Medical Oxygen

Section 1, Identification

Product Name : Oxygen, compressed
Formula : O2
Other means of identification : Compressed oxygen, medical oxygen, pure oxygen, Aviator's Breathing oxygen
Product use : Medical applications
Supplier's details : WKS INDUSTRIAL GAS PTE LTD
22 Tuas Avenue 10
Singapore 639145
T-6898 2292, F-6898 2202
info@wks.com.sg / www.wks.com.sg

Section 2, Hazard(s) identification

Classified as Hazardous under OSHA Hazard Communication Standard (29 CFR 1910.1200)

GHS Classification : Oxidizing Gases, Category 1.
: Gases under pressure – Compressed gas.

Hazard pictogram(s) :

Signal word : Danger.
Hazard statement(s) : H270 May cause or intensify fire; oxidizer.
: H280 Contains gas under pressure; may explode if heated.
Precautionary statement(s) : P220 Keep/Store away from clothing/…/combustible materials.
: P244 Keep reduction valves free from grease and oil.
: P370+P376 In case of fire, stop leak if safe to do so.
: P271 Use only outdoors or in a well-ventilated area.
: P403 Store in a well-ventilated area.
Disposal : Not applicable.
Hazards not otherwise classified : None known.

Hazchem code : 2S

H S code : 28044000

Section 3, Composition/information on ngredients

Name : Oxygen.
CAS No. : 7782-44-7
% : >99.5%

Section 4, First-aid measures

Description of First-Aid measures

Inhalation : Move victim to fresh air and keep at rest in a comfortable position. Seek medical advice/attention if required.
Skin contact : Adverse effects not expected from this product.
Eye contact : Adverse effects not expected from this product. In case of eye irritation, rinse immediately with plenty of water. Seek medical attention if needed.
Ingestion : Ingestion is considered unlikely as this product is in gas form.

Most important symptoms and effects, both acute and delayed

Continuous inhalation of 80% or more oxygen for more than a few hours may cause nausea, sore throat, dizziness, breathing difficulty and chest pain.

Indication of any immediate medical attention and special treatment needed

Treatment for hyperoxia.

Section 5, Fire-fighting measures

Extinguishing media

Use an extinguishing agent appropriate for surrounding fire. E.g. water is the preferred.

Special hazards arising from the substance or mixture

Oxidizing agent. Support combustion and contact with flammable materials may cause fire or explosion.

Advice for firefighters

Evacuate all personnel. Heat from fire will increase temperatures in cylinder and may cause cylinder to rupture. Cool cylinders or containers by applying water from a safe distance. Stop flow of gas if safe to do so. Remove cylinders from path of fire if safe to do so. Use self-contained breathing apparatus and protective clothing.

Section6, Accidental release measures

Personal precautions, protective equipment and emergency procedures

Non-emergency personnel	:	Evacuate area. Eliminate ignition sources. Ensure adequate air ventilation and wear appropriate respirator when ventilation is inadequate. Wear PPE.
For emergency responders	:	If specialised clothing is required to deal with spillage, refer to Section 8 on suitable and unsuitable materials. See also information in “Non-emergency personnel”.
Environmental precautions	:	Try to stop release. Prevent from entering sewers, basement, work pits or any place where its accumulation can be dangerous.

Methods and materials used for containment cleaning up

Stop leak if without risk. Carefully move cylinder to well-ventilated remote area and allow discharge if safe to do so. Use spark-proof tools and explosion-proof equipment.

Section 7, Handling and storage

Precautions for safe handling

Contain under pressure. Do not drag, roll, drop or slide cylinder. Keep cylinder valve free from oil or grease. Do not puncture or incinerate cylinder. Open valve slowly and close after use. Use equipment rated for cylinder pressure. Keep cylinders in well-ventilated place.

Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store cylinders only where temperature will not exceed 52°C. Keep cylinder tightly closed until ready for use. Keep cylinders away from acids, reducing agents, alkalies and combustibles. Post “No Smoking or Open Flames” signs in storage and use areas.

