PUREGAS	SAFETY DATA SHEET	Version: 4 Revision date: 2025-04-25
	Nitrogen Bulk & Compressed	PG-SDS-11

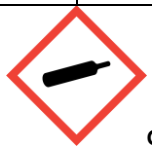
This SDS conforms to the Globally Harmonised System (GHS), South African Regulations on Hazardous Chemical Agents, and SANS 10234, SANS 11014 & SANS 10228.

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product name	Nitrogen - High Purity, Technical, Ultra High Purity, Instrument Grade
Chemical Name	Nitrogen
Other means of identification	N2, Gaseous Nitrogen, GAN
Recommended Intended Purpose	The product is used in various applications and may include - Technical processes, the Food Industry, and the Medical Industry. Always use as intended.
Company Information	**Puregas (Pty) Ltd** PO Box 123884, Alrode, 1451, Gauteng, South Africa **Tel:** (011) 903 9760 **Fax:** (011) 903 9766 **Cellphone:** 082 889 6946 (1st) 082 885 7475 (2nd) **Email:** info@puregas.co.za Website: www.puregas.co.za
Emergency Telephone	0800 172 743 Rapid Spill Response - 24 hours, 7 days a week

SECTION 2. HAZARDS IDENTIFICATION

Classification of the substance - GHS classification as published through ECHA

Hazard Classification	Category	Hazard Statement	
Gases under pressure (Comp.) Gases under Pressure (Ref. Liq)	2.2 2.2	H280 H281	Contains gas under pressure; may explode if heated Contains refrigerated gas, may cause cryogenic burns or injury
Hazard Pictograms	 **GHS04**		
Signal Word	**Warning**		

Precautionary Statements

General:	P101 P102 P103	If medical advice is needed, have product container or label at hand Keep out of reach of children Read carefully and follow all instructions
Prevention	P202 P280	Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection.
Response	P304 + P340 + P313	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Get medical advice/attention
Storage	P271 P403	Use and store only outdoors or in a well-ventilated place. Store in a well-ventilated place.
Disposal		None
Main Hazard	Liquid nitrogen is a colourless, odourless, extremely cold liquid and gas under pressure. It can cause rapid suffocation when concentrations are sufficient to reduce oxygen levels below 19.5%. Self-contained breathing apparatus (SCBA) may be required. Contact with liquid or cold vapours can cause severe frostbite. Cold vapours in the air will appear as a white fog due to the condensation of moisture. While this may indicate the presence of the gas it should not be used	

	to determine its concentration in the atmosphere. Oxygen concentrations must be monitored in the release area. All cryogenic liquids produce large volumes of gas when they vaporize. One volume of liquid nitrogen will expand to produce 696.5 equivalent volumes of gas.
Flammability	Non-Flammable
Health Hazard	Inhalation of nitrogen in excessive concentrations can result in dizziness, nausea, vomiting, loss of consciousness, and death.
Other Hazards	Nitrogen acts as a simple asphyxiant death that may result from errors in judgment, confusion, or loss of consciousness which prevents self-rescue. At low oxygen concentrations, unconsciousness and death may occur in seconds without warning. May cause frostbite or freezing of the skin.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance

CAS No	EC No	Name	
7727-37-9	231-783-9	Nitrogen, Compressed	
UN Number - Compressed:	1066	**UN Number - Liquified**	1977

See Section 8 for Exposure Guidelines and Section 15 for Regulatory Classifications.

