

Ellenbarrie Industrial Gases Limited Material Safety Data Sheet

1. Chemical Product and Company Identification

Product Name:	Liquid Nitrogen	Trade Name:	Liquid Nitrogen
Product Use:	Many.		
Chemical Name:	Nitrogen	Synonym:	Not applicable.
Chemical Formula:	N ₂	Chemical Family:	Inert material.
Telephone:	Emergencies: * 033-25828791	Supplier	Ellenbarrie Industrial Gases Limited
	*033-27094398	/Manufacture:	3A Ripon Street, Kolkata-700016
	*08924-205105	Phone:	033-22292441, 22291923, 22491922
		Fax:	033-22493396

**Call emergency numbers 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product. For routine information, contact your supplier or Ellenbarrie Industrial Gases Limited sales representative.*

2. Composition and Information on Ingredients

INGREDIENTS	% (VOL)	CAS NUMBER	LD ₅₀ (Species & Routes)	LC ₅₀ (Rat, 4 hrs.)	TLV-TWA (ACGIH)
Nitrogen	100	7727-37-9	Not applicable.	Not available.	Simple asphyxiant.

3. Hazards Identification

Emergency Overview

CAUTION! Extremely cold liquid and gas under pressure. Can cause rapid suffocation. Can cause severe frostbite. May cause dizziness and drowsiness. Self-contained breathing apparatus and protective clothing may be required by rescue workers.

ROUTES OF EXPOSURE: Inhalation. Swallowing. Skin contact.

THRESHOLD LIMIT VALUE: TLV-TWA Data from 2004 Guide to Occupational Exposure Values (ACGIH).

EFFECTS OF A SINGLE (ACUTE) OVEREXPOSURE:

INHALATION: Asphyxiant. Effects are due to lack of oxygen. Moderate concentrations may cause headaches, drowsiness, dizziness, excitation, excess salivation, vomiting, and unconsciousness. Lack of oxygen can kill.

SKIN CONTACT: No harm expected from vapour. Liquid may cause frostbite.

SKIN ABSORPTION: No evidence of adverse effects from available information.

SWALLOWING: Frostbite of the lips and mouth may result from contact with the liquid.

EYE CONTACT:

No harm expected from vapour. Liquid may cause frostbite.

EFFECTS OF REPEATED (CHRONIC) OVEREXPOSURE:

No evidence of adverse effects from available information.

OTHER EFFECTS OF OVEREXPOSURE:

Contact with the liquid may cause frostbite.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

The toxicology and the physical and chemical properties of this product suggest that overexposure is unlikely to aggravate medical condition.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION:

None currently known.

CARCINOGENICITY:

Not listed as carcinogen by OSHA, NTP or IARC.

4. First Aid Measures

INHALATION:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

SKIN CONTACT:

Immediately warm frostbite area with warm water (not to exceed 40°C). In case of massive exposure, remove clothing and shoes while showering with warm water. Get medical attention immediately.

SWALLOWING:

This product is a gas at normal temperature and pressure.

EYE CONTACT:

Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. See a physician, preferably an ophthalmologist, immediately.

NOTES TO PHYSICIAN:

There is no specific antidote. Treatment of over-exposure should be directed at the control of symptoms and the clinical condition.

5. Fire Fighting Measures

FLAMMABLE : No.

IF YES, UNDER WHAT CONDITIONS?

Not applicable.

FLASH POINT (test method)

Not applicable.

AUTOIGNITION TEMPERATURE

Not applicable.

FLAMMABLE LIMITS IN AIR, % by volume:

LOWER: Not applicable.

UPPER: Not applicable.

EXTINGUISHING MEDIA:

This material cannot catch fire. Use media appropriate for surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES:

CAUTION! Evacuate all personnel to a safe distance. Immediately deluge containers with water spray from maximum distance until cool, then move containers away from fire area if without risk. Do not discharge water sprays into liquid.

