

# Liquid Oxygen

PRODUCT: LIQUID OXYGEN MSDS NR : 301-00-0004 BOC VERSION: 1.04 DATE: 10/11/05 PAGE: 1/2

## 1 IDENTIFICATION OF THE SUBSTANCE/ PREPARATION AND OF THE COMPANY

**Product name** Liquid Oxygen  
**Chemical formula** O<sub>2</sub>  
**Company identification** see end of page 2  
**Emergency phone Nos** see end of page 2

## 2 COMPOSITION/INFORMATION ON INGREDIENTS

**Substance/Preparation** Substance  
**Components/Impurities** Contains no other components or impurities which will influence the classification of the product.  
**CAS Nr** 7782-44-7  
**EEC Nr (from EINECS)** 231-956-9  
**E Nr** 948

## 3 HAZARDS IDENTIFICATION

**Hazards identification** Refrigerated liquefied gas. Contact with product may cause cold burns or frostbite. Oxidant. Strongly supports combustion. May react violently with combustible materials.

## 4 FIRST AID MEASURES

**Inhalation** Not hazardous.  
**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.  
**Ingestion** Ingestion is not considered a potential route of exposure.

## 5 FIRE FIGHTING MEASURES

**Specific hazards** Supports combustion. Exposure to fire may cause containers to rupture/explode. Non-flammable  
**Hazardous combustion products** None  
**Suitable extinguishing media** All known extinguishants can be used.  
**Specific methods** If possible, stop flow of product. Move container away or cool with water from a protected position.  
**Special protective equipment for fire fighters** None

## 6 ACCIDENTAL RELEASE MEASURES

**Personal precautions** Evacuate area. Ensure adequate air ventilation. Eliminate ignition sources. Use protective clothing.  
**Environmental precautions** Try to stop release. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.  
**Clean up methods** Ventilate area. Keep area evacuated and free from ignition sources until any spilled liquid has evaporated. (Ground free from frost.)

## 7 HANDLING AND STORAGE

**Handling and storage** Use no oil or grease. Segregate from flammable gases and other flammable materials in store. 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. Keep container below 50°C in a well ventilated place. Open valve slowly to avoid pressure shock.

## 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

**Personal protection** Do not smoke while handling product. Ensure adequate ventilation. Protect eyes, face and skin from liquid splashes. Avoid oxygen rich (>21%) atmospheres.

## 9 PHYSICAL AND CHEMICAL PROPERTIES

**Molecular weight** 32  
**Melting point** -219°C  
**Boiling point** -183°C  
**Critical temperature** -118°C  
**Relative density, gas** 1.1 (air = 1)  
**Relative density, liquid** 1.1 (water = 1)  
**Vapour Pressure 20°C** Not applicable  
**Solubility mg/l water** 39 mg/l  
**Appearance/Colour** Bluish liquid  
**Odour** No odour warning properties  
**Autoignition temperature** Not applicable  
**Flammability range** Oxidiser  
**Other data** Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

# SAFETY DATA SHEET

## 10 STABILITY AND REACTIVITY

<b>Stability and reactivity</b>	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).
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## 11 TOXICOLOGICAL INFORMATION

<b>General</b>	No toxicological effects from this product.
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## 12 ECOLOGICAL INFORMATION

<b>General</b>	Can cause frost damage to vegetation.
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## 13 DISPOSAL CONSIDERATIONS

<b>General</b>	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.
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## 14 TRANSPORT INFORMATION

<b>Proper Shipping Name</b>	Oxygen, Refrigerated Liquid
<b>UN Nr</b>	1073
<b>Class/Div</b>	2.2
<b>Subsidiary risk</b>	5.1
<b>ADR/RID Classification Code</b>	3O
<b>ADR/RID Hazard Nr</b>	225
<b>Labelling ADR</b>	Label 2.2: non-flammable non-toxic gas Label 5.1: fire intensifying risk
<b>Other transport information</b>	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 they are firmly secured and: – there is adequate ventilation. – compliance with applicable regulations.

## 15 REGULATORY INFORMATION

<b>Number in Annex I of Dir 67/548</b>	008-001-00-8
<b>EC Classification</b>	O;R8
<b>Labelling of cylinders</b>	
– <b>Symbols</b>	Label 2.2: non-flammable non-toxic gas Label 5.1: fire intensifying risk.
– <b>Risk phrases</b>	R8 Contact with combustible material may cause fire.
– <b>Safety phrases</b>	S9 Keep container in well ventilated place. S17 Keep away from combustible material. S36 Wear suitable protective clothing.

## 16 OTHER INFORMATION

Ensure all national/local regulations are observed.

Ensure operators understand the hazard of oxygen enrichment.

Contact with liquid may cause cold burns/frost bite.

Permitted as a packaging or propellant gas in all foodstuffs when used in accordance with good manufacturing practice.

This Safety Data Sheet has been established in accordance with the applicable European Directives and applies to all countries that have translated the Directives in their national laws.

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.

## PRODUCT SPECIFICATION

	Specification	Typical Analysis
<b>Oxygen</b>	99.5%	99.7%
<b>Moisture</b>	<2 vpm	<1 vpm
<b>Carbon Dioxide</b>		<2 vpm
<b>Hydrocarbons</b>		80 to 40 vpm
<b>Carbon Monoxide</b>		<1 vpm
<b>Nitrous Oxide</b>		<0.1 vpm
<b>Acetylene</b>		<0.05 vpm
<b>Nitrogen</b>		50 vpm

The remainder consists of Argon



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