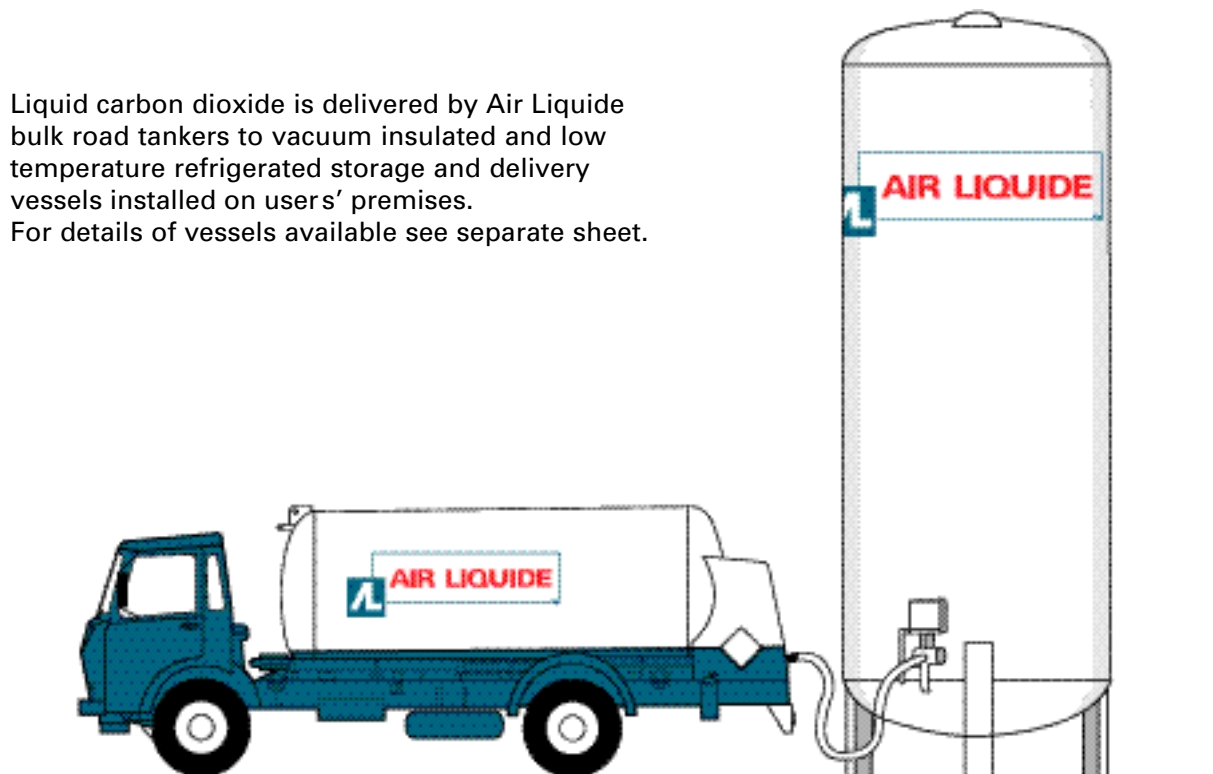


# Carbon Dioxide, liquid

UN	2187
HAZCHEM	2RE
CLASS	2.2

## T E C H   S P E C S

Liquid carbon dioxide is delivered by Air Liquide bulk road tankers to vacuum insulated and low temperature refrigerated storage and delivery vessels installed on users' premises.  
For details of vessels available see separate sheet.



### SPECIFICATION

Carbon Dioxide	> 99.8%
Moisture	< 100 ppm

### PHYSICAL DATA

Chemical Symbol	CO <sub>2</sub>
Vapour Pressure (kPa @ 15°C)	5090
Relative Density (Air = 1)	1.53
Molecular Weight	44.01
Sublimation Point	-78.5°C
Critical Temperature	31.0°C
Specific Volume (@101.3 kPa & 15°C)	0.535 m <sup>3</sup> /kg

### PROPERTIES

Carbon Dioxide is a colourless, odourless, non flammable gas. It is heavier than air.

