PUREGAS	SAFETY DATA SHEET	Version: 4 Revision date: 2025-04-24
	Oxygen Bulk & Compressed	PG-SDS-08

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	Oxygen - Instrument Grade, Instrument "O" Grade, Ultra High Purity
Chemical Name	Oxygen
Other means of identification	Molecular oxygen, Oxygen, Oxygen compressed
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	
Oxidizing gases		H270	May cause or intensify fire: oxidizer
Gases under pressure (Comp.)	2.2	H280	Contains gas under pressure; may explode if heated
Gases under Pressure (Ref. Liq)	2.2	H281	Contains refrigerated gas, may cause cryogenic burns or injury

Hazard Pictograms

GHS03

GHS04

Signal Word: **Danger**

Precautionary Statements

General:	P101	If medical advice is needed, have product container or label at hand
	P102	Keep out of reach of children
	P103	Read carefully and follow all instructions
Prevention	P202	Do not handle until all safety precautions have been read and understood.
	P220	Keep/Store away from combustible materials, clothing
	P244	Keep reduction valves/valves and fittings free from oil and grease.
	P280	Wear protective gloves/protective clothing/eye protection/face protection.
Response	P370+P376	In case of fire: Stop leak if safe to do so
Storage	P271 + P403	Use and store only outdoors or in a well-ventilated place
Disposal		None
Main Hazard	Oxygen is non-flammable, but readily supports combustion. Never permit oil, grease or other readily combustible substance to come into contact with high concentrations of oxygen	

Flammability	Not flammable, however, Oxidiser may intensify fires
Health Hazard	Central Nervous system toxicity includes dizziness, convulsions, and loss of consciousness after only 2-3 hours of exposure to pure oxygen at 2 or more atmospheres e.g. sports and deep-sea diving. Essentially non-toxic
Other Hazards	Adults can satisfactorily breathe pure oxygen for extended periods at 0.33 atm, or at 1 atm for several days at least 5 hours a day. However, irritation of mucous membranes may occur when 100% oxygen is inhaled continuously for several hours. Chest pains and cough can result from breathing O_2 at 1 atm for 8 to 24 hours or 2 atm for 2 to 3 hours or from an atmosphere of 60% oxygen for several days. A variety of central nervous system effects can occur from breathing oxygen at partial pressures greater than 2 atm, including dizziness, impaired coordination, visual and hearing disturbances, and seizures. Contact with liquid can cause severe frostbite/freeze burns. Prolonged breathing of very cold atmospheres can produce lung damage. Prolonged exposure to cold areas can result in hypothermia. Primarily entry: Inhalation.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance

CAS No	EC No	Name	%
7782-44-7	231-956-9	Oxygen, Compressed	99.5 – 100
UN Number - compressed:	1072	**UN Number - liquified**	1073

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

SECTION 4. FIRST AID MEASURES

In case of eye contact	Not applicable. Non-irritating gas.
In case of skin contact	Not applicable. Non-irritating gas.
In case of ingestion	Ingestion is not an applicable route of exposure to gases
In the case of inhalation	If symptoms are experienced, remove the source of contamination or move the victim to fresh air and obtain medical advice.
Treatment (Advice to doctor)	Remove the victim to a warm (not hot) area. Remove contaminated clothing, if possible. Wrap the person in blankets. Slowly restore body temperature. Get medical help.

SECTION 5. FIRE-FIGHTING MEASURES

Fire / Explosion hazard:	As oxygen is non-flammable, but strongly supports combustion, the correct type of extinguisher should be used depending on the combustible material involved. If possible, shut off the source of escaping oxygen. All cylinders should be removed from the fire. Cylinders that cannot be removed should be cooled with water from a safe distance
Special hazards arising from the substance	Oxygen vigorously accelerates combustion. Materials that would not normally burn in air could combust vigorously in atmospheres having high concentrations of oxygen.
Special protective equipment for fire-fighters	Safety goggles, gloves, and safety shoes should be worn when handling cylinders.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions	Workers handling liquid oxygen should wear safety glasses, clean approved insulated gloves, and other approved protective clothing as required to prevent skin contact. Gloves and protective clothing must be of a material that is resistant to ignition in contact with liquid oxygen; leather gloves and safety shoes have been recommended. Safety shoes and safety glasses are recommended when handling cylinders of compressed gas. Clothing that has been overexposed or contaminated with oxygen should be removed and considered unsafe (highly flammable) to wear for at least 30 minutes. If oxygen-enriched clothing catches fire, extinguish the flame under a safety shower; a fire blanket may not be effective in this situation. Use a continuous water spray to soak the clothing of a rescuer who must operate in an oxygen-enriched fire area.
Environmental precautions	As gas is heavier than air, pockets of oxygen-enriched air could occur. These could lead to the fire spreading rapidly. If possible ventilate the affected area
Methods and material for containment and cleaning up	Notify safety personnel of leaks or spills. Evacuate all personnel from the danger area. Provide optimum exhaust ventilation. Shut off the source of the oxygen leak if you can do so without risk. Remove the source of heat, and ignition, and, if feasible, separate combustibles from the leak. Small leaks in an oxygen system in an enclosed, unventilated area can build up a hazardous oxygen level. To increase the rate of controlled evaporation of spilled liquid oxygen (when desired) spray the spill with large amounts of water (This may generate a fog and reduce visibility)

