

Oxygen (refrigerated)**ALSA097B**

2.2 : Non flammable, non toxic gas.



5.1 : Oxidizing substances.

Danger**SECTION 1. Identification of the substance/mixture and of the company/undertaking****Product identifier**

Trade name : Oxygen (refrigerated)
SDS Nr : ALSA097B
Chemical description : Oxygen (refrigerated)
CAS No :007782-44-7
EC No :231-956-9
Index No :008-001-00-8
Registration-No. : Listed in Annex IV / V REACH, exempted from registration.
Chemical formula : O₂

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses : Industrial and professional. Perform risk assessment prior to use. Laboratory use
Contact supplier for more uses information

Details of the supplier of the safety data sheet

Company identification : AIR LIQUIDE (PTY) LTD
Crn Vereeniging Road & Andre Marais Street
Alrode, Alberton
Gauteng SOUTH AFRICA
Tel. : (011) 389 7000
E-Mail address (competent person) : sales@airliquide.co.za

Emergency telephone number

Emergency telephone number : (011) 389 7000

SECTION 2. Hazards identification**Classification of the substance or mixture****Hazard Class and Category Code Regulation EC 1272/2008 (CLP)**

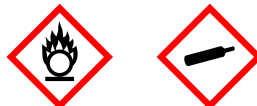
• Physical hazards : Oxidizing gases - Category 1 - Danger - (CLP : Ox. Gas 1) - H270
Gases under pressure - Refrigerated liquefied gas - Warning - (CLP : Press. Gas) - H281

Classification EC 67/548 or EC 1999/45

: O; R8

Label elements**Labelling Regulation EC 1272/2008 (CLP)**

• Hazard pictograms



Oxygen (refrigerated)

ALSA097B

SECTION 2. Hazards identification (continued)

- Hazard pictograms code : GHS03 - GHS04
- Signal word : Danger
- Hazard statements : H270 - May cause or intensify fire; oxidizer.
H281 - Contains refrigerated gas; may cause cryogenic burns or injury.
- Precautionary statements
 - Prevention : P244 - Keep valves and fittings free from oil and grease
P220 - Keep away from combustible materials.
P282 - Wear cold insulating gloves, face shield, eye protection.
 - Response : P336+P315 - Thaw frosted parts with lukewarm water. Do not rub affected area. Get immediate medical advice / attention.
P370+P376 - In case of fire : Stop leak if safe to do so.
 - Storage : P403 - Store in a well-ventilated place.

Other hazards

: None.

SECTION 3. Composition/information on ingredients

Substance / 3.2. Mixture

Substance.

Substance name	Contents	CAS No	EC No	Index No	Registration no	Classification
Oxygen (refrigerated)	100 %	7782-44-7	231-956-9	008-001-00-8	* 1	O; R8 ----- Ox. Gas 1 (H270) Press. Gas (H281)

Contains no other components or impurities which will influence the classification of the product.

* 1: Listed in Annex IV / V REACH, exempted from registration.

* 2: Registration deadline not expired.

* 3: Registration not required: Substance manufactured or imported < 1t/y

Full text of R-phrases see chapter 16. Full text of H-statements see chapter 16

SECTION 4. First aid measures

Description of first aid measures

- Inhalation : Remove victim to uncontaminated area.
- Skin contact : In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.
- Eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes.
- Ingestion : Ingestion is not considered a potential route of exposure.

Most important symptoms and effects, both acute and delayed

: Continuous inhalation of concentrations higher than 75% may cause nausea, dizziness, respiratory difficulty and convulsion.

Indication of any immediate medical attention and special treatment needed

: None.

Oxygen (refrigerated)**ALSA097B****SECTION 5. Fire-fighting measures****Extinguishing media****Extinguishing media****- Suitable extinguishing media** : All known extinguishants can be used.**Special hazards arising from the substance or mixture****Specific hazards** : Exposure to fire may cause containers to rupture/explode.
Supports combustion.**Hazardous combustion products** : None.**Advice for fire-fighters****Specific methods** : If possible, stop flow of product.
Coordinate fire measure to the surrounding fire. Cool endangered containers with water spray jet from a protected position. Do not empty contaminated fire water into drains.
If leaking do not spray water onto container. Water surrounding area (from protected position) to contain fire.**Special protective equipment for fire fighters** : None.**SECTION 6. Accidental release measures****Personal precautions, protective equipment and emergency procedures**: Try to stop release.
Monitor concentration of released product.
Ensure adequate air ventilation.
Eliminate ignition sources.
Evacuate area.
Use protective clothing.
Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.**Environmental precautions**

: Try to stop release.