### USES

The food industries consume most of the carbon dioxide produced. It is employed for:

- carbonation of soft drinks, lemonade, soda, fruit juices, etc. . .
- recharging of natural mineral waters with carbon dioxide.
- conservation of wine, unfermented grape juice and various fruit juices.

- tapping of beer and prevention of oxidation through contact with the air.
- accelerating the growth of farm produce as an atmospheric additive.

It is employed in the chemical industry in the following applications:

- preparation of sodium carbonate, alkaline bicarbonates, lead carbonate and various organic substances (e.g. salicylic acid).
- neutralization of sedentary alkalis.
- manufacture of foam rubber.
- precipitation of lime after clarification of juices in the sugar industry.
- dehydration of penicillin.
- tanning of hides.
- production of paints and varnishes.

It is employed as a protective atmosphere for arc welding and in reactor cooling circuits in nuclear power plants.

Pressurized carbon dioxide is employed in fire extinguishers, extinguishers for aircraft and torpedoes. It serves to inflate buoys and pneumatic rescue dinghies. It is also used as a propellant gas in aerosols.



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## TECH SPECS

## HANDLING & SAFETY

### USES Continued

Carbon dioxide is employed in the laboratory as a carrier gas for gas analysis, and as a standard gas.

Owing to its stimulating effect on the nerve centres, carbon dioxide is employed in medicine in mixtures with oxygen, for reviving victims of asphyxiation (drowning, electrocution, carbon dioxide poisoning, diphtheric toxin morphine, scopolamine). It also serves in the treatment of certain skin lesions. Mixed with ethylene oxide, it is employed as a fumigant in the destruction of insects in grain silos, and in leguminous plants, dates and dried figs.

### HAZARDS

Inhalation of carbon dioxide in high concentration is dangerous to respiration. At very high concentrations leads to loss of consciousness, and eventually death.

Mental alertness (narcotic effect) and respiration begin to become affected at a concentration of 2% in air. Above 7%, loss of consciousness can occur very rapidly.

There is a risk of accumulation in low points (pits, culverts, basements, etc.) where it will create hazardous conditions.

### MATERIALS COMPATIBILITY

Carbon dioxide is non-corrosive and so any common metal is acceptable, provided equipment is designed to withstand process pressure.

### PRECAUTIONS IN USE

Use only in a well ventilated area to prevent accumulation of high concentration of carbon dioxide. Ensure that oxygen content of air is maintained above 18%.

It is recommended that the user of liquid carbon dioxide is familiar with relevant sections of the Australian Standard 1894-1997 "The storage and handling of non-flammable cryogenic and refrigerated liquids", available from Standards Australia.

### PERSONAL PROTECTION

Full face mask, well fitting leather gloves and full overalls without cuffs should be worn when handling liquid carbon dioxide supply systems.

### FIRST AID

If victim is conscious:

- Move to uncontaminated area to breathe fresh air.
- Keep warm and quiet.
- Call doctor.

If victim is unconscious:

- Move to uncontaminated area and give assisted respiration.
- When breathing is restored, treatment as above. Continued treatment should be symptomatic and supportive.

Cold burns/Frostbite:

- Flush with luke warm water for at least 10 minutes then treat as thermal burns.
- Seek hospital attention for all but the most superficial cases. Do not apply direct heat or give alcohol or cigarettes.
- Protect frozen parts from infection.

Hospital treatment of cold burns/frostbite may differ from heat burns.

### ADDITIONAL INFORMATION

The information, recommendations and data contained in this publication are intended to give basic guidance to users of Air Liquide gases for their safe handling and use.

Material Safety Data Sheets (MSDS) for gases and gas mixtures supplied by Air Liquide are also available.

It is essential for the safe use of gases that personnel are properly trained and are fully aware of the possible hazards.

Further information and advice on any matter relating to the safe handling or use of these products may be obtained from the nearest Air Liquide office.