



Date Prepared: July 1, 1992

Date Reviewed: March 21, 2006

## MATERIAL SAFETY DATA SHEET

**Product Name:** Carbon dioxide, refrigerated liquid

**March 21, 2006**

### 1. Chemical Product and Company Identification

Linweld, Inc  
9911 Deer Park Road  
Waverly, NE 68462

Telephone Number  
Information: (402) 786-3330  
Emergency: (402) 786-5277

**Product Name:** Carbon dioxide, refrigerated liquid  
**Chemical Name:** Carbon dioxide  
**Common Names:** Carbon dioxide; carbonic anhydride, refrigerated liquid

### 2. Hazard Ingredients and Identity Information

COMPONENT	% VOLUME	OSHA-PEL	ACGIH-TLV	CAS NUMBER
Carbon Dioxide	> 99.5	5000 ppm	5000 ppm 30000 ppm STEL	000124-38-9

### 3. Physical and Chemical Characteristics

<b>Boiling Point:</b>	-109.3° F	<b>Vapor Density:</b>	1.53	<b>pH:</b>	N/A
<b>Melting Point:</b>	-69.8° F	<b>Evaporation Rate:</b>	N/A	<b>Physical State:</b>	Liquid
<b>Vapor Pressure:</b>	856 psi	<b>Solubility (H2O):</b>	Soluble		

**Appearance and Odor:**  
Colorless, odorless gas.

**How to Detect This Substance:**  
N/A

**Other Physical and Chemical Data:**  
Liquid density at boiling point, 97.5 lb/ft<sup>3</sup> (1562 kg/m<sup>3</sup>)  
Gas density at 70° F 1 atm, 0.124 lb/f<sup>3</sup> (1.99 kg/m<sup>3</sup>)

### 4. Fire and Explosion Hazard Data

<b>Flammability Classification:</b>	Nonflammable	<b>Flash Point (F):</b>	N/A	<b>LEL (%):</b>	N/A
<b>Ignition Temperature:</b>	N/A	<b>Method:</b>	N/A	<b>UEL (%):</b>	N/A

**Extinguishing Media:**  
N/A

**Fire Fighting Procedures:**  
N/A

**Fire & Explosion Hazard:**  
N/A

### 5. Reactivity Data

**Stability:** Stable **Hazardous Polymerization:** Will not occur

**Incompatibility:**  
None

**Conditions to Avoid:**  
N/A

**Hazardous Decomposition or Byproducts:**  
Carbon monoxide and oxygen when heated above 3092° F. Carbonic acid is formed in the presence of moisture.

**Other Reactivity Data:**  
N/A

**6. Health Hazard Data**

Route(s) of Entry:	Eye contact Yes	Skin Contact Yes	Skin Absorption No
	Inhalation Yes	Ingestion Yes	

**Health Hazards:**

**Acute**

Carbon dioxide is a cerebral vasodilator. Inhaling large quantities causes rapid circulatory insufficiency leading to coma and death. Asphyxiation is likely to occur before the effects of carbon dioxide overexposure. Low concentrations cause increased respiration and headache. Product is a simple asphyxiant. Effects of oxygen deficiency may include any, all or none of the following: rapid breathing, diminished mental alertness, impaired muscle coordination, blurred speech, and fatigue. As asphyxiation progresses; nausea, vomiting, and loss of consciousness may occur, eventually leading to convulsions, coma and death. Evaporating liquid may cause frostbite or eye irritation.

**Chronic**

N/A

**Carcinogenicity:**

NTP No	IARC Monographs No	OSHA No
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**Signs and Symptoms of Exposure and Emergency First Aid Procedures:**

**Eye Contact**

Contact with evaporating liquid may cause frostbite or eye irritation. Remove victim from source of contamination. Open eyelids and allow liquid to evaporate, DO NOT FLUSH WITH WATER. If pain is present, seek attention of an ophthalmologist for further treatment.