Methods and material for containment and cleaning up: Liquid spillages can cause embrittlement of structural materials.
Ventilate area.
Keep area evacuated and free from ignition sources until any spilled liquid has evaporated. (Ground free from frost).**Reference to other sections**

: See also sections 8 and 13.

SECTION 7. Handling and storage**Precautions for safe handling****Safe use of the product**: Only experienced and properly instructed persons should handle gases under pressure.
The product must be handled in accordance with good industrial hygiene and safety procedures.
Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
Use no oil or grease.
Do not smoke while handling product.
Keep equipment free from oil and grease.
Use only oxygen approved lubricants and oxygen approved sealings.
Use only with equipment cleaned for oxygen service and rated for cylinder pressure.
Ensure the complete gas system was (or is regularly) checked for leaks before use.**Safe handling of the gas receptacle**: Refer to supplier's container handling instructions.
Suck back of water into the container must be prevented.
Open valve slowly to avoid pressure shock.
Do not allow backfeed into the container.

Oxygen (refrigerated)**ALSA097B****SECTION 7. Handling and storage (continued)**

Never attempt to repair or modify container valves or safety relief devices.
Damaged valves should be reported immediately to the supplier.
Keep container valve outlets clean and free from contaminants particularly oil and water.
Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment.
Close container valve after each use and when empty, even if still connected to equipment.
Never use direct flame or electrical heating devices to raise the pressure of a container.
Do not remove or deface labels provided by the supplier for the identification of the cylinder contents.

Conditions for safe storage, including any incompatibilities

: Observe all regulations and local requirements regarding storage of containers.
Segregate from flammable gases and other flammable materials in store. Containers should be stored in the vertical position and properly secured to prevent toppling.
Keep container below 50°C in a well ventilated place. Stored containers should be periodically checked for general condition and leakage. Container valve guards or caps should be in place. Store containers in location free from fire risk and away from sources of heat and ignition. Keep away from combustible materials.
Containers should not be stored in conditions likely to encourage corrosion.

Specific end use(s)

: None.

SECTION 8. Exposure controls/personal protection**Control parameters**

DNEL: Derived no effect level : None available.

PNEC: Predicted no effect concentration : None available.

Exposure controls

Appropriate engineering controls : Systems under pressure should be regularly checked for leakages.
Avoid oxygen rich (>21%) atmospheres.
Gas detectors should be used when oxidising gases may be released.
Provide adequate general and local exhaust ventilation.
Consider work permit system e.g. for maintenance activities.

Individual protection measures, e.g. personal protective equipment : A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk.
The following recommendations should be considered.
Protect eyes, face and skin from liquid splashes.
Wear safety glasses with side shields
Wear goggles and a face shield when transfilling or breaking transfer connections
Wear cold insulating gloves when transfilling or breaking transfer connections.

Environmental exposure controls : None necessary.**SECTION 9. Physical and chemical properties****Information on basic physical and chemical properties****Appearance**

- Physical state at 20°C / 101.3kPa : Gas.

- Colour : Bluish liquid.

Odour : No odour warning properties.**Odour threshold** : Odour threshold is subjective and inadequate to warn for overexposure.**Molar mass [g/mol]** : 32**Melting point [°C]** : -219**Boiling point [°C]** : -183**Critical temperature [°C]** : -118



Oxygen (refrigerated)

ALSA097B

SECTION 9. Physical and chemical properties (continued)

Flash point [°C]	: Not applicable for gases and gas-mixtures.
Evaporation rate (ether=1)	: Not applicable for gases and gas-mixtures.
Flammability range [vol% in air]	: Non flammable.
Vapour pressure [20°C]	: Not applicable.
Relative density, gas (air=1)	: 1.1
Relative density, liquid (water=1)	: 1.1
Solubility in water [mg/l]	: 39
Partition coefficient n-octanol/water	: Not applicable for inorganic gases.
Auto-ignition temperature [°C]	: Not applicable.
Oxidising properties	: Oxidiser.

Other information

Other data	: Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.
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SECTION 10. Stability and reactivity

Reactivity

: No reactivity hazard other than the effects described in sub-sections below.

Chemical stability

: Stable under normal conditions.

Possibility of hazardous reactions

: Violently oxidises organic material.
Risk of explosion if spilt on organic structural materials (eg wood or asphalt)..

Conditions to avoid

: None under recommended storage and handling conditions (see section 7).