SECTION 4. FIRST AID MEASURES

In case of eye contact	For exposure to liquid, immediately warm the frostbite area with warm water (not to exceed 40ºC)
In case of skin contact	Remove any clothing that may restrict circulation to the frozen area. Do not rub frozen parts as tissue damage may result. As soon as practical place the affected area in a warm water bath which has a temperature not to exceed (40ºC)? Never use dry heat. Call a physician as soon as possible.
In the case of inhalation	Prompt medical attention is mandatory in all cases of overexposure to Nitrogen. Rescue personnel should be equipped with self-contained breathing apparatus. Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be removed to an uncontaminated area and given mount-to-mouth resuscitation and supplemental oxygen.
In case of ingestion	Ingestion is not considered a potential route of exposure.
Treatment (Advice to doctor)	None

SECTION 5. FIRE-FIGHTING MEASURES

Fire / Explosion hazard:	As Nitrogen is an inert gas, it does not contribute to a fire but could help with the extinguishing by reducing the oxygen content of the air by dilution to below the level to support combustion
Special hazards arising from the substance	Nitrogen does not support life. It can act as a simple asphyxiant by diluting the concentration of oxygen in the air below the levels to support life. If possible, shut off the source of excess Nitrogen. Evacuate area. All cylinders should be removed from the vicinity of the fire. Cylinders that cannot be removed should be cooled with water from a safe distance. Cylinders that have been exposed to excessive heat should be clearly identified and returned to the supplier
Special protective equipment for	Firefighters should wear self-contained breathing apparatus. Safety gloves

firefighters	and shoes, or boots, should be worn when handling cylinders Nitrogen is lighter than air and disperses rapidly in the atmosphere. Care should be taken when entering a potentially oxygen-deficient environment. If possible, ventilate the affected area

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions	Do not enter any area where nitrogen has been spilled unless tests have shown that it is safe to do so. Evacuate all personnel from the affected area. Increase ventilation to release area and monitor oxygen level. Use appropriate protective equipment. To increase the rate of vaporization spray large amounts of water onto the spill from an upwind position. Do not spray water directly at the leak. If the leak is from the container or its valve, call the Puregas emergency telephone number.
Environmental precautions	Nitrogen does not pose a hazard to the environment
Methods and material for containment and cleaning up	Shut off the source of escaping nitrogen. Ventilate the area Evacuate the area. Shut off the source of the spill if this can be done without risk. Restrict access to the area until completion of the clean-up procedure. Ventilate the area using forced draught if necessary.

SECTION 7. HANDLING AND STORAGE

Requirements for storage rooms and vessels	Store and use with adequate ventilation. Do not store in a confined space. Cryogenic containers are equipped with pressure relief devices to control internal pressure. Under normal conditions, these containers will periodically vent product. Do not plug, remove, or tamper with the pressure relief device.
Precautions for safe handling	Never allow any unprotected part of the body to touch un-insulated pipes or vessels that contain cryogenic fluids. The extremely cold metal will cause the flesh to stick fast and tear when one attempts to withdraw from it. Use a suitable hand truck for container movement. Containers shall be handled and stored in an upright position. Do not drop, tip, or roll containers on their sides. Do not remove or interchange connections. If the user experiences any difficulty operating the container valve or with container connections discontinue use and contact the supplier. Use the proper connection. Do not use adapters. Use piping and equipment adequately designed to withstand pressures to be encountered. Use a check valve or other protective apparatus in any line or piping from the cylinder to prevent reverse flow. To prevent cryogenic liquids or cold gas from being trapped in piping between valves the piping shall be equipped with pressure relief devices. Only transfer lines designed for cryogenic liquids shall be used. Some metals such as carbon steel may become brittle at low temperatures, will easily fracture, and should not be used with cryogenic liquids. It is recommended that all vents be piped to the exterior of the building. Some metals such as carbon steel, may become brittle and fracture at low temperatures.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

No exposure limits are available	
Respiratory protection	Self-contained breathing apparatus (SCBA) or positive pressure airline with a mask and escape pack should always be worn when entering an area where

