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## MATERIAL SAFETY DATA SHEET

Product Name:

**CARBON MONOXIDE,  
Compressed (CO)**

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Label 2.3 : Toxic gas.



Label 2.1 : flammable gas.

### IDENTIFICATION

**Chemical Name:** Carbon Monoxide  
**Synonyms:** Coal Gas  
**UN Number:** 1016  
**Poisons Schedule Number:** None allocated  
**G.T. EPG. (Group Text. Emergency Procedure Guide):** AS 1678 2A4

**Use:** Used as a Fuel, As a Reducing Agent in Metallurgy, And in Organic Synthesis.

### HAZARDS IDENTIFICATION

**Dangerous Goods Class and Subsidiary Risk:** 2.3 sub. 2.1  
**HSNO Classification:** 2.1.1A, 6.1C, 6.8A, 6.9A, 9.1D

**Hazard Statement:** Extremely flammable gas.  
Toxic if inhaled.  
May damage fertility or the unborn child.  
Danger of serious damage to health by prolonged exposure through inhalation.  
Toxic and harmful to aquatic life.  
May cause long lasting harmful effects to aquatic life.

**Precautionary Statements:** Keep out of reach of children.  
Read label before use.  
Read Material Safety Data Sheet before use.  
Obtain special instructions before use.  
Do not handle until all safety precautions have been read and understood.  
Keep away from heat, sparks, open flames and hot surfaces.  
Do not breathe gas.  
Wash hands thoroughly after handling.  
Do not eat, drink or smoke when using this product.  
Use only outdoors or in a well-ventilated area.  
Use personal protective equipment as required.  
Avoid release to the environment.  
Leaking gas fire: Do not extinguish, unless can be stopped safely.  
Eliminate all ignition sources if safe to do so.  
If medical advice is needed, have product container or label at hand.  
IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor.  
Do NOT induce vomiting.  
IF exposed: Get medical attention and call a POISON Centre or doctor.

**COMPOSITION****Ingredients**

Chemical Entity	CAS Number	Proportion
Carbon Monoxide	630-08-0	100%

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

Swallowed: Not applicable to gases.  
Eye: Not irritating to the eye.  
Skin: Not irritating to the skin.  
Inhaled: Health effects are related to the level of carbon monoxide in the blood. This level depends on the length of exposure, the concentration of CO in the air and the workload. Transient headache (50-200 ppm); severe headache (above 200 ppm); nausea and possible collapse (above 400 ppm). At concentrations above 5,000 ppm death may occur in minutes. The symptoms described above may appear sooner or at lower concentrations than expected in case of heavy workload.

**Chronic**

Repeated exposure to carbon monoxide may cause subtle behavioural changes and increase the reaction time. It may also increase the risk of heart problems.

**First Aid**Inhalation:

Toxic by inhalation. 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 - Do not use direct mouth-to-mouth method if victim ingested or inhaled the substance: use alternative respiratory method or proper respiratory device – Administer oxygen if breathing is difficult.

Skin Contact:

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

Eye Contact:

If eyes become affected gently flood with tap water for at least 15 minutes.

**General:**

**CONTACT NATIONAL POISONS CENTRE FOR FURTHER ADVICE.**

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

Extremely flammable gas.

**Fire/Explosion Hazard:**

Carbon Monoxide is highly flammable. Container may rupture when heated.

**Extinguishing Media:**

Water jets or water fog. If possible, stop flow of product. Move away from the container and cool with water from a protected position. Do not extinguish a loading gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire. Evacuate Area.

**Hazchem Code:**  
2SE**Recommended Protective Clothing:**

Breathing apparatus need only be worn if the substances are involved in a fire.

**ACCIDENTAL RELEASE MEASURES****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 carbon monoxide, approved self-contained full face respiratory equipment should be readily available.

**Spills and Disposal:**

Avoid discharge to atmosphere. Do not discharge into areas where there is a risk of forming an explosive mixture with air. Waste gas should be flared through a suitable burner with flash back arrestor. Toxic and corrosive gases formed during combustion should be scrubbed before discharge to atmosphere. Evacuate Area.

