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:

5% CARBON DIOXIDE IN OXYGEN,
Compressed Gas Mixture

IDENTIFICATION

Chemical Name: 5% Carbon Dioxide (CO_2) in Oxygen (O_2) Mixture
Synonyms: Not Applicable
UN Number: 3156
Poisons Schedule Number: Non Allocated

Use: Medical Gas Mixture.

HAZARDS IDENTIFICATION

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

Hazard Statement: Contains gas under pressure; may explode if heated.
May cause or intensify fire: Oxidiser. Supports Combustion.

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 precautions to avoid mixing with combustibles.
Keep reduction valves free from grease and oil.
Wear protective gloves and eye protection.
Wear fire retardant clothing.
In case of fire: Stop leak if safe to do so. Move away from cylinder and cool with water from a protected position.
Store in a well ventilated place.

COMPOSITION

Ingredients

Chemical Entity	CAS Number	Proportion
Oxygen	7782-44-7	95%
Carbon Dioxide	124-38-9	5%

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

FIRST AID MEASURES

Health Effects

Acute
Swallowed: Not applicable to gases.
Eye: Not irritating to the eye.
Skin: Not irritating to the skin.
Inhaled: Continuous inhalation of oxygen concentrations higher than 75% may cause nausea, dizziness, respiratory difficulty, and convulsion.

First Aid
Inhalation:
Call doctor. Prompt medical attention is mandatory in all cases of overexposure to 5% carbon dioxide in 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. Continued treatment should be symptomatic and supportive.
Keep ignition sources away from patient and rescuers as 5% carbon dioxide in oxygen will saturate their clothing.

Advice to Doctor
Advise doctor that victim is experiencing (has experienced) hyperoxia.

General:
Rescue personnel should be aware of extreme fire hazard associated with 5% carbon dioxide in oxygen rich atmospheres.

FIRE FIGHTING MEASURES

Flammability:
5% carbon dioxide in oxygen is non-flammable, but vigorously supports combustion of many materials which will not normally burn in air.
5% carbon dioxide in oxygen may react violently with combustible materials.
5% carbon dioxide in oxygen may react violently with reducing materials.
5% carbon dioxide in oxygen violently oxidises organic material.
Store away from flammable products.
Never smoke or carry out hot work in oxygen rich atmosphere.
Never wear clothing saturated with Oxygen based compressed gas mixture.

Fire/Explosion Hazard:
Exposure to fire may cause container to rupture/explode. Cylinders involved in a fire/explosion may rocket. Move cylinders from vicinity of fire if safe to do so. Cool cylinders by spraying flooding quantities of water from a protected location. If unable to keep cylinders cool, evacuate area, minimum distance 200 meters.

Extinguishing Media:
Use extinguishing media appropriate for the substance burning. 5% carbon dioxide in oxygen vigorously supports combustion and may be supporting the combustion.

Hazchem Code:
2 S

Recommended Protective Clothing:
In confined space use a self contained breathing apparatus.

ACCIDENTAL RELEASE MEASURES

Personal Protection:
Do not smoke while handling this product. Personnel engaged in the movement of cylinders shall be provided with safety footwear, safety glasses and leather or PVC gloves. Full cover overalls are recommended. In areas where equipment failure may cause an immediate high concentration of oxygen, ensure adequate ventilation. Avoid oxygen rich (>21%) atmospheres.

Spills and Disposal:
Ventilate area. Eliminate ignition sources. Stop leak if it can be done without risk. Allow gas to dissipate to atmosphere. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

Reference Guide:
Standard SNZ HB 76:2008 Dangerous Goods – Initial Emergency Response Guide.
AS/NZS 1337 – Eye Protection for Industrial Applications
AS/NZS 2161.1 – Occupational Protective Gloves – Selection, use and maintenance
AS/NZS 1715 – Selection, Use and Maintenance of Respiratory Protective Devices
AS/NZS 1716 – Respiratory Protective Devices

General:
Only experienced and properly instructed personnel should handle compressed gases. Use no oil or grease. Open valve slowly to avoid pressure shock. Cylinder contents and identification labels provided by the supplier must not be removed or defaced. Colour coding should not be the only criterion used for content identification.

HANDLING AND STORAGE

Handling

Flammability:
5% carbon dioxide in oxygen is non-flammable, but vigorously supports combustion of many materials which will not normally burn in air.
5% carbon dioxide in oxygen may react violently with combustible materials.
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General:
Only experienced and properly instructed personnel should handle compressed gases. Use no oil or grease. Open valve slowly to avoid pressure shock. Cylinder contents and identification labels provided by the supplier must not be removed or defaced. Colour coding should not be the only criterion used for content identification.

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

Storage
Storage of compressed gas cylinders shall be in compliance with New Zealand HSNO Regulations.
Cylinder should be kept away from ignition sources (including static discharges).
Cylinders shall be stored in a cool, dry, well ventilated area out of direct sunlight and away from heat and ignition sources.
No part of cylinders shall be exposed to temperatures above 50°C.
Cylinders shall be stored upright on a level, fireproof floor, secured in position and protected from damage.
Full cylinders shall be stored separately from empties.
Cylinders should be moved by hand-truck or cart designed for that purpose.

Separation:
Avoid any contact with oil or grease particularly to the cylinder valve.
Keep 5% carbon dioxide in oxygen cylinders a minimum of 3 meters away from ignition sources.
Keep 5% carbon dioxide in oxygen cylinders a minimum of 3 meters away from incompatible materials if less than 200m^3 of 5% carbon dioxide in oxygen is kept on site.
Keep 5% carbon dioxide in oxygen cylinders a minimum of 5 meters away from incompatible materials if more than 200m^3 of 5% carbon dioxide in oxygen is kept on site.

