

## Safety data sheet

### Oxygen, refrigerated liquid.

Creation date : 27.01.2005  
Revision date : 01.04.2011

Version : 1.3

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#### SECTION 1: Identification of the substance/mixture and of the company/undertaking

##### 1.1. Product identifier

###### Product name

Oxygen, refrigerated liquid.

EC No (from EINECS): 231-956-9

CAS No: 7782-44-7

Index-Nr. 008-001-00-8

**Chemical formula** O<sub>2</sub>

###### REACH Registration number:

Listed in Annex IV/V of Regulation (EC) No 1907/2006 (REACH), exempted from registration.

##### 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.

###### Uses advised against

Consumer use.

##### 1.3. Details of the supplier of the safety data sheet

###### Company identification

BOC, PO Box 1201, Bluebell, Dublin

**E-Mail Address** ReachSDS@boc.com

##### 1.4. Emergency telephone number

**Emergency phone numbers (24h):** 1850 333 435

#### SECTION 2: Hazards identification

##### 2.1. Classification of the substance or mixture

###### Classification acc. to Regulation (EC) No 1272/2008/EC (CLP/GHS)

Press. Gas (Refrigerated liquefied gas) - Contains refrigerated gas; may cause cryogenic burns or injury.

Ox. Gas 1 - May cause or intensify fire; oxidiser.

###### Classification acc. to Directive 67/548/EEC & 1999/45/EC

O; R8

Contact with combustible material may cause fire.

###### Risk advice to man and the environment

Refrigerated liquefied gas. Contact with product may cause cold burns or frostbite.

##### 2.2. Label elements

###### - Labelling Pictograms



###### - Signal word

Danger

###### - Hazard Statements

H281 Contains refrigerated gas; may cause cryogenic burns or injury.

H270 May cause or intensify fire; oxidiser.

###### - Precautionary Statements

###### Precautionary Statement Prevention

P220 Keep away from combustible materials.  
P244 Keep valves and fittings free from oil and

P282

grease.  
Wear cold insulating gloves/face shield/eye protection.

###### Precautionary Statement Response

P370 + P376 In case of fire: Stop leak if safe to do so.  
P336+P315 Thaw frosted parts with lukewarm water. Do not rub affected area. Get immediate medical advice/attention.

###### Precautionary Statement Storage

P403 Store in a well-ventilated place.

###### Precautionary Statement Disposal

None.

##### 2.3. Other hazards

None.

#### SECTION 3: Composition/information on ingredients

**Substance / Mixture:** Substance.

##### 3.1. Substances

Oxygen, refrigerated liquid.

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**Index-Nr.:** 008-001-00-8

**EC No (from EINECS):** 231-956-9

###### REACH Registration number:

Listed in Annex IV/V of Regulation (EC) No 1907/2006 (REACH), exempted from registration.

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

##### 3.2. Mixtures

Not applicable.

#### SECTION 4: First aid measures

##### 4.1. Description of first aid measures

###### First Aid General Information:

Remove victim to uncontaminated area.

###### First Aid Inhalation:

Remove victim to uncontaminated area.

###### First Aid Skin / Eye:

In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance. Immediately flush eyes thoroughly with water for at least 15 minutes.

###### First Aid Ingestion:

Ingestion is not considered a potential route of exposure.

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

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

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

None.

#### SECTION 5: Fire fighting measures

##### 5.1. Extinguishing media

###### Suitable extinguishing media

All known extinguishants can be used.

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### 5.2. Special hazards arising from the substance or mixture

#### Specific hazards

Supports combustion. Exposure to fire may cause containers to rupture/explode.

#### Hazardous combustion products

None.

### 5.3. Advice for fire-fighters

#### Specific methods

If possible, stop flow of product. Move container away or cool with water from a protected position. 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

### 6.1. Personal precautions, protective equipment and emergency procedures

Evacuate area. Ensure adequate air ventilation. Eliminate ignition sources. Use protective clothing. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Monitor concentration of released product.

### 6.2. Environmental precautions

Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Try to stop release.

### 6.3. Methods and material for containment and cleaning up

Ventilate area. Keep area evacuated and free from ignition sources until any spilled liquid has evaporated. (Ground free from frost). Liquid spillages can cause embrittlement of structural materials.

### 6.4. Reference to other sections

See also sections 8 and 13.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

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 handling instructions. The substance must be handled in accordance with good industrial hygiene and safety procedures. Purge system with dry inert gas (e.g. helium or nitrogen) before gas is introduced and when system is placed out of service. Use only with equipment cleaned for oxygen service and rated for cylinder pressure. Do not smoke while handling product. Only experienced and properly instructed persons should handle gases under pressure. Protect cylinders from physical damage; do not drag, roll, slide or drop. 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. 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. Ensure the complete gas system has been (or is regularly) checked for leaks before use. If user experiences any difficulty operating cylinder valve discontinue use and contact supplier. Close container valve after each use and when empty, even if still connected to equipment. Never attempt to repair or modify container valves or safety relief devices. Damaged valves

should be reported immediately to the supplier. Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment. Keep container valve outlets clean and free from contaminants particularly oil and water. Never attempt to transfer gases from one cylinder/container to another. Keep equipment free from oil and grease. Use only oxygen approved lubricants and oxygen approved sealings.

