
# Burtek Dry Ice MATERIAL SAFETY DATA SHEET

**MATERIAL SAFETY DATA SHEET**

PRODUCT NAME: CARBON DIOXIDE, SOLID

**Revised:** 7/20/11

## 1. Chemical Product and Company Identification

**Burtek Dry Ice**
**120 1st Ave N**
**Altoona, IA 5009**
**TELEPHONE NUMBER:** 515-243-4226
**24-HOUR EMERGENCY TELEPHONE NUMBER:**
CHEMTREC (800)424-9300
**EMERGENCY RESPONSE PLAN NO:** 20101
**PRODUCT NAME:** CARBON DIOXIDE, SOLID
**CHEMICAL NAME:** Carbon Dioxide
**COMMON NAMES/SYNONYMS:** Carbon Ice, Dry Ice, Solid Carbon Dioxide
**TDG (Canada) CLASSIFICATION:** 9.1
**WHMIS CLASSIFICATION:** A, D2B
**PREPARED BY:** Burtek Dry Ice
**PREPARATION DATE:** 7/20/11

## 2. Composition, Information on Ingredients

**INGREDIENT % WEIGHT PEL-OSHA[1] TLV-ACGIH[2] $LD_{50}$ or $LC_{50}$ Route/Species**
Carbon Dioxide
FORMULA: $CO_2$
CAS: 124-38-9
RTECS #: FF6400000
99.8 to 99.999 5000 ppm TWA 5000 ppm TWA
30,000 ppm STEL
Not Available

1 As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)
2 As stated in the ACGIH 1994-95 Threshold Limit Values for Chemical Substances and Physical Agents

## 3. Hazards Identification

EMERGENCY OVERVIEW

Oxygen levels below 19.5% may cause asphyxia. Exposure to carbon dioxide gas can cause nausea and respiratory problems. High concentrations may cause vasodilatation leading to circulatory collapse. Contact with solid product may cause frostbite or freeze burns in exposed tissues.

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**ROUTE OF ENTRY:**
Skin Contact
Yes
Skin Absorption
No
Eye Contact
Yes
Inhalation
Yes
Ingestion
Yes
**HEALTH EFFECTS:**
Exposure Limits
Yes
Irritant
No
Sensitization
No

Teratogen
No
Reproductive Hazard
No
Mutagen
No
Synergistic Effects
None reported
Carcinogenicity: -- NTP: No IARC: No OSHA: No
**EYE EFFECTS:**
Contact with product may cause frostbite or cryogenic "burns.
**SKIN EFFECTS:**
Contact with product may cause frostbite. Frostbite effects are a change in color of the skin to gray or white, possibly followed by blistering. Skin may become inflamed and painful.
**INGESTION EFFECTS:**
Contact with product may cause frostbite.
**INHALATION EFFECTS:**
Carbon dioxide is the most powerful cerebral vasodilator known. Inhaling large concentrations causes rapid circulatory insufficiency leading to coma and death. Asphyxiation is likely to occur before the effects of carbon dioxide overexposure. Chronic, harmful effects are not known from repeated inhalation of low concentrations. Low concentrations of carbon dioxide cause increased respiration and headache.
Effects of oxygen deficiency may include: rapid breathing, diminished mental alertness, impaired muscular coordination, faulty judgment, depression of all sensations, emotional instability, and fatigue. As asphyxiation progresses, nausea, vomiting, prostration, and loss of consciousness may result, eventually leading to convulsions, coma, and death. Oxygen deficiency during pregnancy has produced developmental abnormalities in humans and experimental animals.
**NFPA HAZARD CODES HMIS HAZARD CODES RATINGS SYSTEM**
Health: 1 Health: 1 0 = No Hazard
Flammability: 0 Flammability: 0 1 = Slight Hazard
Reactivity: 0 Reactivity: 0 2 = Moderate Hazard
3 = Serious Hazard
4 = Severe Hazard

## 4. First Aid Measures

**EYES:**

Never introduce oil or ointment into the eyes without medical advice! In case of freezing or cryogenic "burns" by rapidly evaporating liquid. DO NOT WASH THE EYES WITH HOT OR EVEN TEPID WATER! Remove victim from the source of contamination. Open eyelids wide to allow liquid/solid to evaporate/sublime. If pain

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is present, refer the victim to an ophthalmologist for further treatment and follow up. If the victim cannot tolerate light; protect eyes with a light bandage or handkerchief.

**SKIN:**

Remove contaminated clothing and flush affected area with cold water and soap. DO NOT USE HOT WATER. A physician should see the patient promptly if frostbite has occurred.

**INGESTION:**

A physician should see the patient promptly if frostbite has occurred.

**INHALATION:**

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO CARBON DIOXIDE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS. 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. Further treatment should be symptomatic and supportive.

