

Liquid CO₂ (LCO₂) Quality Specifications

Component	Unit	Limit for CO ₂ Cargo within Reference Conditions
Carbon Dioxide (CO ₂)	mol-%	Balance (Minimum 99.81%)
Water (H ₂ O)	ppm-mol	≤ 30
Oxygen (O ₂)	ppm-mol	≤ 10
Sulphur Oxides (SO _x)	ppm-mol	≤ 10
Nitrogen Oxides (NO _x)	ppm-mol	≤ 1.5
Hydrogen Sulfide (H ₂ S)	ppm-mol	≤ 9
Amine	ppm-mol	≤ 10
Ammonia (NH ₃)	ppm-mol	≤ 10
Formaldehyde (CH ₂ O)	ppm-mol	≤ 20
Acetaldehyde (CH ₃ CHO)	ppm-mol	≤ 20
Mercury (Hg)	ppm-mol	≤ 0.0003
Carbon Monoxide (CO)	ppm-mol	≤ 100
Hydrogen (H ₂)	ppm-mol	≤ 50
Methane (CH ₄)	ppm-mol	≤ 100
Nitrogen (N ₂)	ppm-mol	≤ 50
Argon (Ar)	ppm-mol	≤ 100
Methanol (CH ₃ OH)	ppm-mol	≤ 30
Ethanol (C ₂ H ₅ OH)	ppm-mol	≤ 1
Total Volatile Organic Compounds (VOC)	ppm-mol	≤ 10
Mono-Ethylene Glycol (MEG)	ppm-mol	≤ 0.005
Tri-Ethylene Glycol (TEG)	ppm-mol	Not allowed
BTEX	ppm-mol	≤ 0.5
Ethylene (C ₂ H ₄)	ppm-mol	≤ 0.5
Hydrogen Cyanide (HCN)	ppm-mol	≤ 100
Aliphatic Hydrocarbons (C ₃ +)	ppm-mol	≤ 1,100
Ethane (C ₂ H ₆)	ppm-mol	≤ 75
Solids, particles, dust	Micro-meter (µm)	≤ 1

Northern Lights adheres to the CO₂ specification to ensure safety and technical integrity. While these components are specified, exception may be evaluated in close cooperation with the customer.