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling and storage rooms and vessels	Do not allow cylinders to slide or come into contact with sharp edges. Cylinders of oxygen should not be stored near cylinders of acetylene or other combustible gases. Oxygen cylinders may be stacked horizontally provided that they are firmly secured at each end to prevent rolling. Prevent dirt, grit of any sort, oil, or any other lubricant from entering the cylinder valves, and store cylinders well clear of any corrosive influence e.g. battery acid. Compliance with all relevant legislation is essential. Use a “first in – first out” inventory system to prevent full cylinders from being stored for excessive periods of time Keep out of reach of children. NO SMOKING in areas of storage. Do not perform any welding, cutting, soldering, drilling, or other hot work on an empty vessel, container, or piping until all material has been cleared. No contact with incompatible materials such as oil and grease. Do not open the cylinder if damaged. Never use excessive force when opening. Make sure valves on gas cylinders are fully opened when gas is used. Open and shut the valve at least once a day, while the cylinder is in use to avoid “freezing”. Make sure cylinders are labeled clearly. Do not lift cylinders by the cap or with a lifting magnet. Shut flow off at the cylinder valve and not just at the regulator after se. Regularly check cylinders for evidence of corrosion or leak. Keep empty cylinders under slightly positive pressure. Have suitable emergency equipment for fires, spills, and leaks readily available. Practice good housekeeping. Maintain handling equipment. Comply with applicable regulations.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

No exposure limits are available	
Respiratory protection	No specific guidelines are available.

Hand protection	Workers handling liquid oxygen should wear clean approved insulated gloves (Gloves must be of a material that is resistant to ignition on contact with liquid oxygen; leather gloves have been recommended)
Eye protection	Workers handling liquid oxygen should wear safety glasses.
Skin and body protection	Workers should wear approved protective clothing as required to prevent skin contact. (Protective clothing must be of a material that is resistant to ignition on contact with liquid oxygen; leather safety shoes have been recommended) Clothing that has been overexposed or contaminated with oxygen should be removed and considered unsafe (highly flammable) to wear for at least 30 minutes. If oxygen-enriched clothing catches fire, extinguish the flame under a safety shower; a fire blanket may not be effective in this situation. Use a continuous water spray to soak the clothing of a rescuer who must operate in an oxygen-enriched fire area
Engineering Controls	Where oxygen may be released, providing adequate ventilation to prevent excessive oxygen enrichment of the workplace atmosphere (holding at < 3% O2 by volume) is recommended for fire safety. Personnel who have been exposed to high concentrations of oxygen should stay in a well-ventilated or open area for 15 minutes before going into a confined space or near an ignition source.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	Colourless liquified gas
Colour	Colourless
Odour	odourless
Taste	Tasteless
pH	N/A
Melting point	- 219 °C
Boiling point	- 183 °C
Auto-ignition temperature	Not available
Flammability (solid, gas)	Not applicable
Vapour pressure	@ -199°C mmHg : ca 100
Density	(Air = 1) 1.1
Solubility : Water	cm/100g @ 25°C : 3.16
Solubility - coefficient	(oil/water) : Log P(oct) = 0.65

SECTION 10. STABILITY AND REACTIVITY

Reactivity	No additional information available
Chemical Stability	Stable under normal conditions.
Possibility of Hazardous reactions	Violently oxidizes organic material.
Conditions to avoid	The build-up of oxygen-enriched atmospheres, as, depending on temperature, oxygen reacts with all of the elements, except the inert gases, to form oxides These reactions can sometimes be violent, as with highly combustible materials such as oil and grease. Never use cylinders as rollers or supports or for any other purpose than the storing of oxygen. Never expose cylinders to excessive heat, as this may cause a sufficient build-up of pressure to rupture the cylinders.
Incompatible materials	Since dry oxygen is non-corrosive most materials of construction are suitable. Avoid all flammable materials.

Hazardous decomposition products.	Not known

SECTION 11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute toxicity:	Inhalation: Numerous animal studies demonstrate that high oxygen concentrations or pressures cause respiratory, central nervous system (CNS) and visual effects. Mortality in animals is generally related to lung damage and pulmonarye dema
Germ cell mutagenicity:	High oxygen concentrations at atmospheric pressure caused chromosomal aberrations and mutations in Chinese hamster lung cells. A mutagenic effect of 70 to 95% oxygen was reported in Syrian hamster embryo fibroblasts. 95% oxygen/1% carbon dioxide induced chromosomal aberrations and sister chromatid exchanges in Chinese hamster ovary cells.
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:

Remove waste containers or leaking cylinders to an open outdoor area away from combustibles and allow the oxygen to discharge at a moderate rate. Tag a leaking cylinder to indicate a defect, close the valve, and return the cylinder to its supplier

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. 1072 9compressed & UN No. 1073 (liquified), Shipping Name Oxygen, Class 2.2, Subsidiary Risk: Oxidizing agent, Hazchem Warning: 2.2 - Non-flammable gas, 5.1 - Oxidizer.

Marine transport IMDG

MDG 1072, Shipping Name Oxygen, Class 2.2, Subsidiary Risk: Oxidizing agent, Label: Non-flammable, non-toxic gas.

Air transport ICAO/IATA-DGR

ICAO/IATA Code 1072, Class 2.2, Packing Group: - Packaging instructions - Cargo: allowed - Passenger: allowed

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 :

R8 – Contact with combustible material may cause fire
R37 – Irritating to respiratory system
R48 - Danger of serious damage to health by prolonged exposure
S2 – Keep out of reach of children
S9 – Keep container in a well-ventilated place
S15 – Keep away from heat
S21 – When using do not smoke
S27 – Take off immediately all contaminated clothing

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.