

Biogenic carbon dioxide

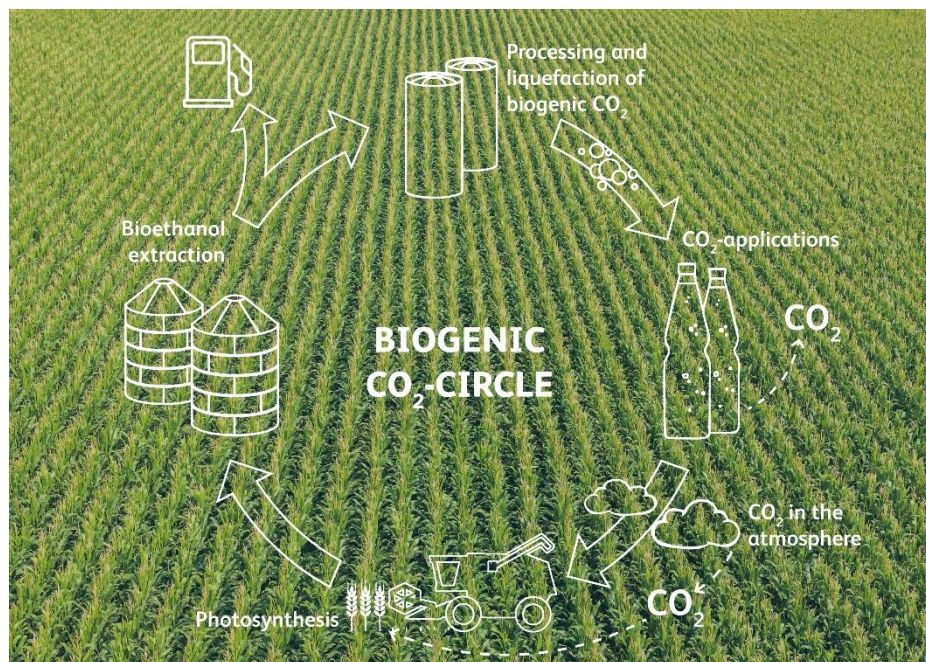
Biogenic carbon dioxide 4.0

Quality 4.0 (99,99 vol.%), liquid CO₂, for food (E290)

Sustainable and environmentally friendly

Today, carbon dioxide for beverage, food and other applications is mainly obtained as a by-product of chemical processes. CO₂ from chemical processes (also called "technical CO₂") is essentially produced by the oxidation of natural gas or other fossil fuels, so that technical carbon dioxide can also be referred to as "fossil" carbon dioxide. The oxidation of fossil fuels and the release of the associated CO₂ contribute significantly to the increase in the CO₂ content of the air.

Biogenic carbon dioxide is gained out of the raw gas of bioethanol plants. By producing bioethanol, a CO₂-rich raw gas accrues, which is then purified and liquefied in an elaborate process to **biogenic CO₂**. During use, the biogenic carbon dioxide only releases as much CO₂ as was previously taken from the atmosphere (photosynthesis) by plant growth (mainly wheat and corn). The liquefaction and processing of biogenic CO₂ closes the carbon dioxide loop so that there is no further increase in the CO₂ content of the air.



Biogenic CO₂ is therefore a sustainable and particularly environmentally friendly product that enables industrial customers to produce more environmentally friendly and sustainable products.

In the food sector, biogenic carbon dioxide is the product of choice for companies, which attach importance on food additives with a natural origin.

Biogenic carbon dioxide

Properties and Composition

Physical properties	
Molecular weight	44.01 g/mol
density, gaseous	1.528 (air = 1)
density, liquid	1.03 (water = 1)
Critical temperature	31.06 °C
Solubility in water at 20 °C and 1 bar	1,500 mg/l

Chemical properties	
Non flammable, inert gas	
At normal conditions colourless gas	
No coloration or turbidity when dissolved in water	
Free of taste and odor	

Shipment details	
Shipment	Cryogenic liquid, in road tankers
UN No.	UN 2187
ADR/RID	class 2 classification code 3A
OEL value	5,000 ppm
EC safety data sheet	Regulation (EC) No. 1907/2007
Availability	All over Germany

Components	Amount	
CO ₂	≥ 99.99	Vol. %
H ₂ O	≤ 20	ppm V/V
O ₂	≤ 30	ppm V/V
CO	≤ 10	ppm V/V
NH ₃	≤ 2.5	ppm V/V
NO/NO ₂	≤ 2.5 each	ppm V/V
Total volatile hydrocarbons	≤ 50	ppm V/V (calculated as CH ₄)
Volatile hydrocarbons higher homologues	≤ 20	ppm V/V (without CH ₄)
Acetaldehyd	≤ 0.2	ppm V/V
Total sulphur	≤ 0.1	ppm V/V (calculated as S)
SO ₂	≤ 1	ppm V/V
Aromatic hydrocarbon	≤ 0.02	ppm V/V
Non-volatile residue	≤ 10	mg/kg
Non-volatile organic residue	≤ 5	mg/kg

Further information

- Also complies with the actual VDM CO₂ specification 09/15
- JECFA-acidity → test passed
- JECFA-test of reducing substances (hydrogen phosphide, sulphides and other reducing substances): → test negative
- HACCP → principles of HACCP and the product traceability are applied
- EIGA, E290 and ISBT → biogenic CO₂ matches the requirements of the purity specification E290, ISBT (International Society of Beverage Technologists) and the EIGA (European Industrial Gases Association)
- GMO Exemption: → No GMO products are produced or otherwise used in the production process
- Corresponds to Regulation (EU) No. 231/2012