

Food grade liquid carbon dioxide

Material Safety Data Sheet #: **104**

Issued: 12 April, 2000

This product contains carbon dioxide at concentrations above its exposure standard, is an asphyxiant and is not classified as hazardous according to criteria of Worksafe Australia.

COMPANY DETAILS

Company: BOC Gases Australia Limited
A.C.N. 000 029 729
Address: Riverside Corporate Park, 10 Julius Avenue,
North Ryde NSW 2113
Telephone Number: (02) 8874 4400
Emergency Telephone Number: 1800 653 572

IDENTIFICATION

Product name: Food grade liquid carbon dioxide
Other name:
Product code: 744
UN number: 2187
Dangerous Goods: 2.2
HAZCHEM code: 2RE
Poisons schedule: None allocated.
Pack size: Refer to BOC Gases.
Use: Source of low temperatures for freezing, bulk gas supply for blanketing, carbonation and beverage dispensing applications.
Application method: Low temperature liquid requires specialised transfer equipment and methods, pressure regulated gas applications use heat transfer to evaporated liquid.

Physical Description/Properties:

Appearance: Colourless and odourless liquid and gas.
Boiling point (deg. C at 101.32 kPa): No liquid phase at ambient pressure, exists as solid carbon dioxide at -78 approximately
Vapour pressure (kPa at 25 deg. C): 6,300
Relative density (25 deg. C, 101.3 kPa, Air = 1): 1.53
Flashpoint (deg C): Non-flammable.
Lower flammability limit (%): Non-flammable.
Upper flammability limit (%): Non-flammable.
Solubility in water (101.32 kPa, 20 deg. C): 0.759 gas cm³/cm³

Other properties:

Storage pressure is regulated to process requirements, refer to operating instructions.

High pressure liquefiable gas, critical temperature deg. C: 31

Critical pressure kPa: 7,380

Reactions: Dust of aluminium, chrome and manganese ignite and explode when heated in carbon dioxide. Incompatible with acrylaldehyde, aziridine, metal acteylides, sodium peroxide.

Material compatibility: Low temperature will change mechanical properties of some materials. Most rubbers and plastics are affected by liquid carbon dioxide. Corrosive when moist.

Ingredients	Chemical name:	CAS number:	Proportion (%):
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Carbon dioxide	124-38-9	99.5 minimum
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HEALTH HAZARD INFORMATION

Health Effects: This product contains carbon dioxide at concentrations above its exposure standard. LCLo (lowest reported lethal concentration) human 90,000 ppm 5 minutes.

Acute: Escaping liquid can form a dry ice powder like snow. Uncontrolled release of compressed gas may cause physical injuries in addition to the following health effects:

Swallowed: Solid carbon dioxide will cause cold burns to mouth and throat.

Eye: Eye contact with dry ice powder could result in frostbite or cold burns.

Skin: Skin contact with dry ice powder could result in frostbite or cold burns.

Inhaled: Carbon Dioxide in low concentrations of 3 to 5% by volume in air can cause increased respiration and headache. Concentrations of 8 to 15% can cause headache, nausea and vomiting which may lead to unconsciousness. Higher concentrations can cause rapid circulatory insufficiency leading to coma and death.

Chronic: Carbon Dioxide is potentially toxic at concentrations below 3% due to cellular membrane effects and biochemical alterations such as increased partial pressure of carbon dioxide, increased concentration of bicarbonate ions and acidosis. Long term exposures to levels between 0.5 and 1% are likely to cause calcium deposition in body tissues including kidneys.

First Aid: Rescue personnel are advised to monitor oxygen concentration or wear self contained breathing apparatus when entering confined spaces and poorly ventilated areas.

Swallowed: Drink large amounts of water. Seek medical attention.

Eye: Dry ice powder: keep patient calm. Immediately flush with tepid water in large quantities, or with sterile saline solution. Hold eyelids apart and irrigate with gentle flow for 15 minutes bathing entire eyeball. Seek medical attention.

Skin: Cold burns: irrigate with tap or tepid water for 15 to 30 minutes. Apply sterile dressing and treat as thermal burn. Immerse large areas or limbs in tap or tepid water for 15 to 30 minutes. Do not apply any form of direct heat. Seek medical attention.

Inhaled: Remove from exposure. Check there is no obstruction to the airway if breathing is weak or has ceased and give artificial respiration, preferably using an oxygen resuscitator. Keep warm and rested. Seek medical attention.

First Aid Facilities: Air Viva™ or Oxy Viva™ . Water or sterile saline solution for irrigation.

Advice to Doctor: Treatment for cold burns or asphyxiation.

PRECAUTIONS FOR USE

Exposure Standards: Worksafe exposure standard TLV TWA for carbon dioxide is 5,000 ppm (0.5 volume%) STEL 30,000 ppm.

Engineering Controls: Obtain specialist advice before installing and operating storage vessel and equipment. Low temperature insulation is required for liquid storage and transfer. Equipment design and materials must allow for contraction at low temperature. Some plastics and rubbers are unsuitable due to low temperature embrittlement and leaching of plasticisers. Pressure relief valves must be used between points where liquid and cold gas can be trapped as high pressures will develop as liquid evaporates and gas warms. Uninsulated surfaces must be protected against skin contact. Connect all pressure relief devices to a safe location having good natural ventilation. Check for leaks prior to use. Ensure liquid supply valve is shut and equipment is slowly depressurised and warmed to ambient temperature before commencing maintenance and repairs. Solid carbon dioxide formed on rapid release of pressure may block pipework and equipment. Any contained pressure may be released suddenly when the solid is warmed.

Personal Protection: Avoid contact with escaping liquid and gas. Only experienced and properly trained people should use this product. Wear safety glasses, safety shoes, use leather or plastic protective gloves when operating valves. Follow equipment operating instructions.

Flammability: Non-flammable product.

SAFE HANDLING INFORMATION

Storage and Transport: Commonwealth, State and Territory Dangerous Goods legislation contain requirements which affect low temperature liquid storage and transport. Store: Refer to vessel operating instructions. Do not store near sources of ignition, oxidising agents, poisons, combustible material and flammable liquids. Portable liquid containers should be stored: upright, prevented from falling, in a secure area; below 45 deg C, in a dry, well ventilated area constructed of non-combustible material with firm level floor (preferably concrete), away from areas of heavy traffic and emergency exits. Transport: Transport on open top vehicles in accordance with Australian Code for the Transport of Dangerous Goods. Shipping name: Carbon dioxide, refrigerated liquid Transport E.P.G. card: 2C2.

Spills and disposal: Release of liquid to atmosphere will generate vapour fog clouds which can travel considerable distances and affect visibility. These clouds should be treated as asphyxiating atmospheres as the evaporated solid will have displaced air. Refer to vessel operating instructions. In an emergency allow liquid and gas to escape to atmosphere. Monitor oxygen concentration in confined spaces. Contact nearest BOC Gases centre for guidance. Leak checking may be done by pressure drop test or soapy water at joints and

outlets. Shut liquid and gas supply valves to stop leak if possible and safe to do so. Notify the nearest BOC Gases centre. Residual product will be disposed of under BOC Gases supervision.

Fire/Explosion Hazard: Temperatures in a fire may cause liquid vessels and related equipment to rupture. Storage vessels may contain fine particle insulation materials or foam products which may be hazardous or release hazardous decomposition products in a fire. Call fire brigade. Cool vessels exposed to fire by applying water from a protected location. Do not approach vessels suspected of being hot. Evacuate the area if unable to keep vessels cool.

CONTACT POINT

Technical Support: 131 262 (B/Hrs)
or 132 427 (fax)

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