

■ SIGNAL WORD: WARNING

H280: Contains gas under pressure; may explode if heated.
Simple asphyxiant AND direct physiological toxin at elevated concentrations: CO2 causes rapid circulatory insufficiency even at normal oxygen levels. Cryogenic liquid/gas contact causes frostbite.

SECTION 1: IDENTIFICATION

Product Name	Carbon Dioxide (CO2)
CAS Number	124-38-9
Synonyms	Carbonic Acid Gas; Carbonic Anhydride; Carbon Anhydride; R744; CO2; UN1013 (compressed); UN2187 (refrigerated liquid)
Molecular Formula	CO2 MW: 44.01 g/mol
Product Use	Inert gas; fire suppression; supercritical extraction solvent; food processing/packaging; carbonation; cooling; welding shielding gas; inerting; laboratory use
Supplier	Cannagas Supply 97 Turnpike Rd, Westborough, MA 01581
Phone	877-710-1965
Email	Sales@canna-gas.com
Emergency Phone	CHEMTREC: 1-800-424-9300 (24-hour)
SDS Revision Date	March 2026

SECTION 2: HAZARDS IDENTIFICATION

GHS Classification	Gases Under Pressure — Liquefied Gas (H280). Simple Asphyxiant (SA).
Signal Word	WARNING
Hazard Statements	H280: Contains gas under pressure; may explode if heated. Simple asphyxiant and direct physiological toxin at elevated concentrations: CO2 causes rapid circulatory insufficiency. Low concentrations cause increased respiration and headache. High concentrations cause unconsciousness and death.
Precautionary – Prevention	P260: Do not breathe gas. P271: Use only in well-ventilated area. Install CO2 and O2 monitors in enclosed use areas.
Precautionary – Response	P304+340: IF INHALED — remove to fresh air, keep comfortable for breathing. P308+313: If exposed or concerned — get medical attention.
Precautionary – Storage	P410+403: Protect from sunlight. Store in well-ventilated area. P405: Store locked up.
Precautionary – Disposal	P501: Return cylinders to supplier. Dispose per applicable regulations.
Other Hazards	IMPORTANT DISTINCTION FROM NITROGEN: CO2 is not merely a simple asphyxiant. At 1–2%, CO2 causes increased respiration rate and headache. At 3–4%, impaired judgment and headache. At 5%+, rapid circulatory disturbance, nausea, vomiting. At 7–10%, loss of consciousness within minutes. CO2 gas is ~1.5x heavier than air — accumulates in low-lying areas, pits, and basements. Cryogenic: liquid CO2 and dry ice cause frostbite/cryogenic burns on contact.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Concentration	EC Number
Carbon Dioxide	124-38-9	≥99.8% (industrial); ≥99.9% (food grade)	201-206-9

All components on TSCA Inventory. Listed in Annex IV/V of REACH — exempted from registration.

SECTION 4: FIRST-AID MEASURES

Inhalation	EMERGENCY: Remove to fresh air immediately using SCBA if CO2-enriched atmosphere. Apply artificial respiration if not breathing. Administer oxygen if available. Call 911. CO2 is both an asphyxiant AND a physiological toxin — urgent medical care required.
Skin Contact	Compressed gas/liquefied gas: frostbite possible. Thaw with lukewarm (not hot) water. Do NOT rub frozen tissue. Seek immediate medical attention.
Eye Contact	Liquefied gas splash: rinse immediately with water for at least 15 minutes. Remove contact lenses. Seek immediate medical attention.
Ingestion	Not a relevant route of exposure for gas.
Key Symptoms	Low conc. (1–2%): increased respiration, headache. Moderate (3–5%): headache, nausea, vomiting, impaired judgment. High (>7%): rapid unconsciousness, irregular heartbeat, convulsions, death.

SECTION 5: FIRE-FIGHTING MEASURES

Suitable Extinguishing Media	Non-flammable — CO2 IS an extinguishing agent. Use agent appropriate for surrounding fire.
Specific Hazards	Non-combustible. Cylinders/containers may explode if heated (BLEVE). Depressurization of liquid CO2 below ~5 bar may create solid CO2 (dry ice) which can block relief devices and pipework.
Protective Equipment	SCBA and full protective gear. Cool cylinders with water from safe distance.
Flash Point	Not applicable (non-flammable gas)
Autoignition	Not applicable
Flammable Limits	Not applicable

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions	EVACUATE area. CO2 is ~1.5x heavier than air — accumulates in low-lying areas. Use SCBA if entry required. Install CO2 detectors. Ventilate from floor level.
Environmental Precautions	CO2 is a greenhouse gas — minimize unnecessary releases. Prevents from entering sewers, basements, and low areas.
Containment & Cleanup	Gas: Ventilate area thoroughly. Stop source if safe. Liquid CO2: Keep personnel upwind and away from low areas. Allow to evaporate in ventilated area.

