSCA 12(b) - Notices of Export Not applicable

Component	CAS-No	TSCA 12(b) - Notices of Export
1-Methyl-2-pyrrolidone	872-50-4	Section 5

International Inventories
Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Australia (AICS), China (IECSC), Korea (ECL).

Component	CAS-No	DSL	NDSL	EINECS	PICCS	ENCS	AICS	IECSC	KECL
1-Methyl-2-pyrrolidone	872-50-4	X	-	212-828-1	X	X	X	X	KE-25324

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
1-Methyl-2-pyrrolidone	872-50-4	99	1.0

SARA 311/312 Hazard Categories See section 2 for more information
CWA (Clean Water Act) Not applicable
Clean Air Act Not applicable
OSHA - Occupational Safety and Health Administration
Not applicable
CERCLA Not applicable
California Proposition 65 This product contains the following Proposition 65 chemicals.

Component	CAS-No	California Prop. 65	Prop 65 NSRL	Category
1-Methyl-2-pyrrolidone	872-50-4	Developmental	-	Developmental

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
1-Methyl-2-pyrrolidone	X	X	X	-	-

U.S. Department of Transportation
Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N
U.S. Department of Homeland Security
This product does not contain any DHS chemicals. Other International Regulations
Mexico - Grade Slight risk, Grade 1

Section 16: Other Information

This safety data sheet should be used in conjunction with technical sheets. It does not replace them. The information given is based on our knowledge of this product, at the time of publication. It is given in good faith. The attention of the user is drawn to the possible risks incurred by using the product for any other purpose other than that for which it was intended. This does not in any way excuse the user from knowing and applying all the regulations governing his activity. It is the sole responsibility of the user to take all precautions required in handling the product. The aim of the mandatory regulations mentioned is to help the user to fulfill his obligations regarding the use of hazardous products.