

# MATERIAL SAFETY DATA SHEET

CARBON DIOXIDE



## LIQUID CARBONIC INDUSTRIES

810 JORIE BLVD. • OAK BROOK, IL 60521-2216 • 708 572-7500

DOT: UN 1013  
HAZ.CL.: Division 2.2  
LABEL: Nonflammable Gas

April 1994

24 Hour Emergency Phone Numbers: (504) 673-8831; CHEMTREC (800) 424-9300

### SECTION I -- PRODUCT IDENTIFICATION

CHEMICAL NAME: Carbon Dioxide, ~~Carbon Dioxide~~  
COMMON NAME AND SYNONYMS: Gaseous Carbon Dioxide, Carbon Dioxide, Carbon Anydride, Carbonic Acid Gas  
FORMULA: CO<sub>2</sub> CHEMICAL FAMILY: Carbonate

### SECTION II -- HAZARDOUS INGREDIENTS

| MATERIAL       | VOLUME % | CAS NO.  | THRESHOLD LIMIT VALUES  |
|----------------|----------|----------|---|
| Carbon Dioxide | 99.5+    | 124-38-9 | ACGIH 1993-1994 TWA = 5,000 Molar PPM<br>STEL = 30,000 Molar PPM<br>OSHA 1993 PEL = 5,000 Molar PPM |

### SECTION III -- PHYSICAL DATA

SUBLIMATION POINT (°F): -109.3  
VAPOR PRESSURE: @ 70°F = 856 psia  
VAPOR DENSITY (AIR=1): @ 70°F = 1.65  
SOLUBILITY IN WATER: Very Soluble (85+%)  
APPEARANCE AND ODOR: Colorless gas, slight pungent odor  
SPECIFIC GRAVITY (H<sub>2</sub>O=1): \*  
% VOLATILE BY VOLUME: 99+  
EVAPORATION RATE (BUTYL ACETATE=1): N/A (Gas)  
\* @ 1 ATM Solid @ -11°F = 1.56

### SECTION IV -- FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED): N/A  
EXTINGUISHING MEDIA: Nonflammable gas - carbon dioxide is an extinguishing agent.  
FLAMMABLE LIMITS: LEL None UEL

#### SPECIAL FIRE FIGHTING PROCEDURES:

If cylinders are exposed to a fire, safely relocate or keep cool with water spray.

#### UNUSUAL FIRE AND EXPLOSION HAZARDS:

None

### SECTION V -- HEALTH HAZARD DATA

Route(s) of Entry: Inhalation? Yes Skin? No Ingestion? No  
Carcinogenicity: NTP? No IARC Monographs? No OSHA? No  
EFFECTS OF OVEREXPOSURE:

Inhalation: At 2 to 3% concentration symptoms of simple asphyxia occur; 3 to 5% causes increased respiration and headache; up to 15% causes headache, nausea, vomiting and unconsciousness. Higher concentrations cause rapid circulatory insufficiency leading to coma and death. CO<sub>2</sub> is the most powerful cerebral vasodilator known.

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SECTION V -- HEALTH HAZARD DATA (CONT'D)

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EFFECTS OF OVEREXPOSURE (Cont'd):

Persons in ill health where such illness would be aggravated by exposure to gaseous carbon dioxide should not be allowed to work with or handle this product.

EMERGENCY AND FIRST AID PROCEDURE:

If Inhaled: Conscious persons should be assisted to an uncontaminated area and inhale fresh air. If unconscious, provide assisted respiration and supplemental oxygen. Further treatment should be symptomatic and supportive. Self-contained breathing apparatus should be available for rescue personnel.

CAUTION: Welding or brazing may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. Use adequate ventilation. See ANSI Z-49.1 "Safety in Welding and Cutting" published by the American Welding Society and OSHA safety regulations under 29 CFR 1910.252 "Welding, Cutting and Brazing." Also see ACGIH TLVs 1993-1994 Appendix B, Section B2, "Welding Fumes." ARC RAYS can injure eyes and burn skin.

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SECTION VI -- REACTIVITY DATA

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STABILITY: UNSTABLE ( ) STABLE ( x )

CONDITIONS TO AVOID: N/A

INCOMPATIBILITY (MATERIALS TO AVOID): Reacts with alkaline materials to form carbonates and bicarbonates. Can be explosive with reactive metals (Sodium, Potassium, Magnesium) and their hydrides.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide at high temperatures.

HAZARDOUS POLYMERIZATION: MAY OCCUR ( ) WON'T OCCUR ( x )

CONDITIONS TO AVOID: N/A

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SECTION VII -- SPILL OR LEAK PROCEDURES

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STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Evacuate all personnel from affected area. Ventilate area of leak with supplemental fans. Carbon dioxide is heavier than air and will collect in low areas. Use self-contained breathing apparatus to enter leaking cylinder area.

WASTE DISPOSAL METHOD:

If possible, remove cylinder to remote area (downwind) and allow to slowly vent to atmosphere.

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SECTION VIII -- SPECIAL PROTECTION INFORMATION

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RESPIRATORY PROTECTION: Positive pressure air line with mask or self-contained breathing apparatus in event of major leak.

VENTILATION: LOCAL EXHAUST ( x ) Provide adequate ventilation to prevent concentration over the allowable TWA, STEL or PEL  
MECHANICAL (GENERAL) ( x )

PROTECTIVE GLOVES: Cotton or leather

EYE PROTECTION: Safety goggles or glasses

OTHER PROTECTIVE EQUIPMENT: Safety shoes. Use low oxygen alarm (less than 18%) where necessary. Use appropriate protective equipment when welding.

No. 123  
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### SECTION IX -- SPECIAL PRECAUTIONS

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#### PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

Use only DOT or ASME coded containers. Protect cylinders from physical damage. Store in well-ventilated, cool, and dry areas. Follow normal compressed gas storage recommendations. Do not allow temperature where cylinders are stored to exceed 125F. Store carbon dioxide cylinders with the cap on tight and valve end up. Avoid low storage areas and corrosive chemicals.

#### OTHER PRECAUTIONS:

Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. See Compressed Gas Bulletin SB-2, "Oxygen Deficient Atmospheres," CGA Pamphlets P-1, "Safe Handling of Compressed Gases in Containers;" G-6, "Carbon Dioxide;" G-6.1, "Standard for Low Pressure CO<sub>2</sub> Systems at Consumer Sites;" G-6.3, "Carbon Dioxide Cylinder Filling and Handling Procedures for Beverage Plants, NSDA TD01."

Consult manufacturer's MSDS sheet on welding consumables and related products for reactivity and health hazard data, and for further information regarding welding fumes.

Reporting under SARA, Title III, Section 313 not required.

NFPA 704 No. for carbon dioxide = 1 0 0