**Skin Contact**

Contact with evaporating liquid may cause frostbite. Skin may become inflamed and painful, changing in color to gray or white, possibly followed by blistering.

Remove contaminated clothing and flush area with cold water. DO NOT USE HOT WATER. Seek medical attention if frostbite is apparent.

**Inhalation**

Carbon dioxide is a cerebral vasodilator. Inhaling large quantities causes rapid circulatory insufficiency leading to coma and death. Asphyxiation is likely to occur before the effects of carbon dioxide overexposure. Low concentrations cause increased respiration and headache. Product is a simple asphyxiant. Effects of oxygen deficiency may include any, all or none of the following: rapid breathing, diminished mental alertness, impaired muscle coordination, blurred speech, and fatigue. As asphyxiation progresses; nausea, vomiting, and loss of consciousness may occur, eventually leading to convulsions, coma and death.

Conscious victim should be assisted to an uncontaminated area and allowed to inhale fresh air. Unconscious victim should be moved to an uncontaminated area and given assisted respiration.

**Ingestion**

No adverse effects anticipated. Contact with evaporating liquid may cause frostbite. Seek medical attention if frostbite is apparent.

**Medical Conditions Aggravated by Exposure:**

Persons of ill health that may be aggravated by exposure to carbon dioxide should not be allowed to work with this product.

**7. Precautions for Safe Handling and Use**

**Actions if Released or Spilled:**

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

**Waste Disposal Method:**

Do not attempt to dispose of waste or unused quantities. Return in properly labeled shipping container, with any valve outlet plugs or caps secured and valve protection caps in place.

**7. Precautions for Safe Handling and Use (Continued)****Handling and Storage Precautions:**

Use only in well-ventilated areas. Carbon dioxide vapor is heavier than air and will accumulate in low 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 piping or systems. Use check valve or trap in discharge line to prevent hazardous backflow into the system. Protect cylinders from physical damage. Store in cool, dry, well ventilated area away from heavy traffic areas and emergency exits. Do not allow temperature of storage area to exceed 125° F. Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated.

**Other Precautions:**

Dry carbon dioxide may be used with common structural materials. Moist carbon dioxide is generally corrosive by its formation of carbonic acid. For applications with moist carbon dioxide, 316, 309 and 310 stainless steels may be used as well as Hastelloy A, B, & C and Monel. Ferrrous nickel alloys are slightly susceptible to corrosion. At normal temperatures, carbon dioxide is compatible with most plastics and elastomers.

Compressed gas cylinders should only be refilled by qualified personnel. Shipment of compressed gas cylinders that have been filled without the consent of the cylinder owner is a violation of federal law (49 CFR).

Always secure cylinders in an upright position during transportation. Never transport cryogenic liquid in enclosed space such as a vehicle truck or van.

For additional recommendations, see CGA Pamphlet P-1, G-6, G-6.1, G-6.2, G-6.3.

**Transportation Information:**

<b>Shipping Name</b>	Carbon dioxide, refrigerated liquid
<b>Hazard Class</b>	2.2
<b>ID Number</b>	UN2187
<b>Shipping Label - 1</b>	Nonflammable Gas

**NFPA Rating:**

**Health:** 3      **Flammability:** 0      **Reactivity:** 0

**8. Control Measures****Eye Protection:**

Safety glasses or goggles with faceshield.

**Protective Gloves:**

Loose fitting, insulated gloves.

**Respiratory Protection:**

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

**Ventilation:**

Local exhaust to prevent carbon dioxide accumulation sufficient to reduce oxygen concentration below 19.5% and carbon dioxide concentration below the exposure limit.

**Other Protective Clothing or Equipment:**

Safety shoes, safety shower.

**9. Regulatory Information****SARA TITLE III NOTIFICATIONS AND INFORMATION****SARA Title III – Section 313 Supplier Notification:**

This product does not contain toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and 40 CFR 372.

**SARA Title III – Hazard Classes:**

Acute Health Hazard  
Sudden Release of Pressure Hazard

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