



Product data sheet.

Liquid Carbon Dioxide, Cooling Systems (R744).



Application

Liquid carbon dioxide is used for refrigerators- and freezer-transport instead of diesel oil used for running a conventional refrigerator- and cold-storage plant. Carbon dioxide results in lower running costs and lower maintenance costs. The cooling is not produced in a unit, but is in the carbon dioxide-tank as liquid carbon dioxide which is -45°C. This also creates bigger cooling-capacity. The carbon dioxide cools the air in the cargo hold via a heat exchanger and afterwards it is ventilated over the roof of the car. When it is necessarily, the system utilizes hot cooling water from the engine of the car, to keep the desired temperature in the cargo hold. The system gives total climate-control.

Physical properties

Liquid carbon dioxide is a colourless liquid that is slightly heavier than water. In gaseous form, it is colourless with a sour pungent odor/taste. Carbon dioxide is neither flammable nor does it support combustion; it is, on the other hand, a product of the decomposition/combustion of organic and some inorganic materials. Atmospheric air contains around 0.04 vol. % carbon dioxide and exhaled air contains around 4 vol. %. In gaseous form, carbon dioxide is around 1.4 times heavier than air. At atmospheric pressure, carbon dioxide in its solid form (dry ice) with a temperature of -78° C will not melt like ordinary water-ice, but instead will evaporate and become gaseous carbon dioxide (when a substance converts straight from its solid form to its gaseous form, it is called sublimation). Carbon dioxide reacts violently with strong alkalis, especially at high temperatures. Carbon dioxide is extracted as a by-product of various processes such as fertiliser production and from natural sources. Carbon dioxide must be kept at a pressure greater than 5.2 bar in order to remain liquid.

Specification

Material No. 110711
Product name: Liquid Carbon Dioxide, Transport Cooling

Purity

Carbon dioxide (CO₂) ≥ 99,8 vol. %

Impurities

Water (H₂O) ≤ 30 ppm

Oxygen (O₂) ≤ 30 ppm

The specifications are exclusively valid for deliveries in pressure tanks.

Physical data

Gas type	Boiling Point	Latent heat of vaporization	Specific Heat Capacity (15° C)
Carbon dioxide, CO ₂ , LIC	-78,5° C	348 kJ/kg	0,81 kJ/kg K
Conversion factors		Critical values	
1 nm ³ = 1,530 litre = 1,808 kg		Critical temperature 31,04° C	
1 litre = 0,652 nm ³ = 1.181 kg		Critical pressure 73,82 bar	
1 kg = 0,553 nm ³ = 0.847 litres		Critical density 0,468 kg/l	
1 nm ³ =1 m ³ at 15° C and 0,98 KPa. The litre-designation is used for gas in its liquid phase.			