UNUSUAL FIRE AND EXPLOSION HAZARD:

Liquid or vapour cannot catch fire. Container may rupture due to heat of fire. Liquid will freeze water rapidly. Containers are provided with a pressure relief device designed to vent contents when they are exposed to elevated temperature. Liquid causes cryogenic "burns" (frostbite-like injury).

HAZARDOUS COMBUSTION PRODUCTS:

None.

SENSITIVITY TO IMPACT:

Avoid impact against container.

SENSITIVITY TO STATIC DISCHARGE:

Not applicable.

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

CAUTION! Evacuate all personnel from danger area. Allow spilled liquid to evaporate. Use self-contained breathing apparatus where needed. Shut off flow if you can do so without risk. Ventilate area or move container to a well-ventilated area. Test for sufficient oxygen, especially in confined spaces, before allowing reentry.

WASTE DISPOSAL METHOD:

Slowly release into atmosphere outdoors. Keep personnel away. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, provincial, and local regulations. If necessary, call your local supplier for assistance.

7. Handling and Storage

PRECAUTIONS TO BE TAKEN IN STORAGE:

Store and use with adequate ventilation. Firmly secure containers upright to keep them from falling or being knocked over. Screw valve protection cap firmly in place by hand. Store only where temperature will not exceed 52 C. Use a first-in, first-out inventory system to prevent storing full containers for long periods.

PRECAUTIONS TO BE TAKEN IN HANDLING:

Protect containers from damage. Leak check system with soapy water; never use a flame. Never attempt to lift a container by its cap; the cap is intended solely to protect the valve. Never insert an object (e.g., wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Open valve slowly. If valve is hard to open, discontinue use and contact your supplier. For other precautions, see Section 16.

OTHER HAZARDOUS CONDITIONS OF HANDLING, STORAGE, AND USE:

Extremely cold liquid and gas. Do not get liquid or vapours in eyes, on skin, or clothing. Safety showers and eyewash fountains should be immediately available. Use only in a closed system. Use piping and equipment adequately designed to withstand pressures to be encountered. Liquid can solidify air. **Store and use with adequate ventilation at all times.** Close valve after each use; keep closed even when empty. Air will condense on exposed liquid or cold-gas surfaces, such as vaporizers and piping. Nitrogen, having a lower boiling point than oxygen, will evaporate first leaving an oxygen-enriched condensation on the surface. **Prevent Liquid or cold gas from being trapped in piping between valves.** Equip the piping with pressure relief devices. **When returning container to supplier,** be sure valve is closed. **Never work on a pressurized system.** If there is a leak, close the container valve. Vent the system down in a safe and environmentally sound manner in compliance with all federal, provincial, and local laws; then repair the leak. **Never place a container where it may become part of an electrical circuit.**

8. Exposure Controls/Personal Protection

VENTILATION/ENGINEERING CONTROLS:

LOCAL EXHAUST:	Preferred.
MECHANICAL (general):	Acceptable.
SPECIAL:	Not applicable.
OTHER:	Not applicable.

PERSONAL PROTECTION:

RESPIRATORY PROTECTION: Use air supplied respirator when working in confined space or where local exhaust or ventilation does not keep exposure below TLV. Select in accordance with the provincial regulations or guidelines. Selection should also be based on the current CSA standards Z94.4, "Selection, care and use of respirators". Respirators should be approved by NIOSH and MSHA.

SKIN PROTECTION: Loose-fitting cryogenic gloves.

EYE PROTECTION: Wear safety glasses when handling containers. Select in accordance with the current CSA standard Z94.3, "Industrial Eye and Face Protection", and any provincial regulations, local bylaws or guidelines.

OTHER PROTECTIVE EQUIPMENT: Metatarsal shoes for container handling. Protective clothing where needed. Cuff less trousers should be worn outside the shoes. Select in accordance with the current CSA standard Z195, "Protective Foot Wear", and any provincial regulations, local bylaws or guidelines.

