

SAFETY DATA SHEET

CARBON DIOXIDE (CO₂)

SECTION I. Chemical Product and Company Identification

Product Name: Carbon Dioxide
Synonym: CO₂, Carbonic Anhydride
Distributor: Buckeye Fire Equipment Company
110 Kings Road
Kings Mountain, NC 28086
Telephone: 704-739-7415
Manufacturer: Praxair Inc.
39 Old Ridgebury Road
Danbury, CT 06810
Telephone: 1.800.645.4633
Web Address: www.buckeyefire.com
Email Address: bfec@buckeyef.com
Recommended Use: Fire Suppression.
Emergency: CHEMTREC 1.800.424.9300
Revision Date: 05/2015

SECTION II. Hazard Identification

WARNING!!! Liquefied gas under pressure.



Contains gas and liquids under pressure; may explode if heated.
Can cause rapid suffocation.
May cause dizziness and drowsiness.
Can increase respiration and heart rate.
May cause frostbite.

OSHA Regulatory Status: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Hazard Classification: Gases Under Pressure – Liquefied Gas

Precautionary Statements: Protect from sunlight. Store in a well-ventilated place.

SECTION III. Composition/Information on Ingredients

	<u>Weight %*</u>	<u>CAS #</u>
Carbon dioxide	> 99.8	124-38-9
Impurities	< 0.2	N/A

* % is rounded to the nearest appropriate number. Values are not to be considered product specifications

SECTION IV. First Aid Measures

NOTE: Rescuers should not attempt to retrieve a victim of exposure to this product without adequate personal protective equipment. At a minimum, self-contained breathing apparatus should be worn.

Remove victim to fresh air as quickly as possible. Trained personnel should administer supplemental oxygen and /or cardio-pulmonary resuscitation if necessary. Only trained personnel should administer supplemental oxygen.

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In case of frostbite, place the frostbitten part in warm water. *Do Not Use Hot Water.* If warm water is not available or is impractical to use, wrap the affected part gently in a blanket. If fingers or hands are frostbitten, place the affected part in the armpit. Have victim gently exercise the affected part while being warmed. Seek immediate medical attention. Take a copy of this SDS to the attending physician or health professional. For more information see supplier website.

SECTION V. Firefighting Measures

Extinguishing Media: This product is an extinguishing agent. It is nonflammable and noncombustible.

Special Firefighting Procedures: Structural firefighters must wear self-contained breathing apparatus and full protective equipment. Move fire exposed cylinders if it can be done without risk to firefighters. Otherwise cool containers with hose stream and protect personnel. Withdraw immediately in case of rising sounds from venting safety device or any discoloration of tanks due to fire.

Unusual Fire and Explosion Hazards: Containers of carbon dioxide, when involved in fire, may rupture or burst from the heat of the fire.

Sensitivity to Mechanical Impact or Static Discharge: None

SECTION VI. Accidental Release Measures

In case of accidental release, use the appropriate respiratory and personal protection. Evacuate the area and allow the gas, which is heavier than air, to dissipate. Monitor the surrounding area for carbon dioxide and oxygen levels. The levels of carbon dioxide must be below those listed in Section II and the atmosphere must have at least 19.5% oxygen before personnel are allowed back into the area.

SECTION VII. Handling and Storage

Avoid eye, respiratory, and skin exposure. Use the appropriate personal protective equipment when handling. Be aware of any signs of dizziness, fatigue, or any exposure symptom described in Section II. Product should be stored in dry, well-ventilated areas away from sources of heat. Store in its original container or extinguisher. Containers are under pressure and present significant safety hazards. Store away from heavily trafficked areas and paths for ingress/egress. Protect containers from possible damage and falling. Secure cylinders to prevent accidental knock over. Protect from sunlight. For more information see supplier website.

SECTION VIII. Exposure Controls and Personal Protection

Exposure Guidelines:

	<u>OSHA PEL</u>	<u>ACGIH TLV</u>
Carbon Dioxide	5000 ppm	5000 ppm

Use adequate ventilation to prevent unacceptable concentration levels noted in Section II.

Respiratory Protection: Use self-contained breathing apparatus

Eye Protection: Wear chemical goggles or full-face air-purifying respirator.

Skin Protection: Use low-temperature protective gloves and appropriate body protection.

SECTION IX. Physical and Chemical Properties

Appearance and Odor: Carbon dioxide is a colorless gas that is odorless at low concentrations. At high concentrations it will have a sharp acidic odor.

Gas Density @ 21°C and 1 atm: 0.1144 lb/ft³

Solubility: 0.90%

Flash Point: N/A

Flammability: N/A

Melting Point/Freezing Point at 1 atm: -78.5°C

Boiling Point @ 1 atm: -78.5°C

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pH: 3.7

Vapor Pressure at 20°C: 838 psig

Vapor Density at 21.1 °C: Liquid Density 762 kg/m³

Relative Density/Specific Gravity (H₂O = 1) at 21.1 °C: 1.22

Relative Density/Specific Gravity (Air = 1) at 21.1 °C and 1 atm: 1.52

Solubility in Water, % by wt: 0.90

SECTION X. Stability and Reactivity

Stability: Normally stable

Incompatibles: Will ignite and explode when heated with powdered aluminum, beryllium, cerium alloys, chromium, magnesium-aluminum alloys, manganese, thorium, titanium, and zirconium. In the presence of moisture, will ignite with cesium oxide. Metal acetylides will also ignite and explode on contact with carbon dioxide.