Spills and Disposal:
Ventilate area. Stop leak if it can be done without risk. Allow gas to dissipate to atmosphere. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Standards:
Not applicable to oxygen. Oxygen is not listed in the Work Place Exposure Standards Effective From 2002, Department of Labour, New Zealand.
Carbon dioxide TWA 5000 ppm v/v STEL 30,000 ppm v/v

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:
Do not smoke while handling this product. Personnel engaged in the movement of cylinders shall be provided with safety footwear, safety glasses and leather or PVC gloves. Full cover overalls are recommended. In areas where equipment failure may cause an immediate high concentration of oxygen, ensure adequate ventilation. Avoid oxygen rich atmospheres.

Reference Guide:
Standard SNZ HB 76:2008 Dangerous Goods – Initial Emergency Response Guide.
AS/NZS 1337 – Eye Protection for Industrial Applications
AS/NZS 2161.1 – Occupational Protective Gloves – Selection, use and maintenance
AS/NZS 1715 – Selection, Use and Maintenance of Respiratory Protective Devices
AS/NZS 1716 – Respiratory Protective Devices

PHYSICAL AND CHEMICAL PROPERTIES

Based on Oxygen (main constituent)

Physical Properties

Appearance:	Colourless, 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/kg

Other Properties

Relative Density (at 15°C) (Air = 1):	1.105	Density of Gas (101.3 kPa, 15°C):	1.3545 kg/m^3
Molecular Weight:	32.00	Critical Temperature:	-118.8°C
Molecular Weight:	Not Applicable	Critical Temperature:	Not Applicable

STABILITY AND REACTIVITY

Flammability:
5% carbon dioxide in oxygen is non-flammable, but vigorously supports combustion of many materials which will not normally burn in air.
5% carbon dioxide in oxygen may react violently with combustible materials.
5% carbon dioxide in oxygen may react violently with reducing materials.
5% carbon dioxide in oxygen violently oxidises organic material.
Store away from flammable products.
Never smoke or carry out hot work in oxygen rich atmosphere.
Never wear clothing saturated with Oxygen based compressed gas mixture.

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

TOXICOLOGY INFORMATION

No known toxicological effects from this product.

ECOLOGICAL INFORMATION

No known ecological damage caused by oxygen.
When discharged in large quantities carbon dioxide constituent contributes to the greenhouse effect.
Global warming factor (CO_2=1): 1

DISPOSAL CONSIDERATIONS

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

TRANSPORT INFORMATION

UN Number: 3156
Proper Shipping Name: COMPRESSED GAS, OXIDISING, N.O.S. – (CONTAINS OXYGEN AND CARBON DIOXIDE
Dangerous Goods Class and Subsidiary Risk: 2.2 sub. 5.1
Packing Group: Not applicable
Hazchem Code: 2 S
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.
- Ensure separation from flammable products.

REGULATORY INFORMATION

ERMA Register Approval No: HSR002534

HSNO Controls: Hazardous Substances and New Organisms Act 1996
Compressed Gas Mixtures (Oxidising (5.1.2) Group Standard 2006

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

OTHER INFORMATION

5% Carbon Dioxide in Oxygen is supplied in high pressure cylinders.

Cylinder Colour:	Medical:	Grey Green with black and white shoulder quadrants
Cylinder Valve Outlet:	Medical:	AS 2473.3 Fig. 10

References:

- L'Air Liquide Gaz Encyclopaedia - Elsevier Scientific Publishing Co. Amsterdam
- NZS 5433:2007 Transport of Dangerous Goods on Land
- ERMA Website – Approvals Register – www.erma.govt.nz
- SNZ HB76:2008 Dangerous Goods – Initial Emergency Response Guide
- Air Liquide Group MSDS – Oxygen AL097A Rev. 1
- ISO 10156 Gases and Gas mixtures – Determination of Fire Potential and Oxidising Ability for the Selection of Cylinder Valve Outlets
- Air Liquide Australia "Oxygen" MSDS June 2008
- AS1678 2C1 Emergency Procedure Guide – Transport – Non-Flammable, Compressed Gas
- AS 4484-2004 - Gas Cylinders for Industrial, Scientific, medical and refrigerant use - labelling and colour coding
- AS 2473.3-2007 - Valves for compressed gas outlets - Part 3 Outlet connections for medical gases (including pin-indexed yoke connections)
- Air Liquide New Zealand Document - DOPM-Z-TECH-0060 Cylinder Reference Manual for Cylinder Identification
- Operators Handbook for the Transport of Dangerous Goods by Road – NZ Road Transport & Logistics Industry Training Organisation
- ALNZ - Transport of Gas cylinders in Non-Dedicated Vehicles Customer Information Guide
- Work Place Exposure Standards Effective From 2002, Department of Labour, New Zealand
- NZCIC Code of Practice – Preparation of Safety Data Sheets

END MSDS

This MSDS summarises to our best knowledge, at the date of issue, the health and safety hazard information regarding this product and general guidance on how to safely handle the product in the workplace. All due care has been taken to include accurate and up-to-date information in this MSDS.

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 Air Liquide New Zealand.

As far as lawfully possible, no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this MSDS can be accepted.

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

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

This MSDS is subject to change without notice, for the latest version of this MSDS visit http://www.airliquide.com.au/en/technical/new-zealand-msds.html

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: 07 849 2968

Mt Maunganui
Unit 4, 12 – 18 Aerodrome Road
Mt Maunganui
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

Wellington
PO Box 36 092
205 Gracefield Road
Seaview
Phone: 04 568 6142
Fax: 04 568 6141

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

Emergency 24hr Phone Number 0800 156 516