



BIOGON[®] food grade gases.

BIOGON[®] C liquid (E 290). Liquid carbon dioxide, CO₂.



Application Within the food industry, liquid carbon dioxide is primarily used for cooling and freezing. Liquid carbon dioxide is delivered in tanks. Gaseous BIOGON[®] C from tank facilities can be used for packaging in a modified atmosphere (MAPAX[®]) and for the carbonisation of beer and mineral water as well as in greenhouses.

Dry ice is formed when compressed liquid carbon dioxide passes through a nozzle at atmospheric pressure. Around 2 kg of BIOGON[®] C liquid is used in order to form 1 kg of dry ice. Dry ice sublimates, in other words it goes directly from solid form to gas without becoming a liquid first. When dry ice sublimates it collects the vaporisation heat from its surroundings. This makes dry ice an excellent alternative for the cooling of food, since the cooling effect is twice as big as ice and since water spill is avoided.

Carbon dioxide also dissolves in water. The colder the water, the more carbon dioxide is dissolved. When carbon dioxide is dissolved in water carbonic acid is formed.

Product specification **BIOGON[®] C liquid (E 290). Liquid carbon dioxide, CO₂**

Product name	Purities vol %	Impurities unit ppm				Odour, taste in water	Material number*
		CO ₂	H ₂ O	O ₂	Oil		
BIOGON [®] C liquid	≥ 99,9	≤ 50	≤ 30	≤ 5	≤ 10	none	

*Differs between countries, see local language version.

All BIOGON[®] products comply with the requirements in European food legislation. This includes, among others, the European regulation (EC) no. 852/2004, regulation (EC) no. 178/2002, regulation (EC) no. 1333/2008 and regulation (EC) 231/2012. The gases in the BIOGON[®] product group do not contain any allergens. No genetically modified organisms (GMO) are used in the manufacturing process for BIOGON[®] gases.

Characteristics and origin

Liquid carbon dioxide is a colourless liquid that is heavier than water. In gaseous form it is colourless with an acid, pungent odour and taste. Carbon dioxide is not flammable, nor does it support combustion. Carbon dioxide is formed during decomposition/combustion of organic and certain inorganic materials. Atmospheric air contains around 0,04% carbon dioxide, and exhaled air contains around 4 vol. %.

In gaseous form, carbon dioxide is around 1,4 times heavier than ordinary 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 directly from its solid form to its gaseous form it is called sublimation). Carbon dioxide reacts strongly with strong alkalis, especially at high temperatures.

Carbon dioxide is extracted as a by-product of various processes such as the production of fertiliser, ethanol, biodiesel and from natural sources. For carbon dioxide that is used with food products, the gas goes through a comprehensive purification process in order to ensure that the gas meets the purity requirements imposed by the authorities.

Carbon dioxide must be kept at a pressure greater than 5,2 bar in order to remain in liquid form.

Physical data

Type of gas and symbol	Carbon dioxide, CO ₂		
Boiling point	-78,5 °C		
Heat of vaporisation, 1 bar	348 kJ/kg		
Heat capacity (15 °C)	0,81 kJ/kg K		
Conversion factors	1 Nm ³	= 1,530 l	= 1,808 kg
	1 l	= 0,652 Nm ³	= 1,181 kg
	1 kg	= 0,553 Nm ³	= 0,847 l
Critical values	Critical temperature	31,04 °C	
	Critical pressure	73,82 bar	
	Critical density	0,468 kg/l	

1 Nm³ = 1 m³ at 15 °C, 1 atm (technical atmosphere). The litre designation is used for gas in liquid form.

Safety

Our goal is to maintain a high level of safety and protection, both for employees and the environment. Please read our safety data sheets (available at our web sites) before you use the product.

Delivery form

Cooled liquid.