

## MATERIAL SAFETY DATA SHEET

### **Oxygen (Refrigerated Liquid)**

#### PRODUCT AND COMPANY IDENTIFICATION

Product name	Oxygen (refrigerated liquid)
Chemical name	Oxygen
Chemical formula	O <sub>2</sub>
Components	Formed from element oxygen
Impurities	Contains no other impurities which will influence the classification of the product
Company identification	CryoExpress Singapore Pte Ltd 1 Bukit Batok Crescent #05-15 WCEGA Plaza Singapore 658064
Telephone number	(65) 6561 5282

#### HAZARDS IDENTIFICATION

Hazards identification	High oxidizing gas. Greatly accelerates combustion rate.
Inhalation	May cause breathing difficulties. Exposure to high oxygen levels (>75%) for more than a few hours could cause central nervous system depression: signs/symptoms include headache, dizziness, drowsiness, poor coordination, slow reaction time, slurred speech, giddiness and unconsciousness. May cause coughing and chest pain. May cause lung damage. May cause soreness of the throat.
Skin / Eye contact	Contact with rapidly expanding gases may cause frostbite.
Ingestion	Ingestion is unlikely to happen.

Product Information / Ingredients

Substance / Preparation	Substance
Components Impurities	Contain no other components or impurities, which will influence the classification of the product.
CAS No	7782-44-7

FIRST AID MEASURES

Inhalation	Personnel should wear adequate personal protective equipment before entering exposed area. Remove victim to fresh air area. If victim is not breathing, administer artificial respiration. Obtain medical assistance.
Skin/Eye contact	Flush eyes immediately and thoroughly with water. Spray with water for at least 15 minutes if frostbite occurs. Obtain medical assistance.
Ingestion	No first aid should be needed. Not considered a potential route of exposure.

FIRE FIGHTING MEASURES

Specific hazards	Oxidizer.
Hazardous combustion products	None.
Suitable extinguishing media	Use appropriate extinguishers for surrounding fire.

ACCIDENTAL RELEASE MEASURES

Personal precautions	Evacuate all personnel from affected area. Wear protective clothing and self-contained breathing apparatus. Eliminate source of ignition and respond with trained personnel. Adequate fire protection equipment must be provided.
Environmental precautions	Stop flow without risk.
Clean up methods	Ventilate area. Monitor the surrounding area for oxygen level.

### HANDLING AND STORAGE

#### Handling and storage

Open valve slowly to avoid pressure shock. Container should be stored in dry, well-ventilated areas away from sources of heat, ignition, flammable materials and direct sunlight. Storage area should not exceed 52°C. Do not use oils or grease on gas-handling fittings or equipment. Post "No Smoking or Open Flames" signs in storage or use areas. Have appropriate extinguishing equipment in the storage area (i.e. sprinkler system, portable fire extinguishers). Contact supplier if in doubt.

### EXPOSURE CONTROLS / PERSONAL PROTECTION

#### Exposure limit value (PEL-OSHA)

None

#### Personal protection

Ensure adequate ventilation. In case of leakage, use self-contained breathing apparatus.

### PHYSICAL AND CHEMICAL PROPERTIES

#### Molecular weight

32

#### Freezing point

-218.8 °C

#### Boiling point

-183 °C

#### Critical temperature

-118.4 °C at 4.9 MPa

#### Relative density, gas

1.11 (air = 1)

#### Relative density, liquid

1.14 (water = 1)

#### Vapour pressure 20 °C

Not applicable

#### Solubility mg/l water

39 mg/l

#### Odour and appearance

Colourless, odourless liquid.

#### Other data

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

### STABILITY AND REACTIVITY

#### Stability and reactivity

Stable under normal conditions.

### TOXICOLOGICAL INFORMATION

#### General

Oxygen concentrations between 20 to 95% have produced genetic changes in mammalian cell assay test systems.

### ECOLOGICAL INFORMATION

General Can cause frost damage to vegetation.

### DISPOSAL CONSIDERATIONS

General Do not discharge into any place where its accumulation could be dangerous. Discharge to atmosphere in large quantities should be avoided. Contact supplier if guidance is required.

### TRANSPORT INFORMATION

Proper shipping name Oxygen, refrigerated liquid  
UN Nr 1073  
Hazard class 2.2  
Shipping label Label 05: Fire intensifying risk. Label 2: Non-flammable liquid.  
Other transport information Avoid transport on vehicles where load space is not separated from driver's compartment. Ensure vehicle driver is aware of the potential hazards and knows what to do in event of an accident or an emergency. Ensure container is firmly secured and not leaking.

### REGULATORY INFORMATION

General Proposed by the industry, not classified as dangerous substance  
Risk and Safety Phrases R8 – Contact with combustible material may cause fire  
RFb – May cause frostbite  
S36A – Use suitable protective equipment  
S9 – Keep container in well ventilated place  
S17A – Keep away from combustible material. Use no oil or grease

### OTHER INFORMATION

Ensure all national/local regulations are observed.  
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