



# Safety Data Sheet

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## Section 01 - Identification

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<b>Product Identifier</b>	N-Methyl-2-Pyrrolidone
<b>Other Means of Identification</b>	1-Methyl-2-pyrrolidinone; 2-Pyrrolidinone; 1-Methyl-; 1-Methyl-2-pyrrolidinone
<b>Product Use and Restrictions on Use</b>	Solvent, pigment dispersant, CO <sub>2</sub> removal, petroleum refining.
<b>Initial Supplier Identifier</b>	ClearTech Industries Inc. 1500 Quebec Avenue Saskatoon, SK. Canada S7K 1V7
<b>Prepared By</b>	ClearTech Industries Inc. Technical Writer Phone: 1 (800) 387-7503
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## Section 02 - Hazard Identification

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### GHS-Classification

<b>Skin Corrosion/Irritation</b>	Category 2
<b>Serious Eye Damage/Corrosion</b>	Category 2
<b>STOT-Single Exposure</b>	Category 3
<b>Reproductive Toxicity</b>	Category 1B

### Physical Hazards

No known physical hazards.

### **Danger**

### **Hazards Statements**

- H315 – Causes skin irritation.
- H319 – Causes serious eye irritation.
- H335 – May cause respiratory irritation.
- H360 – May damage fertility or the unborn child.

### **Pictograms**



## Precautionary Statements

P201 – Obtain special instructions before use.

P405 – Store locked up.

P403 + P233 – Store in a well-ventilated place. Keep container tightly closed.

P260 – Do not breathe mist, vapours or spray.

P271 – Use only outdoors or in a well-ventilated area.

P304 + P340 – IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P308 + P313 – IF exposed or concerned: Get medical advice/attention.

P263 – Avoid contact during pregnancy/while nursing.

P270 – Do not eat, drink or smoke when using this product.

P280 – Wear protective gloves, protective clothing, eye protection, and face protection.

P302 + P352 – IF ON SKIN: Wash with plenty of soap and water.

P332 + P313 – If skin irritation occurs: Get medical advice/attention.

P362 – Take off contaminated clothing and wash 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 + P313 – If eye irritation persists: Get medical advice/attention.

P501 – Dispose of contents/container in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.

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## Section 03 - Composition / Information on Ingredients

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Chemical Name	CAS Number	Weight %	Unique Identifiers
N-methyl-2-pyrrolidone	872-50-4	90-100%	

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## Section 04 - First Aid Measures

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<b>Inhalation</b>	If symptoms are experienced, remove source of contamination or move victim to fresh air. Seek medical attention if irritation persists.
<b>Skin Contact / Absorption</b>	Remove contaminated clothing. Immediately rinse skin with lukewarm, gently flowing water for 30 minutes. If irritation persists, seek medical attention. Completely decontaminate clothing, shoes and leather goods before reuse or discard.
<b>Eye Contact</b>	Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 30 minutes. If irritation persists, seek medical attention.
<b>Ingestion</b>	NEVER give anything by mouth if victim is rapidly losing consciousness, is unconscious or convulsing. Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. Seek medical attention.
<b>Additional Information</b>	1-methyl-2-pyrrolidinon is rapidly absorbed through the skin. It is not expected to be toxic by skin absorption, but can facilitate that absorption of other potentially toxic chemical in the work environment.

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## Section 05 - Fire Fighting Measures

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<b>Suitable Extinguishing Media</b>	Carbon dioxide, dry chemical powder, appropriate foam, water spray or fog. Special alcohol resistant "multipurpose" fire-fighting foams are recommended for use on combustible, water-soluble polar liquids.
<b>Unsuitable Extinguishing Media</b>	Not Available
<b>Specific Hazards Arising From the Chemical</b>	Closed containers may rupture violently and suddenly release large amounts of product when exposed to fire or excessive heat for a sufficient period of time.
<b>Special Protective Equipment and Precautions for Fire-Fighters</b>	Wear NIOSH-approved self-contained breathing apparatus and protective clothing.
<b>Further Information</b>	Carbon monoxide, carbon dioxide and nitrogen oxides and other toxic and irritating chemical may be formed on heating or in a fire.

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## Section 06 - Accidental Release Measures

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<b>Personal Precautions / Protective Equipment / Emergency Procedures</b>	Wear appropriate personal protective equipment. Ventilate area. Only enter area with PPE. Stop or reduce leak if safe to do so.
<b>Environmental Precautions</b>	Prevent material from entering sewers, waterways or confined spaces.
<b>Methods and Materials for Containment and Cleaning Up</b>	Contain spill with earth, sand, or absorbent material which does not react with spilled material. SMALL SPILLS: Soak up spill with absorbent material which does not react with spilled chemical. Put material in suitable, covered, labelled containers. Flush area with water. LARGE SPILLS: Contact fire and emergency services and supplier for advice.

