رقيط للغازات الصناعية
Rakeeth Industrial Gases

Carbon Dioxide (Co2)

CAS: 124-38-9 EC: 204-696-9 UN: 1013; 2187 (Refrigerated liquid)

Carbon Dioxide IG		
3.0 Purity (%)	99,9	
Impurities	Permanent gases + H_2O	0,1%

Carbon Dioxide CP Grade 4.5					
Purity (%)	99,995				
Impurities (ppm)	O_2 5	N_2 10	C_nH_m 2	H_20 5	CO 2
Typical Filling Pressure	15ºC: 51 bar(a)				

Characteristics

- Liquefied, colourless gas.

Health Risks

- Asphyxiant at high concentrations
- Increases the breathing rate.

Transport

ADR Class 2, 2A 

DOT Class 2,2 

Product Description	Size (kg)	Grade	Material Number	Valve Connection	Recommended Regulator
Carbon Dioxide IG N3.0	31,3	Instrument Grade	514103-RC-C	5/8” BSP RH Ext	W019140 or W019240
Carbon Dioxide IG N3.0	5,6	Instrument Grade	514203-RC-C	5/8” BSP RH Ext	W019140 or W019240
Carbon Dioxide PCC	175	Uncertified	514101-PA-N	5/8” BSP RH Ext	W019140 or W019240
Carbon Dioxide CP Grade N4,5	31,3	Chemically Pure	514202-SE-C	5/8” BSP RH Ext	W019140 or W019240
Carbon Dioxide EP	31,3	Pharmaceutical	514106-RC-C	5/8” BSP RH Ext	W019140 or W019240

Physical Data	
Molecular Weight	44,01
Boiling Point at 1,013 bar [°C]	-56,56
Density at 1,013 bar, 20°C [kg/m_3]	1,839
Vapour Pressure at 0°C [bar]	34,5
Vapour Pressure at 20°C [bar]	57,3
Flammability Range in Air [% volume]	Non-combustible
Specific Volume at 1,013 bar, 20°C [m_3/kg]	0,544

Material Compatibility

Aluminium	Buna ® N	Brass	Butyl rubber	Carbon steel	Copper	Neoprene ®	Nylon ®	Polythene	PVC	Stainless steel	Teflon ®	Viton ®
●	■	●	●	●	●	●	●	■	●	●	●	■

Legend: ● Good ● Fair ■ Avoid

Source

- Carbon dioxide is recovered from many different sources. It is obtained as an off-gas from fermentation processes, lime-stone kilns, natural CO_2 springs as well as gas streams from chemical and petrochemical operations. Recently, CO_2 is also recaptured from the off-gas from power plants.

Applications

- Carbon dioxide is used extensively as a neutralising agent for pH control, for example, in cement curing water treatment and in many other commercially important chemical applications.
- Carbon dioxide is used in many consumer products ranging from aerosol packaging to air guns that require pressurised gas because it is inexpensive and non-flammable; in the operation of pneumatic equipment where other power sources are not available or suitable, and for the transfer of hazardous and flammable liquids.
- Owing to its stimulating effect on the nerve centres, carbon dioxide is employed in medicine in mixtures with oxygen, for reanimating victims of asphyxiation (drowning, electrocution, carbon monoxide poisoning, diphtheritic toxin morphine or scopolamine). It also serves in the treatment of certain skin affections.
- Carbon dioxide is used for the chemical vapour deposition of silicon dioxide.
- Mixed with ethylene oxide, it is employed as a fumigant in the destruction of insects in grain silos, as well as in leguminous plants, dates and dried figs.
- A substantial volume of carbon dioxide is used for carbonating beverages such as beer and many soft drinks and conservation of wine, unfermented grape juice and various fruit juices.
- Carbon dioxide is used to modify atmospheres, for example in green houses where it increases plant growth rates or combined with nitrogen to prolong quality in food packaging applications (MAP). (See FoodFresh™)
- Carbon dioxide, when mixed with helium and nitrogen, is used as the active medium in carbon dioxide lasers. Such lasers have a variety of applications, for instance piercing small holes into cigarette papers and the marking of food and drink packages, cutting metals, welding, engraving, etc.
- Carbon dioxide is used as an inerting agent for various mild steel welding operations, often in combination with argon.
- Carbon dioxide is used for foam blowing.
- Carbon dioxide is used in Coleman nitrogen analysers.
- Carbon dioxide is used as media for supercritical fluid extraction (SFE) in sample preparation and as a carrier gas for analytical and preparative supercritical fluid chromatography (SFC).
- Compressed carbon dioxide is used as a replacement for blasting powder in quarrying and mining operations.
- Solid carbon dioxide is used as blasting agent.
- Liquid carbon dioxide is becoming increasingly used as a refrigerant in mechanical refrigerating systems due to its environmental credentials. It has the ASHRAE number R-744. It can be used in direct expansion systems or as a secondary refrigerant with ammonia. 'Dry ice', or solid CO_2, is commonly used as a refrigerant.
- Liquid/solid carbon dioxide is used for cooling gas chromatography ovens.
- Possible refrigerant for MAC (mobile air-conditioning) due to European phase-out of tetrafluoroethane (R-134a).
- Carbon dioxide is used in mixtures for car emission monitoring and environmental monitoring.
- Carbon dioxide is used for fire extinguishing.
- Carbon dioxide is often used in combination with ethylene oxide for sterilising purposes.
- Carbon dioxide is also used for blood analysis and dehydration of penicillin.
- Carbon dioxide is used for production of paints and varnishes.