



UN 1073  
HAZCHEM 2PE  
CLASS 2.2 sub 5.1

PI 05/16/E

LIQUID OXYGEN

### TECHNICAL SPECIFICATION

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Oxygen > 99.5%  
Moisture < 10 ppm

#### PHYSICAL DATA

Chemical Symbol O<sub>2</sub>  
Boiling Point -183.0°C  
Relative Density (Air = 1) 1.105  
Molecular Weight 31.999  
Critical Temperature -118.8°C  
Flashpoint Non-flammable  
Density of Gas (@101.3 kPa & 15°C) 1.355 kg/m<sup>3</sup>  
Density of Liquid (B.Pt.) 1141 kg/m<sup>3</sup>  
Specific Volume (@ 101.3 kPa & 15°C) 0.738 m<sup>3</sup>/kg

#### PROPERTIES

Oxygen gas is odorless and tasteless and constitutes Approx. 21% of volume of air. It supports combustion and sustains life. In liquid form it is pale blue in color.

#### USES

Oxygen sustains life, supports combustion, is used in steel making and, in combination with a fuel gas, is used for welding, cutting, heating and brazing.  
Also used in manufacture of methanol, ethylene oxide, titanium dioxide and for the enrichment of furnace atmospheres for smelting of copper, zinc etc. In the paper industry oxygen is employed for bleaching pulp, oxidization of black liquor and purification of wastes.

#### SUPPLY & STORAGE

As Cryogenic Liquid in Cryogenic Storage Tanks, Bulk Tankers, , Liquid containers, Dewars etc

### HANDLING & SAFETY

#### HAZARDS

Oxygen vigorously supports combustion of many materials which will not normally burn in air.  
Extremely low temperature. (-183°C)

#### MATERIALS COMPATIBILITY

Equipment to handle oxygen must be constructed of suitable materials for the low temperatures encountered. Copper, brass and stainless steel are the most commonly used metals. Most lubricants are NOT compatible.  
N.B. Oil and grease may result in vigorous ignition.

#### PRECAUTIONS IN USE

No smoking, naked lights or hot work in vicinity.  
Do not use oil and grease, use only approved degreased equipment.  
Clothing which becomes impregnated with even small quantities of oxygen must be vigorously ventilated in a remote area.  
It is recommended that the user of liquid oxygen is familiar with relevant standards "The storage and handling of nonflammable cryogenic and refrigerated liquids".

#### PERSONAL PROTECTION

Full face mask, well-fitting cryogenic gloves and full overalls without cuffs should be worn when handling liquid oxygen supply systems.

#### FIRST AID

If victim is conscious:  
• Move to uncontaminated area to breathe fresh air.  
• Keep warm and quiet.  
• Call doctor and advise that patient is experiencing (has experienced) hyperoxia.  
If victim is unconscious:  
• Move to uncontaminated area and give assisted respiration.  
• When breathing is restored, treatment as above. Continued treatment should be symptomatic and supportive.  
N.B. Prompt medical attention is mandatory in all cases of over exposure to oxygen . Rescue personnel should be aware of extreme fire hazards associated with oxygen rich atmospheres.  
Cold burns/Frostbite:  
• Flush with luke-warm water for at least 10 minutes then treat as thermal burns.  
• Seek hospital attention if required (superficial burns ). Do not apply direct heat or allow the victim to smoke cigarettes.  
• Protect frozen parts from infection. Hospital treatment of cold burns/frostbite may differ from heat burns.

#### ADDITIONAL INFORMATION

The information, recommendations and data contained in this publication are intended to give basic guidance to users for their safe handling and use.  
For further information please refer Material Safety Data Sheets (MSDS)

It is essential for the safe use of gases that personnel are properly trained and are fully aware of the possible hazards.

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