Air Liquide New Zealand Limited
19 Maurice Road
Penrose
Auckland 1061

Phone: **(09) 622 3880**
Fax: **(09) 622 3881**
Emergency: **0800 156 516**

MATERIAL SAFETY DATA SHEET

Product Name:

OXYGEN,
Refrigerated Liquid (O_2)

Label 2.2 : Non flammable, non toxic gas.

Label 5.1 : Oxidizing substances.

IDENTIFICATION

Chemical Name: Oxygen, Refrigerated Liquid
Synonyms: LOX, Liquid Oxygen, Bulk Oxygen
UN. Number: 1073
Poisons Schedule Number: None allocated
EPG (Emergency Procedure Guide): AS 1678 2-2-000
G.T. EPG. (Group Text. Emergency Procedure Guide): AS 1678 2C7

Use: Oxygen sustains life, supports combustion. Used in steel making, welding, cutting, waste treatment, etc.

HAZARDS IDENTIFICATION

Dangerous Goods Class and Subsidiary Risk: 2.2 sub. 5.1
HSNO Classification: 5.1.2A

Hazard Statement:
May cause or intensify fire: oxidiser.
Contains refrigerated gas; may cause cryogenic burns or injury.

Precautionary Statements:
Read label before use.
Read Material Safety Data Sheet before use.
Keep away from heat, sparks and open flames.
Keep away from combustible materials and clothing. No Smoking.
Take any precautions to avoid mixing with combustibles.
Keep reduction valves free from grease and oil.
Wear insulating gloves, face shield and eye protection.
Wear fire retardant clothing.
In case of fire: Stop leak if safe to do so.
Thaw frosted parts with lukewarm water. Do not rub affected area.
Get immediate medical advice/attention.
Store in a well ventilated place.

COMPOSITION

Ingredients

Chemical Entity	CAS Number	Proportion
Oxygen	7782-44-7	99.5%

FIRST AID MEASURES

Health Effects

Acute

Swallowed: Not applicable to gases.
Eye: Can cause severe frost burn if brought in contact with eye.
Skin: Can cause severe frost burn if brought in contact with skin.
Inhaled: Breathing high concentrations of oxygen may cause symptoms of hyperoxia including cramps, nausea, dizziness, hypothermia, ambylopia, respiratory difficulties, brachycardia, fainting spells and convulsions capable of leading to death.

Chronic

Long term exposure to oxygen has no known health effects. Can be inhaled as a pure gas for several hours per day for periods of several days without observable harmful effects.

First Aid

Inhalation:

Call doctor. Prompt medical attention is mandatory in all cases of overexposure to oxygen. If victim conscious: Move to uncontaminated area to breathe fresh air. Keep warm and quiet. If victim is unconscious: Move to uncontaminated area and give assisted respiration. When normal breathing is restored, treatment as above. Continued treatment should be symptomatic and supportive.

Skin / Eye Contact

Obtain qualified medical assistance immediately. Whilst waiting for medical assistance to arrive immediately flush eyes thoroughly with water for at least 15 minutes. In case of frostbite; frozen tissues are painless and appear waxy with a pallid yellowish colour. They become painful, swollen and very prone to infection when thawed. DO NOT RE-WARM RAPIDLY. Spray with large quantities of tepid water for at least 15 minutes. Apply a dry sterile dressing with a large bulky protective covering. If qualified medical attention is not immediately available, arrange for the victim to be transported to a hospital without delay. Do not give the patient alcohol to drink or tobacco to smoke. Both of these will restrict blood flow to the wound and retard recovery.

Advice to Doctor

Advise doctor that victim is experiencing (has experienced) hyperoxia. Specialist advice for treatment of cryogenic burns is available at a Burns Unit.

General:

Low air temperature due to close proximity of liquefied atmosphere gases can cause hypothermia and all persons at risk should be warmly clad. Avoid liquid spillage as cryogenic liquids embrittle many materials on contact. N.B. Rescue personnel should be aware of extreme fire hazard associated with oxygen rich atmospheres.

FIRE FIGHTING MEASURES

Flammability:

Non Flammable, but vigorously supports combustion of many materials which will not normally burn in air. Never smoke or carry out hot work in oxygen rich atmosphere. Never wear clothing saturated with oxygen.

Fire/Explosion Hazard:

Oxygen vigorously supports combustion of many materials which will not normally burn in air. Never smoke or carry out hot work in oxygen rich atmosphere. Never wear clothing saturated with oxygen.

Extinguishing Media:

Water Fog or fine water spray. However this may not be appropriate for all fires as oxygen vigorously supports combustion and may be supporting the combustion of a material that is not suitable with this extinguishing media.

Hazchem Code:
2P

Recommended Protective Clothing:
Full chemical protection suit and breathing apparatus should be worn.

ACCIDENTAL RELEASE MEASURES

Personal Protection:
Personnel handling liquid oxygen must be provided with safety footwear, leather or PVC gloves, full cover overalls and safety glasses.

Spills and Disposal:
Ventilate area. Stop leak if it can be done without risk. Allow gas to dissipate to atmosphere. Cold vapours are heavier than air. In case of large spillage evacuate nearby trenches, excavations, pits and the like. Liquide spillage can cause embitterment of structural materials. Risk of explosion if spilt on organic structural materials (e.g. wood or asphalt).

Reference Guide:
Standard SNZ HB 76:2008 Dangerous Goods – Initial Emergency Response Guide.

General:
Low air temperature due to close proximity of liquefied atmosphere gases can cause hypothermia and all persons at risk should be warmly clad. Avoid liquid spillage as cryogenic liquids embrittle many materials on contact.

