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MATERIAL SAFETY DATA SHEET

Product Name: ALPHAGAZ™ 1 - Oxygen

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Revision: 3

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IDENTIFICATION

Chemical Name: Oxygen (O₂)
Synonyms: Lasal™ 2003, Aligal™ 3, Oxygen
UN Number: 1072

Use: Used in laboratories for instrumental methods of analysis.

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 and all oxygen system components 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 | 100% |

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.

First AidInhalation:

Call doctor. Prompt medical attention is mandatory in all cases of overexposure to ALIGAL™3. 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 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:**

ALPHAGAZ™1 – Oxygen is non-flammable, but vigorously supports combustion of many materials which will not normally burn in air.

ALPHAGAZ™1 – Oxygen may react violently with combustible materials.

ALPHAGAZ™1 – Oxygen may react violently with reducing materials.

ALPHAGAZ™1 – 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 ALPHAGAZ™1 – Oxygen.

Fire/Explosion Hazard:

Container may rupture when heated. Move cylinders from fire if safe to do so. Cool cylinders with water from a protected location. If unable to keep cylinders cool, evacuate area.

Extinguishing Media:

Use extinguishing media appropriate for the substance burning. Oxygen vigorously supports combustion and may be supporting the combustion.

Hazchem Code:

2 S

Recommended Protective Clothing:

In confined space use 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, ensure adequate ventilation. Avoid oxygen rich (>21%) atmospheres.

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.

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:**

ALPHAGAZ™1 – Oxygen is non-flammable, but vigorously supports combustion of many materials which will not normally burn in air.

ALPHAGAZ™1 – Oxygen may react violently with combustible materials.

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Never smoke or carry out hot work in oxygen rich atmosphere.

Never wear clothing saturated with ALPHAGAZ™1 – Oxygen.

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 ALPHAGAZ™1 - Oxygen cylinders a minimum of 3 meters away from ignition sources.

Keep ALPHAGAZ™1 - Oxygen cylinders a minimum of 3 meters away from incompatible materials if less than 200m³ of oxygen is kept on site.

Keep ALPHAGAZ™1 - Oxygen cylinders a minimum of 5 meters away from incompatible materials if more than 200m³ of 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 ALPHAGAZ™1 – Oxygen (oxygen). Oxygen is not listed in the Work Place Exposure Standards Effective From 2002, Department of Labour, New Zealand.

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. 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 (>21%) 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
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: | -118.6°C |

STABILITY AND REACTIVITY**Flammability:**

ALPHAGAZ™1 – Oxygen is non-flammable, but vigorously supports combustion of many materials which will not normally burn in air.

ALPHAGAZ™1 – Oxygen may react violently with combustible materials.

ALPHAGAZ™1 – Oxygen may react violently with reducing materials.

ALPHAGAZ™1 – 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 ALPHAGAZ™1 – Oxygen.

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 known toxicological effects from this product.

ECOLOGICAL INFORMATION

No ecological damage caused by this product.

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:

1072

Proper Shipping Name:

OXYGEN, COMPRESSED

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:** HSR001029

HSNO Controls: 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 200 m³ is stored on site.

OTHER INFORMATION

Compressed ALPHAGAZ™1 - Oxygen is supplied in high pressure cylinders.

Cylinder Colour: Industrial: AS4484-2004 Black
Cylinder Valve Outlet: Industrial: AS 2473 Type 10 Scandina Cap / White

- 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.erna.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 2473.2-2007 - 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
 - . CGA Safety bulletin SB2-2007 Oxygen Deficiency
 - . 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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