

## MATERIAL SAFETY DATA SHEET

PRODUCT NAME: 1-ETHYL-2-PYRROLIDINONE

CAS Number: 2687-91-4

**1. IDENTIFICATION:**

**Product Code** : 93193

**Company Name** : ADVENT CHEMBIO PRIVATE LIMITED

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**2. HAZARDS IDENTIFICATION:****Hazard classification****Health hazards**

**Serious eye damage** : Category 1

**Reproductive toxicity** : Category 1 B

**Labels elements** :

**Hazard symbol** : 

**Signal word** : Danger

**Hazard statement** : Causes serious eye damage.  
May damage the unborn child.

**Precautionary statement**

**Prevention** : Obtain special instructions before use.  
Do not breathe dust/ fume/ gas/ mist/ vapors/ spray. Do not handle until all safety precautions have been read and understood.  
Wear protective gloves/ protective clothing/ eye protection/ face protection.  
Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.  
Keep container tightly closed. Ground/ bond container and receiving equipment.  
Use explosion-proof electrical/ ventilating/ lighting/ equipment.  
Use only non-sparking tools. Take precautionary measures against static discharge.

**Response** : IF exposed or concerned: Get medical advice/ attention.  
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

**Storage** : Store in a dry & well-ventilated place. Keep container tightly closed. Containers which are opened must be carefully resealed and kept upright to prevent leakage.



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- Disposal** : 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.
- Other hazards which do not result in GHS classification** : Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapor. May cause flash fire or explosion.

**3. COMPOSITION/ INFORMATION ON INGREDIENTS:**

Ingredient	CAS Number	Percent	Hazardous
1-Ethyl-2-Pyrrolidinone	2687-91-4	NLT 97.5%	No

**4. FIRST AID MEASURES:**

- General information** : Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in attendance.
- Ingestion** : Call a physician or poison control center immediately. Rinse mouth. Do NOT induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
- Inhalation** : Move to fresh air. Call a physician or poison control center immediately. If breathing stops, provide artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms persist.
- Skin contact** : Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention.
- Eye contact** : 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** : Toxic if inhaled. Irritating to eyes, respiratory system and skin.
- Indication of immediate medical attention and special treatment needed** : Symptoms may be delayed. Treat symptomatically.

**5. FIRE FIGHTING MEASURES:**

- General information** : Flammable liquid and vapor.

**Suitable (and unsuitable) extinguishing media**

- Suitable extinguishing media** : Foam, dry powder or carbon dioxide.

- Unsuitable extinguishing media** : For this substance/mixture no limitations of extinguishing agents are given.

**Special protective equipment and precautions for firefighters**

- Special firefighting procedures** : Fight fire from a protected location. Move containers from fire area if you can do so without risk.

- 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.

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**6. ACCIDENTAL RELEASE MEASURES:**

<b>Personal precautions, protective equipment and emergency procedures</b>	:	ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Avoid breathing mists or vapors. Keep upwind. Ventilate closed spaces before entering them. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep unauthorized personnel away.
<b>Methods and material for containment and cleaning up</b>	:	Eliminate all ignition sources if safe to do so. Use only non-sparking tools. Take precautionary measures against static discharges. Stop leak if possible without any risk. Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. Dike far ahead of larger spill for later recovery and disposal.
<b>Notification Procedures</b>	:	Prevent entry into waterways, sewer, basements or confined areas. Inform authorities if large amounts are involved.
<b>Environmental precautions</b>	:	Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

**7. HANDLING AND STORAGE:**

<b>Precautions for safe handling</b>	:	Do not handle until all safety precautions have been read and understood. DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools. Wear protective gloves/protective clothing/eye protection/ face protection. Avoid contact with eyes, skin, and clothing. Do not breathe mist or vapor. Use only with adequate ventilation. Wash hands thoroughly after handling.
<b>Conditions for safe storage, including any incompatibilities</b>	:	Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.

**8. EXPOSURE CONTROLS PERSONAL PROTECTION:****Control parameters****Appropriate engineering**

controls : No data available

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

<b>General information</b>	:	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. An eye wash and safety shower must be available in the immediate work area. Use explosion-proof ventilation equipment.
<b>Eye/face protection</b>	:	Wear safety glasses with side shields (or goggles).
<b>Hand protection</b>	:	Chemical resistant gloves.
<b>Other</b>	:	Wear suitable protective clothing.

