

MEDICAL OXYGEN, Refrigerated Liquid (O2)

ALH610

Danger



SECTION 1. Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Trade name : MEDICAL OXYGEN, Refrigerated Liquid (O2)
 SDS Nr : ALH610
 Chemical formula : O2

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

Relevant identified uses : Industrial and professional. Perform risk assessment prior to use.
 Test gas / Calibration gas. Laboratory use Contact supplier for more uses information
 Use : Medical applications.

1.3. Details of the supplier of the safety data sheet

Company identification : Air Liquide Healthcare Pty Limited
 Unit 5, 476 Gardeners Road
 Alexandria NSW 2015 Australia
 Tel: +61 2 9364 7474
 Fax: +61 2 8338 9797
 ALAEnquiries@AirLiquide.com

1.4. Emergency telephone number

Emergency telephone number : 1800 812 588

SECTION 2. Hazards identification

2.1. Classification of the substance or mixture

Hazard Class and Category Code Regulation EC 1272/2008 (CLP)

R Phrase(s) : R8 : Contact with combustible material may cause fire.
 • 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

2.2. Label elements

Labelling Regulation EC 1272/2008 (CLP)

• Hazard pictograms



• 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
 P282 - Wear cold insulating gloves, face shield, eye protection.
 P220 - Keep away from combustible materials.
 - 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.

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SECTION 2. Hazards identification (continued)

- Storage : P403 - Store in a well-ventilated place.

2.3. Other hazards

: None.

SECTION 3. Composition/information on ingredients

3.1. Substance / 3.2. Mixture

Substance.

Substance name	Contents	CAS No	EC No	Annex 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

4.1. Description of first aid measures

First aid measures

- Inhalation : Continuous inhalation of concentrations higher than 75% may cause nausea, dizziness, respiratory difficulty and convulsion.
Remove victim to uncontaminated area.
- Skin/eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes.
In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.
- Skin contact : Adverse effects not expected from this product.
- Eye contact : Adverse effects not expected from this product.
- Ingestion : Ingestion is not considered a potential route of exposure.

4.2. Most important symptoms and effects, both acute and delayed

: Refer to section 11.
Refer to section 11.

4.3. Indication of any immediate medical attention and special treatment needed

: None.

SECTION 5. Fire-fighting measures

5.1. Extinguishing media

Extinguishing media

- Suitable extinguishing media : All known extinguishants can be used.

5.2. 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.

5.3. Advice for fire-fighters

- Specific methods : 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 possible, stop flow of product.
Move away from the container and cool with water from a protected position.

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SECTION 5. Fire-fighting measures (continued)

Special protective equipment for fire fighters : None.

If leaking do not spray water onto container. Water surrounding area (from protected position) to contain fire.

SECTION 6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions : Try to stop release.
: Evacuate area.
Ensure adequate air ventilation.
Eliminate ignition sources.
Use protective clothing.

6.2. Environmental precautions

: None.
: Try to stop release.
Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

6.3. Methods and material for containment and cleaning up

Clean up methods : None.
: Ventilate area.
Keep area evacuated and free from ignition sources until any spilled liquid has evaporated. (Ground free from frost).

6.4. Reference to other sections

: See also sections 8 and 13.

SECTION 7. Handling and storage

7.1. Precautions for safe handling

Safe use of the product : Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
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.
Do not smoke while handling product.
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.
Do not allow backfeed into the container.
Protect cylinders from physical damage; do not drag, roll, slide or drop.
When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders.
Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use.
If user experiences any difficulty operating cylinder valve discontinue use and contact supplier.
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 attempt to transfer gases from one cylinder/container to another.
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.

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SECTION 7. Handling and storage (continued)

- Handling** :
- Use no oil or grease.
 - Open valve slowly to avoid pressure shock.
 - Suck back of water into the container must be prevented.
 - Do not allow backfeed into the container.
 - Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
 - Keep away from ignition sources (including static discharges).
 - Refer to supplier's container handling instructions.

7.2. Conditions for safe storage, including any incompatibilities

- Storage** :
- Keep container below 50°C in a well ventilated place.
 - Observe all regulations and local requirements regarding storage of containers.
 - Containers should not be stored in conditions likely to encourage corrosion.
 - Containers should be stored in the vertical position and properly secured to prevent toppling.
 - 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.
 - Segregate from flammable gases and other flammable materials in store.
 - Keep container below 50°C in a well ventilated place.

7.3. Specific end use(s)

- : None.

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

- DNEL: Derived no effect level** : None available.
None available.
- PNEC: Predicted no effect concentration** : None available.
None available.