Decomposition Products: In an electrical discharge, yields carbon monoxide and oxygen. In the presence of moisture, carbon dioxide will form carbonic acid.

Hazardous Polymerization: Will not occur, however carbon dioxide acts as to catalyze the polymerization of acrylaldehyde and aziridine.

SECTION XI. Toxicological Information

Potential Health Effects:

Effects of a Single Acute Overexposure:

Inhalation: Carbon Dioxide gas is an asphyxiate with effects due to lack of oxygen. It is also physiologically active, affecting circulation and breathing. Moderate concentrations may cause headache, drowsiness, dizziness, stinging of the nose and throat, excitation, rapid breathing and heart rate, excess salivation, vomiting, and unconsciousness. Lack of oxygen can kill.

Carbon dioxide is an asphyxiant. It initially stimulates respiration and then causes respiratory depression. High concentrations result in narcosis. Symptoms in humans are as follows:

Carbon Dioxide Concentration Inhaled	Effects
1%	Breathing rate increases slightly.
2%	Breathing rate increases to 50% above normal level. Prolonged exposure can cause headache, tiredness.
3%	Breathing increases to twice normal rate and becomes labored. Weak narcotic effect. Impaired hearing, headache, increased blood pressure and pulse rate.
4-5%	Breathing increases to approximately four times normal rate, symptoms of intoxication become evident, and slight choking may be felt.
5-10%	Characteristic sharp odor noticeable. Very labored breathing, visual impairment, headache, and ringing in ears. Judgement may be impaired, followed within minutes of loss of consciousness.
10-100%	Unconsciousness occurs more rapidly about 10% level. Prolonged exposure to high concentrations may eventually result in death from asphyxiation.

Skin Contact: No harm expected from vapor. Cold gas, or liquid or solid carbon dioxide may cause severe frostbite.

Swallowing: An unlikely route of exposure. This product is a gas a normal temperature and pressure.

Eye Contact: No harm expected from vapor. Cold gas, or liquid or solid carbon dioxide may cause severe frostbite.

Effects of Repeated Overexposure: No harm expected.

Other Effects of Over Exposure: Damage to retinal or ganglion cells and central nervous system may occur.

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Medical Conditions Aggravated by Overexposure: The toxicology and the physical and chemical properties of carbon dioxide suggest that overexposure is unlikely to aggravate existing medical conditions.

Acute Dose Effects: LC_{Lo} = 90,000 ppm, 5 min, human

Reproductive Effects: A single study has shown an increase in heart defects in rats exposed to 6% carbon dioxide in air for 24 hours at different times during gestation. There is no evidence that carbon dioxide is tetragenic for humans.

Carcinogenicity: None

SECTION XII. Ecological Information

Ecotoxicity: Occurs naturally in the environment.

Dissipation: Dissipates rapidly in well-ventilated areas.

Any adverse effect on animals would be related to overexposure and oxygen deficient environments. No adverse effect to plant life except for frost caused by rapidly expanding gases.

SECTION XIII. Disposal Consideration

This product is not a RCRA characteristically hazardous or listed hazardous waste. Dispose of according to state or local laws, which may be more restrictive than federal regulations.

SECTION XIV. Transportation Information

This product is hazardous as defined by U.S. Department of Transportation 49 CFR 172, and dangerous goods as defined by Transport Canada "Transportation of Dangerous Goods" regulations.

Proper Shipping Name: Carbon Dioxide

Hazard Class Number and Description: 2.2 (non-flammable gas)

UN Identification Number: UN1013

Packing Group: N/A

DOT Label Required: Non-Flammable Gas

SECTION XV. Regulatory Information

International Inventory Status: All ingredients are on the following inventories

<u>Country</u>	<u>Agency</u>
U.S.A.	TSCA
Canada	DSL
Europe	EINECS/ELINCS
Australia	AICS
Japan	MITI
South Korea	KECL

U.S. Federal Regulatory Information:

This product is not subject to the SARA reporting requirements or has SARA Threshold Planning Quantities or CERCLA Reportable Quantities.

State Regulatory Information:

Chemicals in this product are covered under the specific State regulations noted:

Alaska	Designated Toxic and Hazardous Substances- Carbon Dioxide
California	Permissible Exposure Limits for Chemical Contaminants- Carbon Dioxide
Florida	Substance list- Carbon Dioxide

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Illinois	Toxic Substance List- Carbon Dioxide
Kansas	Section 302/303 List- No
Massachusetts	Substance list- Carbon Dioxide
Minnesota	List of Hazardous Substances- Carbon Dioxide
Missouri	Employer Information/Toxic Substance List- Carbon Dioxide
New Jersey	Right to Know Hazardous Substance List- Carbon Dioxide
North Dakota	List of Hazardous Chemicals, Reportable Quantities- No
Pennsylvania	Hazardous Substance List- Carbon Dioxide
Rhode Island	Hazardous Substance List- Carbon Dioxide
Texas	Hazardous Substance List- No
West Virginia	Hazardous Substance List- Carbon Dioxide
Wisconsin	Toxic and Hazardous Substances- Carbon Dioxide

California Proposition 65- Carbon Dioxide is not listed on the California Proposition 65 List

SECTION XVI. Other Information

HMIS RATINGS:

Health 1
Flammability 0
Reactivity 0

Personal Protective Equipment: Appropriate gloves and eye protection. (See Section 8)

WHMIS (Canadian Workplace Hazardous Materials Identification)

Class A: Compressed

The information contained herein is given in good faith as typical values and not as product specifications. No warranty, either expressed or implied, is hereby made.