

Material Safety Data Sheet

Carbon Dioxide

SECTION I - IDENTIFICATION

Issue Date: April, 1997
Last Revision: January, 2003
Manufacturer's Name: Island Equipment Company
Address: 388 S. Marine Drive
Tamuning, Guam 96911
Emergency Phone No: CHEMTREC 1-800-424-9300
GUAM: 1-671-565-2485/888-2450
Chemical Name and Synonyms: Carbon Dioxide
Trade Name and Synonyms: Carbon Dioxide
Chemical Family: Carbonate
Formula: CO₂
CAS No: 124-38-9
Molecular Weight: 44.01

SECTION II - HEALTH HAZARD DATA

Time Weighted Average Exposure Limit (TWA):

5,000 Molar PPM. Its STEL is proposed to be change from 15,000 Molar PPM to 30,000 Molar PPM.

Symptoms of Exposure:

Inhalation: Low concentrations (3-5 %) cause increased respiration and headache.

Eight to 15 molar % concentrations cause headache, nausea and vomiting which may lead to unconsciousness if not moved to open air or given oxygen.

Higher concentrations cause rapid circulation insufficiency leading to coma and death.

Toxicological Properties:

Carbon Dioxide is the most powerful cerebral vasodilator known. Inhaling large concentrations causes rapid circulation insufficiency leading to coma and death. Chronic, harmful effects are not known from repeated inhalation of low (3-5 molar %) concentrations.

Rat, inhalation LCLo 657,190 PPM for 15 minutes.

Rat (10 days preg.), inhalation TCLo 60,000 PPM, 24 hours teratogenic effects.

Human, inhalation TCLo 2,000 PPM pulmonary effects.

Frostbite effects are a change in the color of the skin to gray or white possibly followed by blistering.

Not listed in the National Toxicology Program (NTP) or I.A.R.C.; not regulated as carcinogen by OSHA

Recommended First Aid Treatment:

Prompt medical attention is mandatory in all cases of overexposure to Carbon Dioxide. Rescue personnel should be equipped with self-contained breathing apparatus.

Inhalation: Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given mouth-to-mouth resuscitation and supplemental oxygen. Assure that vomited material does not obstruct the airway by use of positional drainage. Medical assistance should be sought immediately.

Hazardous Mixtures of Other Liquids, Solids or Gases:

Forms Carbonic acid in the presence of water.

SECTION III - PHYSICAL DATA

Boiling Point (Sublimation Point):	-109.3 F (-78.5 C)
Solid Density:	95.64 lb./cu. ft. (1562 kg/cu. meter)
Vapor Pressure @ 70 F (21.1 C):	844.7 psia (5824 Kpa)
Gas Density @ 70 F, 1 ATM:	0.1144 lb./cu. ft. (1.832 kg/cu. meter)
Solubility in water:	Bunsen Coefficient = 0.8704 @ 68 F (20 C);
Freezing Point:	- 69.83 F (-56.57 C) @ 75.1 psia (518 Kpa)
Specific Gravity:	1.53 (Air = 1.0) @ 70 F
Appearance and Odor:	Colorless, odorless gas

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flammable Limit:	Not Applicable
Electrical Classification:	Non-Hazardous
Extinguishing Media:	Nonflammable, inert gas
Special Fire Fighting Procedure:	Not Applicable
Unusual Fire and Explosion Hazard:	Not Applicable

SECTION V - REACTIVITY DATA

Stability:	Stable
Incompatibility (Materials to avoid):	None
Hazardous Decomposition Products:	Carbon Monoxide
Hazardous Polymerization:	Will Not Occur

SECTION VI - SPILL OR LEAK PROCEDURE

Steps to be taken in case material is released or spilled:

Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is in the cylinder or cylinder valve, contact Island Equipment Company.

Waste Disposal Method:

Do not attempt to dispose of residual or unused quantities. Return in the shipping container tagged to indicate a defect, and properly labeled, with any valve outlet plugs or caps secured and valve protection cap in place to Island Equipment Company for proper disposal.

SECTION VII - SPECIAL PROTECTION INFORMATION

Respiratory Protection:

Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.

Ventilation:

Local Exhaust recommended to prevent accumulation above TWA.

Protective Gloves:

As required, any material

Eye Protection:

Safety goggles or glasses

Other protective equipment:

Safety Shoes

SECTION VIII - SPECIAL PRECAUTION

Special Labeling Information:

DOT Shipping Name -- Carbon Dioxide
ID Number ----- UN 1013
DOT Shipping Label --- Non-Flammable Gas
DOT Hazard Class ----- 2.2

Special Handling Recommendations:

Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure (< 1500 psig) piping or system. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder. Close cylinder valve after each use and when cylinder is empty.

Special Storage Recommendations:

Protect cylinders from physical damage. Store in cool, dry, well ventilated area, away from heavily trafficked area and emergency exits. Do not allow the temperature where cylinders are stored to exceed 130 F (54 C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders being stored for excessive periods of time.

Do not store cylinders in sub-surface or closed areas. Carbon Dioxide is heavier than air and leaking gas could accumulate in low lying areas and cause suffocation.

Special Packaging Recommendation:

Dry carbon dioxide can be handled with most common structural materials. Moist carbon dioxide is corrosive by its formation of carbonic acid. For this applications, 316, 308 and 310 stainless steels may be used as well as Hastelloy A, B, C & Monel. Ferrous nickel alloys are slightly corroded.

At normal temperatures carbon dioxide is compatible with most plastics and elastomers

Other Recommendation or Precaution:

Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder which has not been filled by the owner or with his consent is a violation of Federal Law (49CFR)

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