9. Physical and Chemical Properties

PHYSICAL STATE: Liquid.	FREEZING POINT: -209.9°C (-345.8°F)	pH:	Not applicable.
BOILING POINT -195.8°C (-320.4°F)	VAPOUR PRESSURE Not applicable.	MOLECULAR WEIGHT:	28.01 g/mole
SPECIFIC GRAVITY: 0.0808 @ -195.8 C LIQUID (Water = 1)	SOLUBILITY IN WATER, Negligible.		
SPECIFIC GRAVITY: 0.97 @ 21.1 C VAPOUR (air = 1)	EVAPORATION RATE High. (Butyl Acetate=1):	COEFFICIENT OF WATER/OIL DISTRIBUTION:	Not applicable.
VAPOUR DENSITY: 0.00115 g/ml @ 21.1 C VOLUME:	% VOLATILES BY 100% (v/v).	ODOUR THRESHOLD:	Odourless.
APPEARANCE & ODOUR: Colourless.	Odourless.		

10. Stability and Reactivity

STABILITY:	The product is stable.
CONDITIONS OF CHEMICAL INSTABILITY:	Elevated temperatures.
INCOMPATIBILITY (materials to avoid):	Under certain conditions, Nitrogen can react violently with Lithium, Neodymium, Titanium, and Magnesium to form Nitrides. At high temperature it can also combine with Oxygen and Hydrogen.
HAZARDOUS DECOMPOSITION PRODUCTS:	None.
HAZARDOUS POLYMERIZATION:	Will not occur.
CONDITIONS OF REACTIVITY:	None known.

11. Toxicological Information

See section 3.

12. Ecological Information

No adverse ecological effects expected. This product does not contain any Class I or Class II ozone-depleting chemicals. The components of this mixture are not listed as marine pollutants by TDG Regulations.

13. Disposal Considerations

WASTE DISPOSAL METHOD:

Do not attempt to dispose of residual or unused quantities. Return container to supplier.

14. Transport Information

TDG/IMO SHIPPING NAME:

Nitrogen, Refrigerated Liquid

HAZARD CLASS:

IDENTIFICATION #: UN1977

CLASS: 2.2

Non-flammable,
non-corrosive and
non-poisonous
gas.

SHIPPING LABEL(s):

Non-flammable, non-poisonous gas

PLACARD (when required):

Non-flammable, non-poisonous gas

SPECIAL SHIPPING INFORMATION:

Containers should be transported in a secure position, in a well-ventilated vehicle. Containers transported in an enclosed, non-ventilated compartment of vehicle can present serious safety hazards.

15. Regulatory Information

The following selected regulatory requirements may apply to this product. Not all such requirements are identified. Users of this product are solely responsible for compliance with all applicable federal, provincial, and local regulations.

WHMIS (Canada)

CLASS A: Compressed gas.

International Regulations

EINECS

Not available.

DSCL (EEC)

This product is not classified according to the EU regulations.

International Lists

No products were found.

16. Other Information

MIXTURES:

When two or more gases or liquefied gases are mixed, their hazardous properties may combine to create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an Industrial Hygienist or other trained person when you make your safety evaluation of the end product. Remember, gases and liquids have properties which can cause serious injury or death.

HAZARD RATING SYSTEM:**HMIS RATINGS:**

HEALTH	3
FLAMMABILITY	0
PHYSICAL HAZARD	2

CONNECTIONS: USE OF ADAPTER IS SUBJECT TO VARIANCE BY CONCERNED EIGL PERSONNEL.

Disclaimer: The opinions expressed herein are those of qualified experts within Ellenbarrie Industrial Gases Limited. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of use of the product are not within the control of Ellenbarrie Industrial Gases Limited, it is the user's obligation to determine the conditions of safe use of the product.

Ellenbarrie Industrial Gases Limited requests the users of this product to study this Material Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify its employees, agents and contractors of the information on this MSDS and any product hazards and safety information, (2) furnish this same information to each of its customers for the product, and (3) request such customers to notify their employees and customers for the product of the same product hazards and safety information.

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