

Carbon Dioxide (CO₂)

Physical Properties

Chemical formula	CO ₂	Heat vaporization, BTU/lb	
Molecular weight	44.01	Solid: -109.25°F	246.6
Color - vapor & gas	none	Liquid: +1.7°F 300 psig gauge	119.2
solid	translucent white	Liquid: +70.0°F 839 psig gauge	63.9
Specific gravity (air - 1.0)		Specific heat, BTU/lb	
Gas at 70°F 1 atm	1.53	At constant pressure (1 atm), 70°F	0.20
Specific volume, cu ft/lb		At constant volume (1 atm), 70°F	0.15
Gas 60°F 1 atm, lb/cu ft	8.57	Viscosity, centipoise	
Gas 70°F 1 atm, lb/cu ft	8.74	Gas, 70°F, 1 atm	0.015
Temperature of solid, 1 atm	-109.25°F	Liquid (SAT. at 0°F)	0.14
Density, lb/cu ft		Critical temperature	
Solid: -109.25°F	97.6	Highest as liquid	87.82°F
Liquid: +1.7°F 300 psig gauge	63.36	Triple point	
Liquid: +70.0°F 839 psig gauge	47.35	Temperature-pressure combination for	
Liquid: -69.8°F	73.5	simultaneous existence as solid,	
		liquid or gas	-69.83° F, 60.4 psig

Carbon Dioxide Specifications (Units in ppm [v/v] unless shown otherwise)

Limiting Characteristics	CGA G-6.2 Grade H	MTG Typical
Carbon Dioxide Min. % (mole/mole)	99.8	99.9
Water (vapor)	32	32
Dewpoint, °F	-60	-60
Total Hydrocarbons (as methane)	50	50
Oxygen	30	30
Carbon Monoxide	10	10
Hydrogen Sulfide	0.5*	0.5
Nitric Oxide	2.5	5

*Total sulfides in QVLH shall not exceed 0.5 ppm as hydrogen sulfide

**In gas phase or water solution

Limiting Characteristics	CGA G-6.2 Grade H	MTG Typical
Nitrogen Dioxide	2.5	5
Sulfur Dioxide	5	5
Carbonyl Sulfide	0.5*	0.5
Nonvolatile Residues, ppm (wt/wt)	10	10
Odor	Free of Foreign Odor**	
Inerts	-	1000
Ammonia	-	25
Foreign taste	-	None detected

Conversion Data

	WEIGHT			GAS		LIQUID		SOLID
	POUNDS Lb.	TONS T	KILOGRAMS Kg	CUBIC FEET SCF	CUBIC METERS Nm ³	GALLONS Gal	LITERS L	CUBIC FEET Cu Ft
1 Pound	1.0	0.0005	0.4536	8.741	0.2294	0.11806	0.4469	0.010246
1 Ton	2000.0	1.000	907.2	17,483	458.8	236.1	893.9	20.49
1 Kilogram	2.205	0.0011023	1.0	19.253	0.5058	0.2603	0.9860	0.2260
1 SCF Gas	0.1144	-	0.05189	1.0	0.02628	0.013506	0.05113	0.0011723
1 Nm ³ Gas	4.359	0.002180	1.9772	38.04	1.0	0.515	1.9480	0.04468
1 Gal Liquid	8.470	0.004235	3.842	74.04	1.9431	1.0	3.785	0.08678
1 L Liquid	2.238	0.0011185	1.0151	19.562	0.5134	0.2642	1.0	0.02293
1 Cu Ft Solid	97.56	0.04880	44.25	852.8	22.38	11.518	43.60	1.0

SCF (standard cubic feet) gas measured at 1 atmosphere and 70°F.
Liquid measured at 21.42 atmosphere and 1.7°F.

All values rounded to nearest 4/5 significant numbers.

Nm³ (normal cubic meter) gas measured at 1 atmosphere and 0°C.
Solid measured at -109.25° F.