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MATERIAL SAFETY DATA SHEET

Product Name:

**NITRONOX™,
Compressed Gas Mixture**

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Revision: 8

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Label 2.2 : Non
flammable, non toxic
gas.



Label 5.1 : Oxidizing
substances.

IDENTIFICATION

Chemical Name: 50% Nitrous Oxide / 50% Oxygen
Synonyms: Nitronox™, Entonox™
UN Number: 3156
Poisons Schedule Number: S4
EPG (Emergency Procedure Guide): AS 1678 2C5

Use: General analgesic for first aid, in ambulances, nursing services, obstetrics and in doctors and dentists surgeries.

HAZARDS IDENTIFICATION

Dangerous Goods Class and Subsidiary Risk: 2.2 sub. 5.1
HSNO Classification: 5.1.2A, 6.8B, 6.9B

Hazard Statement: Contains gas under pressure; may explode if heated.
May cause or intensify fire; oxidiser.
Suspected of damaging fertility or the unborn child.
May cause damage to organs through prolonged or repeated exposure.

Precautionary Statements: Read label before use.
Read Material Safety Data Sheet before use.
Obtain special instructions before use.
Keep/Store away from all combustible materials.
Keep reduction valves free from grease and oil.
Do not handle until all safety precautions have been read and understood.
Use personal protective equipment as required.
Do not breathe gas.
Do not eat, drink or smoke when using this product.
In case of fire: Stop leak if safe to do so.
IF exposed/concerned/unwell: Get medical advice/attention.
Store in a well ventilated place away from sunlight.
Store locked up.
Discharge to atmosphere in large quantities.
Do not discharge into any place where its accumulation could be dangerous.

COMPOSITION

Ingredients

| Chemical Entity | CAS Number | Proportion |
|-----------------|------------|------------|
| Nitrous Oxide | 10024-97-2 | 50% |
| Oxygen | 7782-44-7 | 50% |

FIRST AID MEASURES**Health Effects****Acute**

Swallowed: Not applicable to gases.
Eye: Not irritating to the eye.
Skin: Not irritating to the skin.
Inhaled: Inhalation of small amounts of Nitronox™ may produce euphoria. Large doses induced anaesthesia. High concentrations inhaled for a few seconds may cause hysterical laughter or apparent intoxication.

Chronic

Epidemiological studies suggest an increased risk of spontaneous abortion and low birth weight in off-spring in female workers employed in operating theatres and dental surgeries. These findings are controversial.

First AidInhalation:

In high concentration may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. In low concentrations may cause narcotic effects. Symptoms may include dizziness, headache, nausea and loss of co-ordination. 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 and exposed to nitrous oxide which is a known anaesthetic.

FIRE FIGHTING MEASURES**Flammability:**

Non-flammable, but vigorously supports combustion of many materials which will not normally burn in air. Store away from flammable products. Never smoke or carry out hot work in oxygen rich atmosphere. Never wear clothing saturated with 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:

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:

2S

Recommended Protective Clothing:

Breathing apparatus need only be worn if the substance is involved in a fire.

ACCIDENTAL RELEASE MEASURES**Personal Protection:**

Personnel engaged in the movement and use of cylinders should be provided with safety footwear and leather or PVC gloves. Full cover overalls and safety glasses recommended.

Spills and Disposal:

Ventilate area. Stop leak if it can be done without risk. Allow gas to dissipate to atmosphere.

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

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 required if more than 200 m³ is stored on site.

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:

Well ventilate area. Stop leak if it can be done without risk. Allow gas to dissipate to atmosphere.

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

Work safe exposure standard TLV TWA for nitrous oxide is 25 ppm.

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 engaged in the movement and use of cylinders should be provided with safety footwear and leather or PVC gloves. Full cover overalls and safety glasses recommended.

PHYSICAL AND CHEMICAL PROPERTIES**Physical Properties**

| | | | |
|------------------|-------------------------|-------------------------------|----------------|
| Appearance: | Colourless, Sweet Odour | Flashpoint: | Non Flammable |
| Boiling Point: | Not Applicable | Flammability Limits: | Non Flammable |
| Vapour Pressure: | Not Applicable | Solubility in Water (at 0°C): | Not Applicable |

Other Properties

| | | | |
|--|----------------|--------------------------------------|------------------------|
| Relative Density (at 15°C) (Air = 1): | 1.3 | Density of Gas (101.3 kPa, 15°C): | 1.59 kg/m ³ |
| Molecular Weight: | Not Applicable | Critical Temperature: | Not Applicable |

STABILITY AND REACTIVITY**Flammability:**

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

Materials Compatibility:

May react violently with combustible materials.

Thermal decomposition of nitrous oxide yields toxic products which can be corrosive in the presence of moisture.

May react violently with reducing agents.

Nitrous Oxide violently oxidises organic material.

At temperatures over 575°C and at atmospheric pressure, nitrous oxide decomposes into nitrogen and oxygen.

Pressurized nitrous oxide can also decompose at temperatures equal or greater than 300°C. In the presence of catalysts (e.g. halogen products, mercury, nickel, platinum) the rate of decomposition increases and decomposition can occur at even lower temperatures. Nitrous oxide dissociation is irreversible and exothermic, leading to a considerable rise in pressure.

TOXICOLOGY INFORMATION

No known toxicological effects from this product.

ECOLOGICAL INFORMATION

No ecological damage caused by this product.

DISPOSAL CONSIDERATIONS

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 NITROUS OXIDE) |
| Dangerous Goods Class and Subsidiary Risk: | 2.2 sub. 5.1 |
| Packing Group: | Not applicable |
| Hazchem Code: | 2S |
| 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. |

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

Nitronox is supplied in high pressure cylinders.

Cylinder Colour: AS 2700 B 21 Ultramarine Body & Ultramarine and white shoulder quadrants

Cylinder Valve Outlet: Medical: AS 2472 Fig. 11

| | |
|-------------|--|
| 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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