SECTION 7: HANDLING AND STORAGE

Safe Handling	Only trained persons should handle pressurized CO2. Install CO2 and O2 monitors in enclosed areas. Use in well-ventilated areas. Secure cylinders upright. Use appropriate pressure-rated equipment. Never inert containers with flammable/explosive substances with liquid CO2. Check regularly for leaks. Avoid backfeed into cylinders.
Safe Storage	Store in ventilated, secure area away from heat sources. Protect from physical damage. Valve caps in place when not in use. Comply with NFPA 55 and CGA standards. Periodically check containers for corrosion and leaks.
Incompatibles	Strong oxidizers, strong reducing agents, alkali and alkaline earth metals. Do not use with materials that react violently with CO2.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Component	Limit Type	Value	Authority
Carbon Dioxide	TWA	5,000 ppm (9,000 mg/m3)	OSHA PEL
Carbon Dioxide	STEL	30,000 ppm	ACGIH TLV-STEL
Carbon Dioxide	IDLH	40,000 ppm (4%)	NIOSH

Carbon Dioxide	TWA	5,000 ppm	ACGIH TLV
Oxygen (min.)	Minimum safe	19.5% O2 in air	OSHA 29 CFR 1910.146

Engineering Controls	CO2 detectors strongly recommended in all enclosed use areas. O2 monitors required in areas where asphyxiation risk exists. Ventilation from floor level — CO2 is heavier than air.
Respiratory Protection	Not required in well-ventilated areas below OEL. SCBA required for entry into CO2-enriched or O2-deficient atmospheres. Air-purifying respirators do NOT protect against asphyxiation or high CO2 concentrations.
Eye/Face Protection	Safety glasses for compressed gas. Face shield for liquefied CO2 handling.
Hand Protection	Work gloves for cylinders. Cryogenic insulated gloves for liquid CO2.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State (STP)	Colorless gas; liquefied under pressure	Vapor Density	1.52 (air = 1) — significantly heavier than air
Boiling Point	-78.5°C (-109.3°F) — sublimes directly to gas at 1 atm	Density (gas)	1.96 kg/m3 at 15°C, 1 atm
Triple Point	-56.6°C (-69.9°F) at 5.2 bar (only liquid above this pressure)	Density (liquid)	1,032 kg/m3 at -20°C
Critical Point	31.1°C (88°F), 73.8 bar	Solubility in Water	1.45 g/L at 25°C (forms carbonic acid H2CO3)
Flammability	Non-flammable, non-combustible	Odor	Odorless at low concentrations; faintly acidic at high concentrations
Flash Point	Not applicable	GWP	Global Warming Potential = 1 (reference standard)

SECTION 10: STABILITY AND REACTIVITY

Reactivity	Stable under normal conditions.
Chemical Stability	Stable in cylinders and under normal storage conditions.
Hazardous Polymerization	Will not occur.
Conditions to Avoid	Extreme heat (cylinder explosion risk). Depressurization below 5 bar with liquid CO2 — dry ice formation may block relief devices.
Incompatible Materials	Strong oxidizers, alkali metals, some reducing agents. Do not use in systems containing flammable materials — CO2 may be a poor suppressant for some metal fires.
Hazardous Decomp. Products	Stable — does not decompose under normal conditions.

SECTION 11: TOXICOLOGICAL INFORMATION

Acute Toxicity	LC50 (rat): 167,857 ppm over 4 hours. CO2 is directly physiologically active — unlike nitrogen, CO2 can cause harm even at normal oxygen levels.
Physiological Effects	CO2 stimulates the respiratory center. At 5%: causes rapid circulatory insufficiency. At 7–10%: loss of consciousness within minutes. At >30%: convulsions and death. CO2 increases production of carboxy-hemoglobin — synergistically increases toxicity of CO and NO2.
Skin/Eye Effects	Compressed gas: no significant effects. Liquefied CO2: frostbite/cryogenic burns.
Carcinogenicity	Not carcinogenic. Not listed on IARC, NTP, or OSHA carcinogen lists.
Reproductive Toxicity	Not classified.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity	No ecological damage caused under normal use quantities.
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Persistence/Degradability	Not applicable — inorganic gas.
Global Warming	GWP = 1 (reference). Large-scale releases contribute to greenhouse effect. Minimize unnecessary venting.

SECTION 13: DISPOSAL CONSIDERATIONS

Disposal Methods	Vent small quantities to well-ventilated atmosphere. Return cylinders to supplier. Do not attempt to refill cylinders. Follow all applicable regulations.
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SECTION 14: TRANSPORT INFORMATION

	DOT (Compressed)	DOT (Refrigerated Liquid)	IATA / IMDG
UN Number	UN1013	UN2187	UN1013
Proper Shipping Name	Carbon dioxide	Carbon dioxide, refrigerated liquid	Carbon dioxide
Hazard Class	2.2	2.2	Class 2.2
Packing Group	N/A	N/A	N/A
ERG Number	120	120	—

SECTION 15: REGULATORY INFORMATION

OSHA HazCom	Classified as hazardous per 29 CFR 1910.1200.
TSCA	Listed on US TSCA Inventory. 8(a) CDR exempt.
SARA 311/312	Physical Hazard: Yes Health Hazard: Yes (simple asphyxiant, direct physiological effects)
CERCLA	No reportable quantity.
California Prop. 65	Not listed.
Greenhouse Gas	CO2 is subject to EPA greenhouse gas reporting requirements for large industrial emitters (40 CFR 98).

SECTION 16: OTHER INFORMATION

Issue Date	March 2026
Version	1.0
Prepared By	Cannagas Supply
Key Sources	GHS Purple Book Rev. 9; OSHA HazCom 2012; Linde SDS CO2 (2022); Praxair SDS P-4574; Air Liquide SDS; NIOSH Pocket Guide; ACGIH TLVs.

DISCLAIMER: Information believed to be accurate as of issue date. Cannagas Supply makes no warranty of any kind. Users are responsible for compliance with all applicable regulations.