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MATERIAL SAFETY DATA SHEET

Product Name:

**OXYGEN based
Compressed Gas Mixtures**

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IDENTIFICATION

Chemical Name: Oxygen (O₂), Nitrogen (N₂) and Carbon Dioxide (CO₂)
Synonyms: Air Liquide Range of Mixtures
UN Number: 3156

Use: Used in the food and beverage industry and in welding applications.

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. 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	CAS Number	Proportion
Chemical Entity		
Oxygen	7782-44-7	23% - 98%
Nitrogen	7727-37-9	0% - 77%
Carbon dioxide	124-38-9	0% - 77%

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

The effects of carbon dioxide enrichment are:

- 1%: Slight and unnoticeable increase in breathing rate;
- 2%: Breathing becomes deeper and rate will increase above the normal level. Prolonged exposure for several hours may cause a headache and a feeling of exhaustion;
- 3%: Breathing will start to feel laboured and breathing rate will increase to twice the normal rate. Hearing ability will be reduced; blood pressure and pulse rate will increase. Headaches will also be evident.
- 4 – 5%: Breathing rate will increase to four times the normal rate. Signs of intoxication will be evident after ½ hour exposure and you will have a slight choking feeling in addition to the symptoms above.
- 5 – 10%: Carbon dioxide will have a sharp smell. There will be visual disturbance, laboured breathing, headache, and ringing in the ears. Confusion will be followed by loss of consciousness.
- 10 – 100%: Levels above 10% will lead to rapid loss of consciousness. Further exposure at higher concentrations leads to asphyxiation.

Chronic

Long term exposure to OXYGEN BASED GAS MIXTURE has no known health effects.

First AidInhalation:

Call doctor. Prompt medical attention is mandatory in all cases of overexposure to OXYGEN BASED GAS MIXTURE. 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 OXYGEN BASED GAS MIXTURE 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 oxygen rich atmospheres.

FIRE FIGHTING MEASURES**Flammability:**

OXYGEN BASED GAS MIXTURE is non-flammable, but vigorously supports combustion of many materials which will not normally burn in air.

OXYGEN BASED GAS MIXTURE based compressed gas mixture may react violently with combustible materials.

OXYGEN BASED GAS MIXTURE based compressed gas mixture may react violently with reducing materials.

OXYGEN BASED GAS MIXTURE based compressed gas mixture 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 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. OXYGEN BASED GAS MIXTURE 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. All personal protective equipment must be free from oil and grease.

In areas where equipment failure may cause an immediate high concentration of OXYGEN BASED GAS MIXTURE, 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:**

OXYGEN BASED GAS MIXTURE is non-flammable, but vigorously supports combustion of many materials which will not normally burn in air.

OXYGEN BASED GAS MIXTURE based compressed gas mixture may react violently with combustible materials.

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OXYGEN BASED GAS MIXTURE based compressed gas mixture 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 GAS MIXTURE.

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 m³ 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 OXYGEN BASED GAS MIXTURE cylinders a minimum of 3 meters away from ignition sources.

Keep OXYGEN BASED GAS MIXTURE cylinders a minimum of 3 meters away from incompatible materials if less than 200m³ of OXYGEN BASED GAS MIXTURE is kept on site.

Keep OXYGEN BASED GAS MIXTURE cylinders a minimum of 5 meters away from incompatible materials if more than 200m³ of OXYGEN BASED GAS MIXTURE 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
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Exposure Standards:

Nitrogen is a simple asphyxiant.

Carbon dioxide: TWA 5,000 ppm v/v STEL 30,000 ppm v/v.

Not applicable to oxygen. Oxygen is not listed in the Work Place Exposure Standards Effective From 2002, Department of Labour, New Zealand.

Engineering Controls:

Do not allow backfeed into the cylinder. Use only properly specified equipment which is suitable for oxygen, its supply pressure and temperature.

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. All personal protective equipment must be free from oil and grease.

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

STABILITY AND REACTIVITY**Flammability:**

OXYGEN BASED GAS MIXTURE is non-flammable, but vigorously supports combustion of many materials which will not normally burn in air.

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OXYGEN BASED GAS MIXTURE based compressed gas mixture may react violently with reducing materials.

OXYGEN BASED GAS MIXTURE based compressed gas mixture 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 GAS MIXTURE.

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.

All plastics are flammable in oxygen – minimise use.

TOXICOLOGY INFORMATION

No known toxicological effects from this product.

ECOLOGICAL INFORMATION

No known ecological damage caused by oxygen or nitrogen.

When discharged in large quantities carbon dioxide constituent contributes to the greenhouse effect.

Global warming factor (CO₂=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, CARBON DIOXIDE AND NITROGEN)
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: <ul style="list-style-type: none">• 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:** Compressed Gas Mixtures (Oxidising [5.1.2]) Group Standard 2006
Hazardous Substances and New Organisms Act 1996**Approved Handlers:** Approved handlers are required if more than 200 m³ is stored on site.**OTHER INFORMATION**

Oxygen based compressed gas mixtures are supplied in high pressure cylinders.

Cylinder Colours Industrial: Nitrogen - AS 2700 N63 Pewter
Carbon Dioxide Silver

Cylinder Valve Outlet: AS 2473 Type 10, AS2473 Type 30 or AS2473 Type 50

- 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
 - . Air Liquide Group MSDS – Carbon Dioxide AL0018A Rev. 1
 - . Air Liquide Group MSDS – Nitrogen AL089A Rev. 1
 - . Air Liquide Australia “Nitrogen” MSDS June 2008
 - . Air Liquide Australia “Carbon Dioxide” MSDS June 2008
 - . 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 2473.2-2007 - Valves for compressed gas outlets - Part 2 Outlet connections (threaded) and stem (inlet) threads
 - . 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>

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