	oxygen depletion may have occurred. Respirators will not function
Hand protection	Those working with liquid nitrogen should wear approved insulation gloves or safety gloves
Eye protection	Those working with liquid nitrogen should wear safety glasses and a face shield
Skin and body protection	Wear protective clothing, as required by use conditions to prevent any skin contact with liquid nitrogen. Cuffless trousers should be worn outside high-topped shoes. Safety shoes are recommended for those handling cylinders of gases.
Engineering Controls	Engineering control measures are preferred to reduce exposure to Oxygen-depleted atmospheres. General methods include forced-draught ventilation separate from other exhaust ventilation systems. Ensure that sufficient fresh air enters at or near floor level.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	Colourless liquified gas
Colour	Colourless
Odour	odourless
Taste	Tasteless
pH	None
Melting point	- 209.9 °C
Boiling / Freezing point	- 195.8 °C
Auto-ignition temperature	Not available
Decomposition temperature	Not available
Flammability (solid, gas)	Not flammable
Density	Gas – at 21.1°C and 1 Atm : 0.072 lbs/cu ft (1.153 kg/m3)
Solubility : Water	Vol/Vol at 0 °C : 0.023

SECTION 10. STABILITY AND REACTIVITY

Reactivity	Possible
Conditions to avoid	The dilution of the oxygen concentration in the atmosphere to levels that cannot support life. Never use cylinders as rollers or supports or for any other purpose than the storage of Nitrogen. Never expose cylinders to excessive heat, as this may cause a sufficient build-up of pressure to rupture the cylinders.
Incompatible materials	As Nitrogen is inert it may be contained in systems constructed of any of the common metals which have been designed to safely withstand the pressures involved
Chemical Stability	Stable under normal conditions.
Possibility of Hazardous reactions	No data available on arc welding and cutting originate from the volatilization, reaction, and oxidization of the material being worked.
Hazardous decomposition products.	None

SECTION 11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute toxicity:	Not classified
Germ cell mutagenicity:	Not classified
Carcinogenicity:	Not classified
Reproductive toxicity:	Not classified

SECTION 12. ECOLOGICAL INFORMATION

No ecological damage was caused by this product.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste treatment methods:
For emergency disposal, discharge slowly to the atmosphere in a well-ventilated area or outdoors.
Packaging: The disposal of cylinders must only be handled by the gas supplier

SECTION 14. TRANSPORT INFORMATION

UN Pictogram

Land and inland navigation transport ADR/RID
UN No. 1066 (compressed) and UN No. 1977 (liquified), Shipping Name Nitrogen, Class 2.2, Subsidiary Risk Non-flammable, non-toxic gases, Hazchem Warning 2 Non-flammable Gas.

Marine transport IMDG
MDG 1066/1977, Shipping Name Nitrogen, Class 2.2, Subsidiary Risk Non-flammable, non-toxic gases, Label Non-flammable Gas.

Air transport ICAO/IATA-DGR
ICAO/IATA Code 1066/1977, Class 2.2

Special precautions for user
The protective measures listed in Sections 6, 7, and 8 of the Safety Data Sheet have to be considered.

SECTION 15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific to the substance or mixture:
Occupational Health and Safety Act, Hazardous Chemical Agents Regulations
SANS 11014:2010 Edition 1
SANS 10228:2012 Edition 6
SANS 10234:2019 Edition 2
SUPPLEMENT TO SANS 10234 Edition 1
National Road Traffic Act
Dangerous Goods Regulations

SECTION 16. OTHER INFORMATION

SELECTED BIBLIOGRAPHY

1. Data sheets as supplied by various Suppliers and Manufacturers
2. Emergency Response Handbook - Annex A of SABS 0232-3
3. GHS Purple booklet
4. ECHA
5. Occupational Health and Safety Act, Hazardous Chemical Agents Regulations
6. SANS 11014:2010 Edition 1

7. SANS 10228:2012 Edition 6
8. SANS 10234:2019 Edition 2
9. SUPPLEMENT TO SANS 10234 Edition 1
10. National Road Traffic Act
11. Dangerous Goods Regulations

R/S-phrases
R20 – Harmful by inhalation
R44 – Risk of explosion if heated under confinement
S2 – Keep out of reach of children
S9 – Keep container in a well-ventilated place
S15 – Keep away from heat
S27 – Wear suitable gloves
S38 – In case of insufficient ventilation, wear suitable respiratory equipment
S51 – Use only in well-ventilated areas

Disclaimer:
This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety, and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.