8.2. Exposure controls

- 8.2.1. Appropriate engineering controls** : Systems under pressure should be regularly checked for leakages.
Provide adequate general and local exhaust ventilation.
Consider work permit system e.g. for maintenance activities.
- 8.2.2. 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.
Wear safety glasses with side shields
Wear leather safety gloves and safety shoes when handling cylinders.
- Personal protection** : Do not smoke while handling product.
Ensure adequate ventilation.
Protect eyes, face and skin from liquid splashes.
Avoid oxygen rich (>21%) atmospheres.
- 8.2.3. Environmental exposure controls** : Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

SECTION 9. Physical and chemical properties
9.1. 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.
- pH value** : Not applicable for gas-mixtures.

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SECTION 9. Physical and chemical properties (continued)

Molar mass [g/mol]	: 32
Melting point [°C]	: -219
Boiling point [°C]	: -183
Critical temperature [°C]	: -118
Flash point [°C]	: Not applicable for gas-mixtures.
Evaporation rate (ether=1)	: Not applicable for gas-mixtures.
Flammability range [vol% in air]	: Oxidiser.
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 gas-mixtures.
Auto-ignition temperature [°C]	: Not flammable.
Viscosity at 20°C [mPa.s]	: Not applicable.
Explosive Properties	: Not applicable.

9.2. Other information

Other data	: Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.
Molecular weight	: 32

SECTION 10. Stability and reactivity

10.1. Reactivity

Stability and reactivity	: No reactivity hazard other than the effects described in sub-sections below. : May react violently with combustible materials. : May react violently with reducing agents. : Violently oxidises organic material. : Liquid spillages can cause embrittlement of structural materials. : Risk of explosion if spilt on organic structural materials (eg wood or asphalt).. : 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
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10.2. Chemical stability

: Stable under normal conditions.

10.3. Possibility of hazardous reactions

: Liquid spillages can cause embrittlement of structural materials.
: Avoid oil, grease and all other combustible materials.

10.4. Conditions to avoid

: Avoid oil, grease and all other combustible materials.
: Keep equipment free from oil and grease.

10.5. Incompatible materials

: May react violently with combustible materials.
: Combustible material.
: May react violently with reducing agents.
: Accelerate violently the burning of other combustible materials.

10.6. Hazardous decomposition products

: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
: None.

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SECTION 11. Toxicological information

11.1. Information on toxicological effects

Toxicity information	: No toxicological effects from this product.
Acute toxicity	: No known toxicological effects from this product.
Rat inhalation LC50 [ppm/4h]	: No data available.
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.
Toxic for reproduction : Fertility	: No known effects from this product.
Toxic for reproduction : unborn child	: No known effects from this product.
STOT-single exposure	: No known effects from this product.
STOT-repeated exposure	: No known effects from this product.
Aspiration hazard	: Not applicable for gases and gas-mixtures.

SECTION 12. Ecological information

12.1. Toxicity

: No data available.

12.2. Persistence - degradability

: No data available.

12.3. Bioaccumulative potential

: No data available.

12.4. Mobility in soil

: No data available.

12.5. Results of PBT and vPvB assessment

: No data available.

12.6. Other adverse effects

Ecological effects information	: Can cause frost damage to vegetation.
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SECTION 13. Disposal considerations

13.1. Waste treatment methods

General	: 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 Contact supplier if guidance is required.
	: May be vented to atmosphere in a well ventilated place. Do not discharge into any place where its accumulation could be dangerous. Contact supplier if guidance is required.

13.2. Additional information

: None.

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SECTION 14. Transport information

UN number : 1073

Labelling ADR, IMDG, IATA



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

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

HAZCHEM - Emergency Action Code : 2P

2 = Fine water spray.

P = Risk of violent reaction or explosion. Recommended personal protective equipment : Liquid-tight chemical protective clothing and breathing apparatus. Appropriate measures : dilute.

Sea transport (IMDG)

Proper shipping name : OXYGEN, REFRIGERATED LIQUID
OXYGEN, REFRIGERATED LIQUID

Class : 2.2

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 there is adequate ventilation.
- 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.

- IMO-IMDG code

- ICAO/IATA

Other transport information

: 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.
- Compliance with applicable regulations.

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SECTION 14. Transport information (continued)

SECTION 15. Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

EU legislation

Seveso directive 96/82/EC : Not covered.

National legislation

: Ensure all national/local regulations are observed.

15.2. 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	: Receptacle under pressure. May cause frostbite. Ensure all national/local regulations are observed. 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.
Further information	: Classification in accordance with calculation methods of regulation (EC) 1272/2008 CLP / (EC) 1999/45 DPD. This Safety Data Sheet has been established in accordance with the applicable European Union legislation.
Note	: This Safety Data Sheet has been established in accordance with the applicable European Union legislation.
DISCLAIMER OF LIABILITY	: Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out. Details given in this document are believed to be correct at the time of going to press. 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.

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