Dry Ice is the solid form of carbon dioxide (CO2), produced by expanding liquid CO2 to atmospheric pressure which causes rapid cooling and solidification at -78.5°C (-109.3°F). It sublimes directly from solid to gas (no liquid phase at atmospheric pressure) making it an extremely effective, clean, residue-free refrigerant. Cannagas Supply provides dry ice for cold chain shipping, laboratory cooling, and industrial applications.

SECTION 1: PRODUCT IDENTIFICATION

Product Name	Dry Ice
CAS Number	124-38-9 (Carbon Dioxide, Solid)
Formula	CO2 | MW: 44.01 g/mol
Physical Form	White snow-like solid — available as blocks (up to 50 lbs), slabs, pellets, or nuggets
Temperature	-78.5°C (-109.3°F) at atmospheric pressure
GHS Signal Word	WARNING
DOT Classification	UN1845, Class 9, PG III
Supplier	Cannagas Supply | 97 Turnpike Rd, Westborough, MA 01581 877-710-1965 | Sales@canna-gas.com

SECTION 2: PHYSICAL PROPERTIES

Physical State	White snow-like solid
Temperature	-78.5°C (-109.3°F) constant at 1 atm
Sublimation Pt.	-78.5°C — goes directly to gas, no liquid phase at 1 atm
Density (solid)	1,560 kg/m3 (~97 lb/ft3)
Expansion Ratio	~1:845 (solid to gas at 15°C, 1 atm)
Flammability	Non-flammable

Sublimation Rate	~10–15 lbs per day from insulated Styrofoam cooler
Vapor Density (gas)	1.52 (air=1) — CO2 gas heavier than air
Sealed Container VP	~850 psig at 70°F (21°C) — EXPLOSION HAZARD
Color	White / semi-transparent
Odor	Odorless (solid); slightly acidic at high gas concentrations
Water Contact	Reacts with water forming carbonic acid (H2CO3)

SECTION 3: APPLICATIONS & PERFORMANCE

Cold Chain Shipping	Primary use: maintains products below -20°C in insulated shipping containers. Ideal for pharmaceutical, biological samples, frozen foods, and temperature-sensitive chemicals.
Laboratory Cooling	Cold trapping solvents and volatile compounds during concentration. Cold baths when mixed with acetone (~-78°C): exact sublimation temperature.
Blast Cleaning	Dry ice pellet blasting — non-abrasive, non-conductive, residue-free industrial cleaning.
Special Effects	Fog/mist effects (sublimation into water). Entertainment applications.
Food Processing	Rapid freezing of foods. Maintains cold during transport and service.
Dry Ice + Acetone Bath	Mixing dry ice pellets with acetone or isopropanol creates -78°C cold bath — useful for controlling exothermic reactions and cryogenic condensation.
Sublimation Use	Use the minimum quantity needed. Allow excess to sublimate in ventilated outdoor area. Sublimation rate ~10–15 lbs/day in a Styrofoam cooler.

SECTION 4: STORAGE & HANDLING

■ **SAFETY NOTE:** NEVER STORE DRY ICE IN SEALED AIRTIGHT CONTAINERS. Sublimation at room temperature creates ~850 psig pressure — sealed containers WILL rupture violently. NEVER HANDLE WITH BARE HANDS — immediate frostbite at -78.5°C.

Storage Container	Styrofoam (polystyrene) cooler is ideal: insulating, non-sealing, not airtight. Lid must allow CO2 gas to vent.
NEVER Use	Metal, glass, or airtight plastic containers. These WILL fail.
Handling Tools	Insulated thermal gloves (leather or equivalent), dry ice tongs, plastic shovel/scoop. NEVER nitrile gloves alone — may freeze to skin.
Ventilation	Use in ventilated areas. CO2 gas is heavier than air — monitor at floor level in enclosed spaces.
Sublimation Rate	Plan for ~10–15 lb/day sublimation loss in a Styrofoam cooler. Order slightly more than calculated need.
Disposal	Allow to sublimate outdoors in ventilated area. Never in trash, sink, or sealed containers.

SECTION 5: TRANSPORT INFORMATION

DOT Ground	UN1845, Class 9, PG III. Vented packaging required. Max 200 kg per package.
Air Transport	Regulated by IATA DGR. Passenger/cargo limits apply. Must declare as dangerous goods.
Packaging	Vented insulated packaging required. Must allow CO2 to escape — not airtight.
Labeling	Class 9 label with dry ice label showing net weight. Mark "DRY ICE" and UN1845.

SECTION 6: SAFETY SUMMARY

■ **SAFETY NOTE:** THREE HAZARDS: (1) FROSTBITE — direct contact causes immediate cryogenic burns; (2) PRESSURE — sealed containers create explosive pressure; (3) ASPHYXIATION — sublimed CO2 accumulates at floor level and has direct physiological effects. Always work in ventilated areas. Use insulated gloves and tongs. Never seal in containers.

GHS Signal Word	WARNING
Key Hazards	Frostbite; explosive pressure if sealed; CO2 asphyxiation/direct toxicity.
DOT	UN1845, Class 9, PG III — vented packaging required
SDS Reference	Full SDS available. CHEMTREC: 1-800-424-9300.