HANDLING AND STORAGE

Handling

Flammability:
Vigorously supports combustion of many materials which will not normally burn in air. Never smoke or carry out hot work in oxygen rich atmosphere. Never wear clothing saturated with oxygen.

General:
Low air temperature due to close proximity of liquefied atmosphere gases can cause hypothermia and all persons at risk should be warmly clad. Avoid liquid spillage as cryogenic liquids embrittle many materials on contact.

Approved Handlers:
Approved handlers are required if more than 200m^3 is stored on site.

Storage

Separation:
Store away from clothing and combustible materials. Keep reduction valves free from grease and oil.

Spills and Disposal:
Ventilate area. Stop leak if it can be done without risk. Allow gas to dissipate to atmosphere. Cold vapours are heavier than air. In case of large spillage evacuate nearby trenches, excavations, pits and the like. Liquide spillage can cause embitterment of structural materials. Risk of explosion if spilt on organic structural materials (e.g. wood or asphalt..).

EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Standards:
Not applicable to oxygen.

Engineering Controls:
Ensure that ventilation of area where oxygen is being used is adequate to maintain the air-oxygen concentration at the normal 21%.

Personal Protection:
Personnel handling liquid oxygen must be provided with safety footwear, leather or PVC gloves, full cover overalls and safety glasses.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Properties

Appearance:	Pale blue liquid, odourless, tasteless	Flashpoint:	non flammable
Boiling Point:	-183°C	Flammability Limits:	non flammable
Vapour Pressure:	Not applicable	Solubility in Water (at 0°C):	0.0489 m^3/m^3

Other Properties

Relative Density (at 15°C) (Air = 1):	1.105	Density of Liquid (B.P.):	1141 kg/m^3
Molecular Weight:	32.00	Critical Temperature:	-118.8°C

STABILITY AND REACTIVITY

Flammability:
Non Flammable, but may cause or intensify fire: Oxidiser.

Materials Compatibility:
Equipment to handle oxygen must be constructed of suitable material. Copper and stainless steel are most commonly used. Most lubricants are NOT compatible.

TOXICOLOGY INFORMATION

No toxicological effects from this product.

ECOLOGICAL INFORMATION

Can cause frost damage to vegetation.

DISPOSAL CONSIDERATIONS

To atmosphere in a well ventilated place. Do not discharge into any place its accumulation could be dangerous.

TRANSPORT INFORMATION

UN. Number: 1073
Proper Shipping Name: OXYGEN, REFRIGERATED LIQUID
Dangerous Goods Class and Subsidiary Risk: 2.2 sub. 5.1
Packing Group: Not applicable
Hazchem Code: 2P
Other Information: Avoid transport on vehicles where the load 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 there is adequate ventilation.
- Compliance with applicable regulations.

REGULATORY INFORMATION

ERMA Register Approval No: HSR001029

HSNO Controls: Controls applying to this substance are given in the:
Hazardous Substances (Classes 1 to 5 Controls) Regulations 2001.
Hazardous Substances (Disposal) Regulations 2001.
Hazardous Substances (Personnel Qualifications) Regulations 2001.
Hazardous Substances (Emergency Management) Regulations 2001.
Hazardous Substances (Identification) Regulations 2001.
Hazardous Substances (Compressed Gases) Regulations 2004.
Hazardous Substances (Tank Wagon and Transportable Containers) Regulations 2004.
Schedule 12 of the Hazardous Substances (Dangerous Goods and Scheduled Toxic Substances) Transfer Notice 2004.

Approved Handlers:
Approved handlers are required if more than 200m^3 is stored on site.

OTHER INFORMATION

Portable Liquid vessels - Colour Metallic Silver
Outlet CGA 440 or
AS 2473 Type 10

References:

. L'Air Liquide Gas Encyclopaedia - Elsevier Scientific Publishing Co. Amsterdam
. Cheminfo Database
. New Zealand Code for the Transport of Dangerous Goods by Road and Rail
. NHMRC Threshold Limit Values - Commonwealth Dept Health
. SAA Safe Storage and Handling Information Cards
. SAA Emergency Procedure Cards
. Matheson Gas Data Book, 6th Edition, Matheson 1980
. Canadian Liquid Air Montreal, Canada - Gas Products Safety Data Sheets
. AS 1894 Code of Practice for Safe Handling of Cryogenic fluids
. NZCIC Code of Practice – Preparation of Safety Data Sheets

END MSDS

This MSDS summarises our best knowledge of the health and safety hazard information of the product and how to safely handle and use the product in the workplace. Each user should read this MSDS and consider the information in the context of how the product will be handled and used in the workplace in conjunction with other products.

If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact this company.

Our responsibility for products sold is subject to our standard terms and conditions, a copy of which is sent to our customers and is also available on request.

This MSDS has been prepared in accordance with NZCIC Code of Practice – Preparation of Safety Data Sheets

Air Liquide regional offices contact details on following page

Regional Offices

Auckland
PO Box 12846
19 Maurice Road
Penrose
Phone: 09 622 3888
Fax: 09 622 3882

Hamilton
PO Box 10 394
2 Tawn Place, Pukete
Phone: 07 849 2969
Fax: 07 348 9063

Mt Maunganui
89 Poturi Street,Tauriko
Tauranga 3110
Phone: 07 574 8475
Fax: 07 574 8476

Palmerston North
PO Box 10 010
5 Connolly Place
Palmerston North
Phone: 06 355 5216
Fax: 06 354 7104

Christchurch
PO Box 16453
7 Canterbury St
Hornby
Phone: 03 344 6033
Fax: 03 344 6031

Emergency 24hr Phone Number 0800 156 516