Section 8, Exposure controls/personal protection

Control parameters

Exposure standards	:	Not established.
Biological limits	:	Not established.

Exposure controls

Engineering controls	:	No special precautions under normal handling of product. Avoid oxygen rich (>23.5%). Provide adequate exhaust ventilation.

Individual protection measures

PPE

Eye / face	:	Safety glasses with side shields.
Hand	:	Gloves.
Body	:	Safety boots.
Respiratory	:	When a risk assessment indicates respirator use, use a properly fitted, air-purifying or air-fed respirator complying with an approved standard.

Section 9, Physical and chemical properties

Physical state	:	Gas.
Colour	:	Colourless.
Odour	:	Odourless.
Odour threshold	:	Not available.
Molecular mass	:	32 g/mol
pH	:	Not applicable.
Melting point	:	-218.8°C
Boiling point	:	-183°C
Critical temperature	:	-118.4°C
Critical pressure	:	729.1 psia
Flash point	:	Not applicable.
Evaporation rate	:	Not applicable.
Flammability (solid, gas)	:	Non-flammable.
Upper/lower explosive limits	:	Not available.
Vapour pressure	:	Not available.
Vapour density	:	Not available.
Relative density	:	1.1 (Air = 1)
Solubility (water)	:	39mg/l
Oxidizing properties	:	Oxidising gas.
Partition coefficient: n-octanol/water	:	Not available.
Auto-ignition temperature	:	Not available.
Decomposition temperature	:	Not available.
Viscosity	:	Not available.

Section 10, Stability and reactivity

Reactivity	:	No additional information available.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	May cause fire if in contact with combustible materials.
Conditions to avoid	:	Avoid sparks, heat, open flames and other ignition sources.
Incompatible materials	:	Oil, grease, combustible materials & reducing agents.
Hazardous decomposition products	:	None.

Section 11, Toxicological information

Acute toxicity	:	Not classified.
Corrosion/irritation	:	Not available.
Sensitization	:	Not available.
Mutagenicity	:	Not available.
Carcinogenicity	:	Not available.
Reproductive toxicity	:	Not available.
STOT (single exposure)	:	Not available.
STOT (repeated exposure)	:	Continuous inhalation of concentrations higher than 75% may cause nausea, dizziness, respiratory difficulty and convulsion.
Aspiration hazard	:	Not classified.

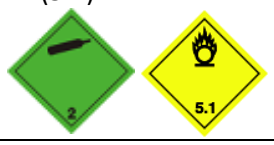
Section 12, Ecological information

Toxicity : No ecological damage caused by this product.
Persistence and degradability : Not available.
Bioaccumulative potential : Not available.
Mobility in soil : Not available.
Other adverse effects : No known effects from this product.

Section 13, Disposal considerations

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

Section 14, Transport information

	Land Transport	Sea transport	Air Transport
UN number	UN1072	UN1072	UN1072
UN proper shipping name	OXYGEN, COMPRESSED	OXYGEN, COMPRESSED	OXYGEN, COMPRESSED
Transport hazard class(es)	2.2 (5.1) 	2.2 (5.1) 	2.2 (5.1) 
Packing group	None allocated	None allocated	None allocated
Environmental hazards	No	No	No

Additional information : Ensure cylinder is separated from driver's compartment. Ensure driver is aware of the potential hazards of product and know what to do in the event of an accident or an emergency. Ensure that cylinders are properly secured and valves are closed.

Section 15, Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture : Ensure all local regulations or legislations are observed.

Section 16, Other information

Ensure operator / user understand the hazard of oxygen enrichment. Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.

R8 : Contact with combustible materials may cause fire.
H270 : May cause or intensify fire; oxidiser.
H280 : Contains gas under pressure; may explode if heated.
S2 : Keep out of reach of children.
S17 : Keep away from combustible material.

Whilst all due care has been taken in the preparation of this document and since the company shall have no control of the use of the product described herein, the Company assumes no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person because of their reliance on the information contained in this SDS.