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<b>Respiratory protection</b>	:	In case of inadequate ventilation use suitable respirator. Chemical respirator with organic vapor cartridge.
<b>Hygiene measures</b>	:	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Provide eyewash station and safety shower. Avoid contact with eyes, skin, and clothing.

**9. PHYSICAL AND CHEMICAL PROPERTIES:**

<b>Appearance</b>	:	Clear, colorless to light yellow liquid. Slightly contains crystals.
<b>Odor</b>	:	No data available
<b>Solubility</b>	:	No data available
<b>Formula</b>	:	C <sub>6</sub> H <sub>11</sub> NO
<b>Molecular Weight</b>	:	113.16 g/mol
<b>Specific Gravity</b>	:	0.992 g/mL (25 °C)
<b>pH</b>	:	8 - 9 (20 °C) Concentration: 100 g/l
<b>% Volatiles by volume @ 21C (70F)</b>	:	No data available
<b>Boiling Point</b>	:	97 °C (27 hPa) Method: lit.
<b>Melting Point</b>	:	-75 °C Method: OECD Test Guideline 102
<b>Flash Point</b>	:	91 °C(1.013,25 hPa) Method: Pensky-Martens closed cup
<b>Vapor Density (Air=1)</b>	:	No data available
<b>Vapor Pressure (mm Hg)</b>	:	0.18 hPa (20 °C) Method: Regulation (EC) No. 440/2008, Annex, A.4 GLP: yes
<b>Evaporation Rate (BuAc=1)</b>	:	No data available

**10. STABILITY AND REACTIVITY:**

<b>Reactivity</b>	:	Forms explosive mixtures with air on intense heating. A range from approx. 15 Kelvin below the flash point is to be rated as critical.
<b>Chemical stability</b>	:	Material is stable under ambient conditions..
<b>Possibility of hazardous reactions</b>	:	Hazardous reactions : Violent reactions possible with: Strong oxidizing agents Strong acids Bases Acid chlorides.
<b>Conditions to avoid</b>	:	Strong heating.
<b>Incompatible materials</b>	:	No data available.
<b>Hazardous decomposition products</b>	:	In the event of fire: see section 5

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**11. TOXICOLOGICAL INFORMATION:****Information on toxicological effects****Acute toxicity (list all possible routes of exposure)**

<b>Inhalation Product</b>	LD50 Oral - Rat - male and female - 3.200 mg/kg (OECD Test Guideline 401) : LC50 Inhalation - Rat - male and female - 4 h - > 5.1 mg/l - aerosol (OECD Test Guideline 403) Symptoms: Cough, Possible damages:, mucosal irritations LD50 Dermal - Rat - male and female - > 2.000 mg/kg (OECD Test Guideline 402)
<b>Repeated dose toxicity Product</b>	: No data available.
<b>Skin corrosion/irritation Product</b>	Skin - Rabbit : Result: No skin irritation - 4 h (OECD Test Guideline 404)
<b>Serious eye damage/eye irritation Product</b>	Eyes - Rabbit : Result: Irreversible effects on the eye (OECD Test Guideline 405) Remarks: Lacrimal irritation due to vapours
<b>Respiratory or skin sensitization Product</b>	Local lymph node assay (LLNA) - Mouse : Result: negative (OECD Test Guideline 429)
<b>Carcinogenicity Product</b>	: No data available.
<b>IARC Monographs on the Evaluation of Carcinogenic Risks to Humans</b>	: No data available
<b>US. National Toxicology Program (NTP) Report on Carcinogens</b>	: No data available
<b>US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)</b>	: No data available.
<b>Germ cell mutagenicity</b>	Test Type: Ames test Test system: Escherichia coli/Salmonella typhimurium Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471 Result: negative Test Type: In vitro mammalian cell gene mutation test Test system: Chinese hamster ovary cells : Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 476 Result: negative Test Type: In vivo micronucleus test Species: Mouse Cell type: Bone marrow Application Route: Oral Method: OECD Test Guideline 474

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	Result: negative
	Test Type: Chromosome aberration test
	Species: Mouse
	Cell type: Bone marrow
	Application Route: Oral
	Method: OECD Test Guideline 475
	Result: negative
<b>In vitro Product</b>	: No data available.
<b>Reproductive toxicity Product</b>	: May damage the unborn child.
<b>Specific target organ toxicity - single exposure Product</b>	: No data available.
<b>Specific target organ toxicity - repeated exposure Product</b>	: No data available.
<b>Aspiration hazard Product</b>	: No data available.
<b>Other effects</b>	: None known.

