## Section 1 : PRODUCT AND COMPANY IDENTIFICATION

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

**Supplier/ Manufacturer:**

Takoradi Gas Ltd
P.O.Box 1050
Takoradi, Ghana
0540 111 898

**Emergency phone:** 0244 330 594
054 011 1899

0202 860 4051 tgl@tglgh.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 colorless, odorless 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.
Immediately flush with lukewarm water. DO NOT USE HOT WATER. If warm water is not available wrap affected parts in blankers.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:** If large amount is swallowed, get medical attention.

## 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.

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.
Neoprine (insulated gloves)

**Respiratory/Type:** NIOSH/MSHA 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:** Colorless, odorless.

**Odor threshold (PPM):** Odorless.

**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)
-320.4°F

**Freezing point :** -209.9°C
-345.8°F

**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, species & route:** Not available.

**LC50 of product, species & route:** Not available.

## Section 13 : DISPOSAL CONSIDERATIONS

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

## Section 14 : TRANSPORT INFORMATION

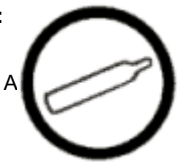
**DOT/ TDG classification:** For bulk liquid shipments
Nitrogen, refrigerated liquid
UN 1977
Class 2.2 (Non-Flammable Gas)


**Emergency Response**

**Emergency Response Guidebook Number:** 0244-330-594
0244-354 394

## Section 15 : REGULATORY INFORMATION

**WHMIS classification:**

A 

**DSL status:**Appears on DSL.

## Section 16 : OTHER INFORMATION

**Definitions and other useful data:**

**CAS #**: The Chemical Abstract Service Number which uniquely identifies each constituent.

**ACGIH** - American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits.

**TLV -** Threshold Limit Value - an airborne concentration of a substance which represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect.

**OSHA** - U.S. Occupational Safety and Health Administration.

**PEL -** Permissible Exposure Limit - The same value as a TLV, except it is enforceable by OSHA.

**IDLH -** Immediately Dangerous to Life and Health **-** A concentration from which one can escape within 30-minutes without suffering permanent injury.

**NATIONAL FIRE PROTECTION ASSOCIATION:**
**Health Hazard Rating Scale (Blue):**
**0** (material that on exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials);
**1** (materialsthat on exposure under fire conditions could cause irritation or minor residual injury);
**2** (materials that on intense or continued exposure under fire conditions could cause temporary incapacitation or possible residual injury);
**3** (materials that can on short exposure could cause serious temporary or residual injury);
**4** (materials that under very short exposure could cause death or major residual injury). **Flammability Hazard Rating Scale (Red)**:
**0** (minimal hazard);
**1** (materials that require substantial pre-heating before burning);
**2** (combustible liquid or solids; liquids with a flash point of 38-93°C [100-200°F]);
**3** (Class IB and IC flammable liquids with flash points below 38°C [100°F]);
**4** (Class IA flammable liquids with flash points below 23°C [73°F] and boiling points below 38°C [100°F].
**Reactivity Hazard Rating Scale(Yellow):**
**0** (normally stable);
**1** (material that can become unstable at elevated temperatures or which can react slightly with water);
**2** (materials that are unstable but do not detonate or which can react violently with water);
**3** (materials that can detonate when initiated or which can react explosively with water);
**4** (materials that can detonate at normal temperatures or pressures).

**TOXICOLOGICAL INFORMATION:**

Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented.
Definitions of some terms:
**LD50** -Lethal Dose (solids & liquids) which kills 50% of the exposed animals;
**LC50** - Lethal Concentration (gases) which kills 50% of the exposed animals;
**ppm** concentration expressed in parts of material per million parts of air or water;
**mg/m3** concentration expressed in weight of substance per volume of air;
**mg/kg** quantity of material, by weight.

**REGULATORY INFORMATION:**

**EPA** is the U.S. Environmental Protection Agency.

**WHMIS** is the Canadian Workplace Hazardous Materials Information System.

**DOT** and **TC** are the U.S. Department of Transportation and the Transport Canada, respectively, which assign DOT and **TDG** (Transportation of Dangerous Goods) identification numbers, hazard classifications, and proper shipping name and shipping label information. This material is hazardous as defined by 49 CFR 172.101 of the US Department of Transportation and Dangerous Goods as defined by Transport Canada Transportation of Dangerous Goods Regularions.

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