**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:**

Extremely flammable gas.

**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. Ensure equipment is adequately earthed. Suck back of water into the container must be prevented. Purge air from system before introducing gas. Do not allow backfeed into the container. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Keep away from ignition sources (including static discharges).

**Approved Handlers:**Approved handlers are required if more than 100 m<sup>3</sup> 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. 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. Segregate from oxidant gases and other oxidants in store. Cylinders should be moved by hand-truck or cart designed for that purpose. Ensure area where gas is stored is locked up.

**Spills and Disposal:**

Avoid discharge to atmosphere. Do not discharge into any place where its accumulation could be dangerous. Do not discharge into areas where there is a risk of forming an explosive mixture with air. Waste gas should be flared through a suitable burner with flash back arrestor. Toxic and corrosive gases formed during combustion should be scrubbed before discharge to atmosphere. Evacuate Area.

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

TWA 50 ppm (55 mg/m<sup>3</sup>) STEL 400 ppm (440 mg/m<sup>3</sup>). IDLH 1500 ppm

**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 carbon monoxide, approved self-contained full face respiratory equipment should be readily available.

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

Appearance:	Colourless, Odourless	Flashpoint:	Not Applicable
Boiling Point:	-191.53°C	Flammability Limits (in air):	12.5% to 74%
Vapour Pressure:	Not Applicable	Solubility in Water (at 0°C):	0.035 m <sup>3</sup> /kg

**Other Properties**

Relative Density (at 15°C) (Air = 1):	0.954	Density of Gas (101.3 kPa, 15°C):	1.169 kg/m <sup>3</sup>
Molecular Weight:	28.01	Critical Temperature:	-140.24°C

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

Extremely flammable gas. May react violently with oxidants

**Materials Compatibility:**

No Information.

**TOXICOLOGY INFORMATION**

Damage to red blood cells (haemolytic poison). LC50 (ppm/1h) : 3760

**ECOLOGICAL INFORMATION**

No known ecological damage caused by this product.

**DISPOSAL CONSIDERATIONS**

Avoid discharge to atmosphere. Do not discharge into any place where its accumulation could be dangerous. Do not discharge into areas where there is a risk of forming an explosive mixture with air. Waste gas should be flared through a suitable burner with flash back arrestor. Toxic and corrosive gases formed during combustion should be scrubbed before discharge to atmosphere. Evacuate Area.

**TRANSPORT INFORMATION**

<b>UN Number:</b>	1016
<b>Proper Shipping Name:</b>	CARBON MONOXIDE, COMPRESSED
<b>Dangerous Goods Class and Subsidiary Risk:</b>	2.3 sub. 2.1
<b>Packing Group:</b>	Not applicable
<b>Hazchem Code:</b>	2SE
<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:** HSR001056

**HSNO Controls:** Hazardous Substances (Classes 1 to 5 Controls) Regulations 2001.  
Hazardous Substances (Classes 6, 8, and 9 Controls) Regulations 2001.  
Hazardous Substances (Disposal) Regulations 2001.  
Hazardous Substances (Personnel Qualifications) Regulations 2001.  
Hazardous Substances (Emergency Management) Regulations 2001.  
Hazardous Substances (Tracking) Regulations 2001.  
Hazardous Substances (Identification) Regulations 2001.  
Hazardous Substances (Compressed Gases) Regulations 2004.  
Hazardous Substances (Tank Wagon and Transportable Containers) Regulations 2004.  
Schedule 10 of the Hazardous Substances (Dangerous Goods and Scheduled Toxic Substances) Transfer Notice 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 100 m<sup>3</sup> is stored on site.**OTHER INFORMATION**

Carbon Monoxide is supplied in high pressure cylinders.

Cylinder Colour: AS2700 Y14 Golden Yellow  
Cylinder Valve Outlet: Industrial: AS 2473 Type 20.

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

**Air Liquide regional offices contact details on following page**

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