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<h2 style="margin: 0;">MATERIAL SAFETY DATA SHEET</h2> <p style="margin: 10px 0;"><b>Product Name:</b></p> <p style="text-align: center; margin: 10px 0;"><b>LASAL™ 2</b></p>
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**Issued: May 2014**

**Revision: 2**

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Label 2.2 : Non flammable, non toxic gas.

<b>IDENTIFICATION</b>
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**Chemical Name:** Carbon Dioxide  
**Synonyms:** Aligal™2, Carbon Dioxide, CO<sub>2</sub>  
**UN Number:** 1013  
**Poisons Schedule Number:** None allocated  
**G.T. EPG. (Group Text. Emergency Procedure Guide):** AS 1678 2C1

**Use:** Inert gas widely used in chemical, food and beverage, petrochemical and metal industries.

<b>HAZARDS IDENTIFICATION</b>
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**Dangerous Goods Class and Subsidiary Risk:** 2.2  
**HSNO Classification:** Not Hazardous

**Hazard Statement:** Contains gas under pressure; may explode if heated.

**Precautionary Statements:** Read label before use.  
 Read Safety Data Sheet before use.  
 Protect from sunlight.  
 Store in a well-ventilated place.

<b>COMPOSITION</b>
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Ingredients	CAS Number	Proportion
Chemical Entity		
Carbon Dioxide	124-38-9	99.8%

<b>FIRST AID MEASURES</b>
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**Health Effects**

**Acute**

Swallowed: Not applicable to gases  
 Eye: Not irritating to the eye.  
 Skin: Not irritating to skin.  
 Inhaled: Non-toxic at normal temperature and pressure. By diluting the oxygen concentration in air below the level necessary to support life, it can act as an asphyxiant. Effects of oxygen deficiency are: 12-16%: breathing and pulse rate increased, muscular coordination slightly disturbed; 10-14%: emotional upset, abnormal fatigue, disturbed respiration; 6-10%: nausea and vomiting, collapse or loss of consciousness; below 6%: convulsive movements, possible respiratory collapse and death.

**Chronic**

Long term exposure to carbon dioxide has no known health effects. Prolonged exposure to an oxygen deficient atmosphere (below 18% oxygen in air) may affect the heart and nervous system.

**First Aid**Inhalation:

In high concentrations may cause asphyxiation. Low concentrations of CO<sub>2</sub> cause increased respiration and Headache. Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

Skin Contact:

Remove contaminated clothing and shoes immediately – Clothing frozen to the skin should be thawed before being removed – In case of frostbite, thaw with lukewarm water. Obtain immediate medical assistance.

Eye Contact:

Immediately flush eyes thoroughly with water for at least 15 minutes.

**Advice to Doctor**

Advise doctor that victim has been exposed to an oxygen deficient atmosphere.

**General:**

Rescuers should not enter an oxygen deficient atmosphere without using self-contained full face positive pressure breathing equipment.

**FIRE FIGHTING MEASURES****Flammability:**

Non-flammable.

**Fire/Explosion Hazard:**

Carbon dioxide is non-flammable, but container may rupture when heated. If possible, stop flow of product. Move away from the container and cool with water from a protected position. If unable to keep cylinders cool, evacuate area.

**Extinguishing Media:**

Fog or fine water spray.

**Hazchem Code:**

2T

**Recommended Protective Clothing:**

A full chemical protection suit and breathing apparatus should be worn.

**ACCIDENTAL RELEASE MEASURES****Personal Protection:**

Evacuate Area. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.

**Spills and Disposal:**

Try to stop release. Prevent from entering sewers, basements and work pits, or any place where its accumulation can be dangerous.

**Reference Guide:**

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

**General:**

Only experienced and properly instructed personnel should handle compressed gases. 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:**

Non-flammable.

**General:**

Only experienced and properly instructed personnel should handle compressed gases. 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 not required, non hazardous gas (HSNO).

**Storage****Separation:**

Storage of compressed gas cylinders shall be in compliance with New Zealand regulations. 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. Avoid any contact with oil or grease particularly to the cylinder valve. Do not allow backfeed into the container. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Cylinders shall be stored upright on a level, fireproof floor, secure 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.

**Spills and Disposal:**

Try to stop release. Prevent from entering sewers, basements and work pits, or any place where its accumulation can be dangerous. Allow gas to dissipate to atmosphere.

**EXPOSURE CONTROLS / PERSONAL PROTECTION****Exposure Standards:**

TWA 5,000 ppm v/v STEL 30,000 ppm v/v

**Engineering Controls:**

Provide adequate local exhaust and dilution (general) ventilation and supply sufficient replacement air to maintain oxygen concentration above 18%.

**Personal Protection:**

Personnel engaged in the movement of cylinders shall be provided with safety footwear and leather or PVC gloves. Full cover overalls and safety glasses recommended. In areas where equipment failure may cause an immediate high concentration of nitrogen, approved self-contained full face respiratory equipment should be readily available.

**PHYSICAL AND CHEMICAL PROPERTIES****Physical Properties**

Appearance:	Colourless, sharp odour	Flashpoint:	non flammable
Sublimation Temp.:	-78.5°C	Flammability Limits:	non flammable
Vapour Pressure:	(at 15°C) 5090 kPa	Solubility in Water (at 0°C):	1.716 m <sup>3</sup> /kg

**Other Properties**

Relative Density (at 15°C) (Air = 1):	1.53	Density of Gas (101.3 kPa, 15°C):	1.873 kg/m <sup>3</sup>
Molecular Weight:	44.01	Critical Temperature:	31.06°C

**STABILITY AND REACTIVITY****Flammability:**

Non-flammable.

**Materials Compatibility:**

Not Applicable

**TOXICOLOGY INFORMATION**

In high concentrations cause rapid circulatory insufficiency. Symptoms are headache, nausea and vomiting, which may lead to unconsciousness.

**ECOLOGICAL INFORMATION**

When discharged in large quantities may contribute to the greenhouse effect.  
Global warming factor (CO<sub>2</sub>=1) : 1

**DISPOSAL CONSIDERATIONS**

Do not discharge into any place where its accumulation could be dangerous. To atmosphere in large quantities should be avoided.

**TRANSPORT INFORMATION**

<b>UN Number:</b>	1013
<b>Proper Shipping Name:</b>	CARBON DIOXIDE
<b>Dangerous Goods Class and Subsidiary Risk:</b>	2.2
<b>Packing Group:</b>	Not applicable
<b>Hazchem Code:</b>	2T
<b>Other Information:</b>	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"><li>• Ensure that containers are firmly secured.</li><li>• Ensure cylinder valve is closed and not leaking.</li><li>• Ensure there is adequate ventilation.</li><li>• Compliance with applicable regulations.</li></ul>

**REGULATORY INFORMATION**

**ERMA Register Approval No:** HSR001018

**HSNO Controls:** Hazardous Substances (Compressed Gases) Regulations 2004.  
Hazardous Substances (Tank Wagon and Transportable Containers) Regulations 2004.

**Approved Handlers:**

Approved handlers are not required, non hazardous gas (HSNO).

**OTHER INFORMATION**

Carbon dioxide is supplied in high pressure cylinders.

Cylinder Colour: AS4484-2004 Green Grey PMS 415C  
Cylinder Valve Outlet: Industrial: AS 2473 Type 30 Scandina Cap / Blue

- 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

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