### 7.2. Conditions for safe storage, including any incompatibilities

Avoid asphalted locations for storage and use (ignition risk if spilt). 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 falling over. Stored containers should be periodically checked for general conditions 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.

### 7.3. Specific end use(s)

None.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

No occupational exposure limit.

### 8.2. Exposure controls

#### Appropriate engineering controls

Product to be handled in a closed system. The substance must be handled in accordance with good industrial hygiene and safety procedures. Consider work permit system e.g. for maintenance activities. Systems under pressure should be regularly checked for leakages. Provide adequate general or local ventilation. Gas detectors should be used when quantities of oxidising gases may be released.

#### Personal protective equipment

##### Eye and face protection

Safety eyewear, goggles or face shield, to EN166 should be used to avoid exposure to liquid splashes.

##### Skin protection

##### Hand protection

Advice:

EN 511 Protective gloves against cold.

##### Body protection

Protect eyes, face and skin from contact with product.

##### Other protection

Avoid oxygen rich (>23,5%) atmospheres. Wear cold insulating gloves.

##### Thermal hazards

If there is a risk of contact with the liquid, all protective equipment should be suitable for extremely low temperatures.

##### Environmental Exposure Controls

Specific risk management measures are not required beyond good industrial hygiene and safety procedures. 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

#### General information

**Appearance/Colour:** Bluish liquid

**Odour:** No odour warning properties.

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**Melting point:** -219 °C  
**Boiling point:** -183 °C  
**Flash point:** Not applicable for gases and gas mixtures.  
**Flammability range:** Non flammable.  
**Vapour Pressure 20 °C:** Not applicable.  
**Relative density, gas:** 1,1  
**Solubility in water:** 39 mg/l  
**Autoignition temperature:** Not applicable.  
**Oxidising properties:** Oxidiser.  
**Molecular weight:** 32 g/mol  
**Critical temperature:** -118 °C  
**Relative density, liquid:** 1,1

### 9.2. Other information

Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Unreactive under normal conditions.

### 10.2. Chemical stability

Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

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

### 10.4. Conditions to avoid

None.

### 10.5. Incompatible materials

Combustible materials. Reducing agents. Organic material. Keep equipment free from oil and grease. For material compatibility see latest version of ISO-11114. Cryogenic liquids can cause embrittlement of some metals and alter the physical properties of other materials.

### 10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

#### General

No known toxicological effects from this product.

## SECTION 12: Ecological information

### 12.1. Toxicity

Can cause frost damage to vegetation.

### 12.2. Persistence and degradability

The substance is naturally occurring.

### 12.3. Bioaccumulative potential

Not applicable.

### 12.4. Mobility in soil

The substance is a gas, not applicable.

### 12.5. Results of PBT and vPvB assessment

Not classified as PBT or vPvB.

## 12.6. Other adverse effects

Can cause frost damage to vegetation.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Do not discharge into any place where its accumulation could be dangerous. Contact supplier if guidance is required. Vent to atmosphere in a well ventilated place. Consult supplier for specific recommendations.

EWC Nr. 16 05 04\*

## SECTION 14: Transport information

### ADR/RID

#### 14.1. UN number

1073

#### 14.2. UN proper shipping name

Oxygen, refrigerated, liquid

#### 14.3. Transport hazard class(es)

Class: 2

Classification Code: 3O

Labels: 2.2, 5.1

Hazard number: 225

Emergency Action Code: 2P

#### 14.4. Packing group (Packing Instruction)

P203

#### 14.5. Environmental hazards

None.

#### 14.6. Special precautions for user

None.

### IMDG

#### 14.1. UN number

1073

#### 14.2. UN proper shipping name

Oxygen, refrigerated, liquid

#### 14.3. Transport hazard class(es)

Class: 2.2

Labels: 2.2, 5.1

EmS: FC, SW

#### 14.4. Packing group (Packing Instruction)

P203

#### 14.5. Environmental hazards

None.

#### 14.6. Special precautions for user

None.

#### 14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not applicable.

### IATA

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### 14.5. Environmental hazards

None.

### 14.6. Special precautions for user

None.

### 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 they are firmly secured. Ensure adequate ventilation. Ensure compliance with applicable regulations.

## SECTION 15: Regulatory information

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

Seveso Directive 96/82/EC: Listed

### 15.2. Chemical safety assessment

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

## SECTION 16: Other information

Ensure all national/local regulations are observed. Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out. Ensure operators understand the hazard of oxygen enrichment.

### Advice

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.

### Further information

Note:

When using this document care should be taken, as the decimal sign and its position complies with rules for the structure and drafting of international standards, and is a comma on the line.

As an example 2,000 is two (to three decimal places) and not two thousand, whilst 1.000 is one thousand and not one (to three decimal places).

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