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## Section 07 - Handling and Storage

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<b>Precautions for Safe Handling</b>	This material is an EYE IRRITANT. Use proper equipment for lifting and transporting all containers. Use sensible industrial hygiene and housekeeping practices. Wash thoroughly after handling. Avoid all situations that could lead to harmful exposure.
<b>Conditions for Safe Storage</b>	Store in a cool, ventilated area, out of direct sunlight and away from heat and ignition sources. Store in accordance with good industrial practices.
<b>Incompatibilities</b>	Strong oxidizing agents, strong acids and bases.

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## Section 08 - Exposure Controls and Personal Protection

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### Exposure Limit(s)

Component	Regulation	Type of Listing	Value
N-methyl-2-pyrrolidone	WEELs	WEEL-TWA	10ppm

### Engineering Control(s)

<b>Ventilation Requirements</b>	Mechanical ventilation (dilution or local exhaust), process or personnel enclosure and control of process conditions must be provided in accordance with all fire codes and regulatory requirements. Supply sufficient replacement air to make up for air removed by exhaust systems.
<b>Other</b>	Emergency shower and eyewash must be available and tested in accordance with regulations and be in close proximity.

### Protective Equipment

<b>Eyes/Face</b>	Chemical safety goggles. A face shield may also be necessary.
<b>Hand Protection</b>	Impervious gloves of chemically resistant material (rubber or PVC) should be worn at all times. Wash contaminated clothing and dry thoroughly before reuse.
<b>Skin and Body Protection</b>	Body suite, aprons, and/or coveralls of chemical resistant material should be worn at all times. Wash contaminated clothing and dry thoroughly before reuse. Impervious boots of chemically resistant material should be worn at all times. No special footwear is required other than what is mandated at place of work.
<b>Respiratory Protection</b>	RECOMMENDED(resistance to breakthrough longer than 8 hours): Butyl rubber, Barrier(R) – PE/PA/PE, Saranex(R), Tychem(R) Thermopro, Tychem(R) BR/LV, Tychem (R) Responder(R) CSM, Tychem(R) TK, Tychem(R) Reflector, Zytron(R) 300, Zytron(R) 500. NOT RECOMMENDED for use (resistance to breakthrough less than 1 hour and/or poor degradation rating): Natural rubber, Neoprene rubber, Nitrile rubber, Polyvinyl alcohol (PVAL), Polyvinyl chloride (PVC), Viton(R), Viton(R)/Butyl rubber.

Thermal Hazards

Not Available

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## Section 09 - Physical and Chemical Properties

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### Appearance

Physical State	Liquid
Colour	Clear
Odour	Amine odour
Odour Threshold	Not Available

### Property

pH	7.7-8 (10% solution)
Melting Point/Freezing Point	-24.4°C
Initial Boiling Point and Boiling Range	202°C
Flash Point	90-91°C
Evaporation Rate	<0.1
Flammability	Can form explosive mixture with air at, or above 90°C.
Upper Flammable Limit	9.5%
Lower Flammable Limit	1.3%
Vapour Pressure (mm Hg, 20°C)	0.293 mmHg
Vapour Density (Air=1)	3.42
Relative Density	Not Available
Solubility(ies)	Soluble in water. Soluble in lower alcohols and moderately soluble in aliphatic hydrocarbons.
Partition Coefficient: n-octanol/water	Log P <sub>ow</sub> = -0.38
Auto-ignition Temperature	245-346°C
Decomposition Temperature	Not Available
Viscosity	1.796 mPa.s @ 20°C
Explosive Properties	May form flammable/explosive vapour-air mixture.
Specific Gravity (Water=1)	1.025-1.035
% Volatiles by Volume	Non volatile
Formula	C <sub>5</sub> H <sub>9</sub> NO
Molecular Weight	99.15

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## Section 10 - Stability and Reactivity

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<b>Reactivity</b>	Not Available
<b>Stability</b>	Normally stable. On exposure to air, 1-methyl-2-pyrrolidinone is slowly oxidized with the formation of hydroperoxides. This process is accelerated by sunlight.
<b>Possibility of Hazardous Reactions</b>	Polymerization does not occur.
<b>Conditions to Avoid</b>	Temperatures of 90°C and above, moisture, air, sunlight.
<b>Incompatible Materials</b>	Strong oxidizing agents, strong acids and bases.
<b>Hazardous Decomposition Products</b>	1-methyl-2-pyrrolidinone may form hydroperoxides on exposure to air and sunlight. In general, hydroperoxides are explosive if they accumulate to a dangerous level or are concentrated when heated. However, the hydroperoxides formed from 1-methyl-2-pyrrolidinone are probably readily degradable and do not accumulate to a hazardous level.