**12. ECOLOGICAL INFORMATION:****Ecotoxicity****Acute hazards to the aquatic environment**

<b>Fish Product</b>	LC50 (Danio rerio (zebra fish)): > 464 - 999 mg/l End point: mortality
	Exposure time: 96 h
	: Test Type: static test
	Analytical monitoring: yes
	Method: OECD Test Guideline 203
	GLP: yes
<b>Aquatic invertebrates Product</b>	EC50 (Daphnia magna (Water flea)): > 104 mg/l
	End point: Immobilization
	Exposure time: 48 h
	: Test Type: static test
	Analytical monitoring: yes
	Method: OECD Test Guideline 202
	GLP: yes

**Chronic hazards to the aquatic environment**

<b>Fish Product</b>	: No data available.
<b>Aquatic invertebrates Product</b>	NOEC: 12,5 mg/l End point: reproduction rate
	Exposure time: 21 d
	Species: Daphnia magna (Water flea)
	: Test Type: semi-static test
	Analytical monitoring: yes
	Method: OECD Test Guideline 211
	GLP: yes

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	Remarks: (in analogy to similar products)
<b>Toxicity to Aquatic Plants Product:</b>	The value is given in analogy to the following substances: N-methyl-2-pyrrolidone ErC50 (Desmodesmus subspicatus (green algae)): > 101 mg/l Exposure time: 72 h Test Type: static test
	: Analytical monitoring: yes Method: OECD Test Guideline 201 GLP: yes
<b>Persistence and degradability</b>	
<b>Biodegradation Product</b>	Test Type: aerobic Inoculum: activated sludge Concentration: 34 mg/l Result: Readily biodegradable.
	: Biodegradation: 90 - 100 % Exposure time: 28 d Method: OECD Test Guideline 301A GLP: yes
<b>BOD/COD ratio Product</b>	: 2.110 mg/g Remarks: (External MSDS)
<b>Bioaccumulative potential</b>	
<b>Bioconcentration factor (BCF) Product</b>	: No data available.
<b>Partition coefficient n-octanol / water (log Kow) Product</b>	: No data available.
<b>Mobility in soil</b>	: No data available
<b>Other adverse effects</b>	: Discharge into the environment must be avoided.

**13. DISPOSAL CONSIDERATION:**

<b>Disposal instructions</b>	: Discharge, treatment, or disposal may be subject to national, state, or local laws. Disposal recommendations are based on uncontaminated material.
<b>Contaminated packaging</b>	: Since emptied containers retain product residue, follow label warnings even after container is emptied.

**14. TRANSPORT INFORMATION:**

	UN No.	UN proper shipping name	Hazard Class(es)	Packaging group	Marine Pollutant
<b>DOT</b>	NA	1-Ethyl-2-Pyrrolidinone	NA	Not dangerous goods	NA
<b>IMDG</b>	NA	1-Ethyl-2-Pyrrolidinone	NA	Not dangerous goods	NA
<b>IATA</b>	NA	1-Ethyl-2-Pyrrolidinone	NA	Not dangerous goods	NA

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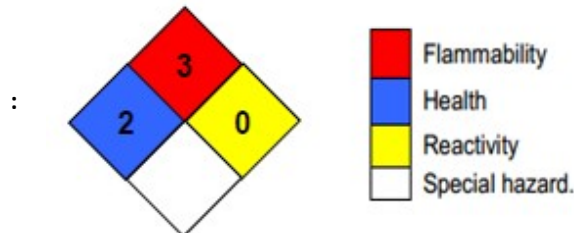
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**15. REGULATORY INFORMATION:**

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.  
Safety, health and environmental regulations/legislation specific for the substance or mixture  
No Data Available.

**16. OTHER INFORMATION:**

NFPA Hazard ID



Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe

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