Incompatible materials

: May react violently with combustible materials.
Consult supplier for specific recommendations.
May react violently with reducing agents.
Consider the potential toxicity hazard due to the presence of chlorinated or fluorinated polymers in high pressure (> 30 bars) oxygen lines in case of combustion
Keep equipment free from oil and grease.
For additional information on compatibility refer to ISO 11114

Hazardous decomposition products

: None.

SECTION 11. Toxicological information

Information on toxicological effects

Acute toxicity	: No known toxicological effects from this product.
Skin corrosion/irritation	: No known effects from this product.
Serious eye damage/irritation	: No known effects from this product.
Respiratory or skin sensitisation	: No known effects from this product.
Carcinogenicity	: No known effects from this product.
Germ cell mutagenicity	: No known effects from this product.
Reproductive toxicity	: No known effects from this product.
STOT-single exposure	: No known effects from this product.
STOT-repeated exposure	: No known effects from this product.

Oxygen (refrigerated)**ALSA097B****SECTION 11. Toxicological information (continued)**

Aspiration hazard : Not applicable for gases and gas-mixtures.

SECTION 12. Ecological information**Toxicity**: **No known ecological damage caused by this product.****Persistence - degradability**

: No data available.

Bioaccumulative potential

: No data available.

Mobility in soil

: No data available.

Results of PBT and vPvB assessment

: Not classified as PBT or vPvB.

Other adverse effects

Effect on ozone layer : Can cause frost damage to vegetation.
Effect on the global warming : None.
Effect on the global warming : No known effects from this product.

SECTION 13. Disposal considerations**Waste treatment methods**

: May be vented to atmosphere in a well ventilated place.
Do not discharge into any place where its accumulation could be dangerous.
Refer to the code of practice of EIGA (Doc. 30/10 "Disposal of Gases, downloadable at <http://www.eiga.org>) for more guidance on suitable disposal methods
Consult supplier for specific recommendations.

Additional information

: None.

SECTION 14. Transport information

UN number : 1073

Labelling ADR, IMDG, IATA



: 5.1 : Oxidizing substances.
2.2 : Non flammable, non toxic gas.

Land transport (ADR/RID)

H.I. nr : 225

UN proper shipping name : OXYGEN, REFRIGERATED LIQUID

Transport hazard class(es) : 2

Classification code : 3 O

Packing Instruction(s) : P203

Tunnel Restriction : C/E Tank carriage: Passage forbidden through tunnels of category C, D and E; Other carriage: Passage forbidden through tunnels of category E



Oxygen (refrigerated)

ALSA097B

SECTION 14. Transport information (continued)

Environmental hazards : None.

Sea transport (IMDG)

Proper shipping name : OXYGEN, REFRIGERATED LIQUID
Class : 2.2
Packing group : P203
Emergency Schedule (EmS) - Fire : F-C
Emergency Schedule (EmS) - Spillage : S-W
Packing instruction : P203

Air transport (ICAO-TI / IATA-DGR)

Proper shipping name (IATA) : OXYGEN, REFRIGERATED LIQUID
Class : 2.2
Passenger and Cargo Aircraft : DO NOT LOAD IN PASSENGER AIRCRAFT.
Cargo Aircraft only : FORBIDDEN.

Special precautions for user

: Avoid transport on vehicles where the load space is not separated from the driver's compartment.
Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency.
Before transporting product containers :
- Ensure that containers are firmly secured.
- Ensure cylinder valve is closed and not leaking.
- Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
- Ensure valve protection device (where provided) is correctly fitted.
- Ensure there is adequate ventilation.

SECTION 15. Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixtureEU legislation

Restrictions on use : None.
Seveso directive 96/82/EC : Listed

National legislation

: Ensure all national/local regulations are observed.

Chemical Safety Assessment

: A CSA does not need to be carried out for this product.

SECTION 16. Other information

Indication of changes : Revised safety data sheet in accordance with commission regulation (EU) No 453/2010
Training advice : Ensure operators understand the hazard of oxygen enrichment.
List of full text of R-phrases in section 3. : R8 : Contact with combustible material may cause fire.
List of full text of H-statements in section 3. : H270 - May cause or intensify fire; oxidizer.
H281 - Contains refrigerated gas; may cause cryogenic burns or injury.
Note : This Safety Data Sheet has been established in accordance with the applicable European Union legislation.
DISCLAIMER OF LIABILITY : Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.
Details given in this document are believed to be correct at the time of going to press. Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.



AIR LIQUIDE

SAFETY DATA SHEET

Page : 8

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Oxygen (refrigerated)

ALSA097B

SECTION 16. Other information (continued)

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