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## Section 11 - Toxicological Information

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### Acute Toxicity

Component	Oral LD <sub>50</sub>	Dermal LD <sub>50</sub>	Inhalation LC <sub>50</sub>
N-methyl-2-pyrrolidone	3500mg/kg (rabbit)	5000-10000mg/kg (rat)	5100mg/m <sup>3</sup> (rat, 4hr)

### Chronic Toxicity – Carcinogenicity

Component	IARC
N-methyl-2-pyrrolidone	Not considered carcinogenic to humans.

<b>Skin Corrosion/Irritation</b>	Can cause skin irritation.
<b>Ingestion</b>	Not expected to be toxic if ingested.
<b>Inhalation</b>	Irritating to the nose and throat.
<b>Serious Eye Damage/Irritation</b>	Moderate eye irritant.
<b>Respiratory or Skin Sensitization</b>	Not expected to be a sensitizer.
<b>Germ Cell Mutagenicity</b>	Not expected to be a mutagenic.
<b>Reproductive Toxicity</b>	May cause damage to fertility or the fetus.
<b>STOT-Single Exposure</b>	May cause respiratory irritation.
<b>STOT-Repeated Exposure</b>	Not Available
<b>Aspiration Hazard</b>	Not Available
<b>Synergistic Materials</b>	In a study, 1-methyl-2-pyrrolidinone caused temporary increase in the ability of other compounds to penetrate the skin.

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## Section 12 – Ecological Information

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### Ecotoxicity

Component	Toxicity to Algae	Toxicity to Fish	Toxicity to Daphnia and Other Aquatic Invertebrates
N-methyl-2-pyrrolidone	EC <sub>50</sub> (Scenedesmus subspicatus, 72hr): >500mg/L	LC <sub>50</sub> (Oncorhynchus mykiss, 96hr): >500mg/L	EC <sub>50</sub> (Daphnia magna, 24hr): >1000mg/L

<b>Biodegradability</b>	Material is biodegradable.
<b>Bioaccumulation</b>	Not Available
<b>Mobility</b>	Expected to have very high mobility in soil.
<b>Other Adverse Effects</b>	Not Available.

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## Section 13 – Disposal Considerations

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<b>Waste From Residues/Unused Products</b>	Dispose in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.
<b>Contaminated Packaging</b>	Dispose in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.

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## Section 14 – Transport Information

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<b>UN Number</b>	Not Regulated
<b>UN Proper Shipping Name</b>	Not Regulated
<b>Transport Hazard Class(es)</b>	Not Regulated
<b>Packaging Group</b>	Not Regulated
<b>Environmental Hazards</b>	Not listed as a marine pollutant under Canadian TDG Regulations, schedule III.
<b>Special Precautions</b>	Not Available
<b>Transport in Bulk</b>	Not Available

### TDG

**Other** Secure containers (full and/or empty) with suitable hold down devices during shipment and ensure all caps, valves, or closures are secured in the closed position.

**TDG PRODUCT CLASSIFICATION:** This product has been classified on the preparation date specified at section 14 of this MSDS / SDS, for transportation in accordance with the requirements of part 2 of the Transportation of Dangerous Goods Regulations. If applicable, testing and/or published test data regarding the classification of this product are listed in the references at section 16 of this MSDS / SDS.

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## Section 15 – Regulatory Information

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**NOTE: THE PRODUCT LISTED ON THIS SDS HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE CANADIAN CONTROLLED PRODUCTS REGULATIONS. THIS SDS CONTAINS ALL INFORMATION REQUIRED BY THOSE REGULATIONS.**

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## Section 16 – Other Information

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**Preparation Date** September 10, 2015

**Note:** The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the user to comply with all applicable laws and regulations.

### **Attention: Receiver of the chemical goods / SDS coordinator**

As part of our commitment to the Canadian Association of Chemical Distributors (CACD) Responsible Distribution<sup>®</sup> initiative, ClearTech Industries Inc. and its associated companies require, as a condition of sale, that you forward the attached Safety Data Sheet(s) to all affected employees, customers, and end-users. ClearTech will send any available supplementary handling, health, and safety information to you at your request.

If you have any questions or concerns please call our customer service center.

**References:**

- 1) CHEMINFO
- 2) eChemPortal
- 3) TOXNET
- 4) Transportation of Dangerous Goods Canada
- 5) HSDB
- 6) ECHA
- 7) PAN

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