

## Material Safety Data Sheet -Liquid Nitrogen

### Section 1 : PRODUCT AND COMPANY IDENTIFICATION

**Product name:** Nitrogen (Liquid),

**Supplier/ Manufacturer:** TOL Gases, Limited  
P.O Box 911, Dar es Salaam, Tanzania

**Phone:** +255 2860047/9  
**E-Mail:** info@tol-gases.co.tz  
**Website:** www.tolgases.com

### Section 2 : COMPOSITION/ INGREDIENT INFORMATION

C.A.S.	CONCENTRATION %	Ingredient Name	OSHA PEL	ACGIH TLV	OSHA STEL
7727-37-9	> 99	NITROGEN	NONE	SIMPLE ASPHYXIANT	NONE

### Section 3 : HAZARD IDENTIFICATION

**Emergency Overview:** Nitrogen gas is colourless, odourless and non-flammable.

It is non-toxic. The primary health hazard is asphyxiation by displacement of oxygen. Maintain oxygen levels above 19.5%.

Contact with the liquid or cold gas can cause freezing of exposed tissue.

**Route of entry:** Inhalation, skin and eye contact.

#### Effects of acute exposure

**Eye contact:** Can cause frostbite (liquid form).  
Vapor may cause a stinging sensation.

**Skin contact:** Can cause frostbite (liquid form).  
No adverse effects from gas.

**Inhalation:** May cause dizziness.  
Asphyxiant.  
Can cause vomiting.  
May result in unconsciousness.  
May cause excitation, excess salivation, rapid breathing.  
May cause headaches and drowsiness.  
May cause stinging of the nose and throat.

**Ingestion:** Not a likely route of exposure.

**Effects of chronic exposure:** Damage to retinal ganglion cells and central nervous system may occur due to the presence of carbon dioxide.

**Reproductive effects:** Oxygen deficiency during pregnancy has produced developmental abnormalities in humans and experimental animals.

#### Section 4 : FIRST AID MEASURES

**Skin contact:** Remove contaminated clothing.  
Treat for frostbite if necessary by gently warming affected areas.  
Consult a physician.

**Eye contact:** Immediately flush eyes with plenty of water for at least 15 minutes.  
Consult an ophthalmologist.

**Inhalation:** **RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO THIS PRODUCT WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. At a minimum, Self-Contained Breathing Apparatus should be worn.**

Remove victim(s) to fresh air, as quickly as possible. If not breathing qualified personnel should administer artificial respiration. Get medical attention.  
If breathing is difficult, administer oxygen.

**Ingestion:** No first aid should be needed.  
Not considered a potential route of exposure.

#### Section 5 : FIRE FIGHTING MEASURES

**Flammability:** Not flammable.

**Conditions of flammability:** Will not burn.

**Extinguishing media:** Use appropriate extinguishing media for surrounding fire.

**Special procedures:** Self-contained breathing apparatus required.  
Firefighters should wear the usual protective gear.  
Cool fire exposed containers with water spray.  
Personnel should be evacuated, if necessary, to upwind area.  
Remove containers from fire area if without risk.

**Auto-ignition temperature:** Not applicable.

**Flash point (°C), method:** Not applicable.

**Lower flammability limit (% vol):** Not applicable.

**Upper flammability limit (% vol):** Not applicable.

#### Explosion Data

**Sensitivity to mechanical impact:** Avoid impact against container.

**Explosive power:** Closed containers may rupture or explode due to pressure build-up when exposed to extreme heat.

#### Section 6 : ACCIDENTAL RELEASE MEASURES

**Leak/Spill:** Evacuate all non-essential personnel.  
Stop leak without risk.  
Wear gloves and goggles  
Use a self-contained breathing apparatus.

**Directors:**

H. Kitillya – Chairman (Tanzanian), T. Kinabo - (Tanzanian), J. Massawe – (Tanzanian), L. Kitoka (Tanzanian)  
S. Selestine – TR - URT (Tanzanian), Prof. A. Temu – (Tanzanian), Eng. J. Machange – (Tanzanian)

Ventilate area. Monitor the surrounding area for Oxygen level. Oxygen must be at least 19.5% before personnel may be allowed into the area without self-contained breathing apparatus.

If the area must be entered by emergency personnel, self-contained breathing apparatus, Kevlar gloves, and appropriate foot and leg protection must be worn.

## Section 7 : HANDLING AND STORAGE

**Handling procedures and equipment:** Never allow any unprotected part of the body to touch uninsulated pipes or vessels that contain cold fluids. The extremely cold metal of the container will cause moist flesh to stick fast and tear when one attempts to withdraw from it.

Protect system components against physical damage. Check all hoses and transfer equipment before filling them with the liquid. Replace any worn or cut hoses prior to use.

Liquid Nitrogen is extremely cold and is under pressure. A complete hose failure can result in a large release of Nitrogen and violent movement of the hose and associated equipment, which may cause severe injury or death. Special care must be taken when depressurizing and disconnecting hoses.

Use adequate ventilation.

Avoid inhalation.

Never work on a pressurized system.

If there is a leak, close the upstream valve, blow down the system by venting to a safe place, then repair the leak.

**Storage requirements:** Use storage containers, piping, valves and fittings designed for storage and distribution of Liquefied Nitrogen and vaporized (Gaseous) Nitrogen.

## Section 8 : EXPOSURE CONTROLS / PERSONAL PROTECTION

### Precautionary Measures

**Gloves/Type:**

Work gloves

**Respiratory/Type:** Approved respirator.

**Eye/Type:** As per local regulations.

**Footwear/Type:** Safety boots per local regulations.

**Clothing/Type:** Wear adequate protective clothes.

**Other/Type:** Eye wash facility should be in close proximity.  
Emergency shower should be in close proximity.

**Ventilation requirements:** Mechanical ventilation is satisfactory. Ensure oxygen concentration remains above 19.5%.  
Local exhaust at points of emission preferred.

**Exposure limit of material** Simple asphyxiant.

### Section 9 : PHYSICAL AND CHEMICAL PROPERTIES

**Physical state:** Liquid

**Appearance & odor:** Colourless, odourless.

**Odour threshold (PPM):** Odourless.

**Vapor pressure :** Gas@ 70°F (21°C)

**Vapor sp. gravity (air=1):** 0.967 @ 70°F (21°C)

**Volatiles (% by volume)** 100%

**Boiling point :** -195.8°C (760 mmHg)

**Freezing point :** -209.9°C

**Solubility in water (%):** Slight.

### Section 10 : STABILITY AND REACTIVITY

**Chemical stability:** Product is stable.

**Conditions of reactivity:** Heat

**Hazardous polymerization:** Will not occur.

**Incompatible substances:** Lithium.  
Titanium.  
Neodymium.  
Magnesium powder.  
Fatty substances in cryogenic grinding

**Hazardous Decomposition Products:** None

### Section 11 : TOXICOLOGICAL INFORMATION

**LD50 of product:** Not available.

**LC50 of product:** Not available.

### Section 13 : DISPOSAL CONSIDERATIONS

**Waste disposal:** Gas will dissipate in air.