## 5. Fire Fighting Measures

Conditions of Flammability: Nonflammable
Flash point:
None
Method:
Not Applicable
Auto ignition
Temperature: None
LEL (%): None UEL (%): None
Hazardous combustion products: None
Sensitivity to mechanical shock: None
Sensitivity to static discharge: None

**FIRE AND EXPLOSION HAZARDS:**

None. Non-flammable.

## 6. Accidental Release Measures

Avoid contact with spilled product. Personnel in area should use insulated gloves and other protective clothing to prevent contact. If spilled in confined area, provide ventilation to prevent buildup of carbon dioxide gas.

## 7. Handling and Storage

**Electrical Classification:**

Non-Hazardous.

Dry carbon dioxide can be handled in most 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 ®. Ferrous Nickel alloys are slightly susceptible to corrosion. At normal temperatures carbon dioxide is compatible with most plastics and elastomers. Use only in well-ventilated areas. Carbon dioxide vapor is heavier than air and will accumulate in low areas.

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Carbon dioxide solid should be stored in insulated containers equipped with loose fitting lids which will allow escape of vapor caused by sublimation. Do not store in subsurface or enclosed areas. Locate the insulated storage container in an area where there is adequate ventilation so as to prevent the accumulation of carbon dioxide vapors/gas above exposure limits. DO NOT PUT DRY ICE IN A CLOSED CONTAINER WHERE EVOLVED GAS CANNOT ESCAPE! Remove scrap solid (snow or dry ice) to a hood with forced ventilation or take to a remote outside location and allow to sublime. Protect containers from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency exits.

## 8. Exposure Controls, Personal Protection

**[1]EXPOSURE LIMITS:**

**INGREDIENT % VOLUME PEL-OSHA[2] TLV-ACGIH[3] $LD_{50}$ or $OC_{50}$ Route/Species**

Carbon Dioxide
FORMULA: $CO_2$
CAS: 124-38-9
RTECS #: FF6400000
99.8 TO 99.999 5000 ppm TWA 5000 ppm TWA
30,000 ppm STEL
Not Available

1 Refer to individual state of provincial regulations, as applicable, for limits which may be more stringent than those listed here.

2 As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)

3 As stated in the ACGIH 1994-1995 Threshold Limit Values for Chemical Substances and Physical Agents.

IDLH (Carbon Dioxide): 50,000 ppm

**ENGINEERING CONTROLS:**

Use local exhaust to prevent accumulation of high concentrations so as to reduce the oxygen level in the air to less than 19.5% and the carbon dioxide concentration below the exposure limit.

**EYE/FACE PROTECTION:**

Safety goggles or glasses as appropriate for the job. A face shield is recommended for handling cryogenic material.

**SKIN PROTECTION:**

Protective gloves of any material appropriate for the job. Insulated gloves are recommended for cryogenic materials.

**RESPIRATORY PROTECTION:**

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

**OTHER/GENERAL PROTECTION:**

Safety shoes.

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## 9. Physical and Chemical Properties

**PARAMETER VALUE UNITS**

Physical state (gas, liquid, solid): solid
Vapor pressure at 70oF: 856 psi
Vapor density at 70oF, 1 atm (Air=1): 1.53
Evaporation point: Not Available
Boiling point (CO2 Sublimes): -109.3
: -78.5oFoC
Freezing point: -69.8: -56.6oFoC
pH: Not Available
Specific gravity: Not Available
Oil/water partition coefficient: Not Available
Solubility (H20): Very soluble
Odor threshold: Not Applicable
Odor and appearance: A white solid liberating a colorless, odorless gas.

## 10. Stability and Reactivity

**STABILITY:**

Stable

**INCOMPATIBLE MATERIALS:**

Certain reactive metals, hydrides, moist cesium monoxide, or lithium acetylene carbide diammino may ignite. Passing carbon dioxide over a mixture of sodium peroxide and aluminum or magnesium may explode.

**HAZARDOUS DECOMPOSITION PRODUCTS:**

Carbon monoxide and oxygen when heated above 3092oF (1700oC). Carbonic acid is formed in the presence of moisture.

**HAZARDOUS POLYMERIZATION:**

Will not occur.

## 11. Toxicological Information

**REPRODUCTIVE:**

Oxygen deficiency during pregnancy has produced developmental abnormalities in humans and experimental animals. Exposure of female rats to 60,000 ppm carbon dioxide for 24 hours has produced toxic effects to the embryo and fetus in pregnant rats. Toxic effects to the reproductive system have been observed in other mammalian species at similar concentrations.

**OTHER:**

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

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## 12. Ecological Information

No data given.

## 13. Disposal Considerations

Allow to sublime (evaporate) in a well ventilated area.

## 14. Transport Information

**PARAMETER United States DOT Canada TDG**

**PROPER SHIPPING NAME:** Carbon Dioxide, solid Carbon Dioxide, solid
**HAZARD CLASS:** 9 9.1
**IDENTIFICATION NUMBER:** UN 1845 UN 1845
**SHIPPING LABEL:** None!
**Packing Group:** III
**Note:** Only regulated as a hazardous material if shipped by air or water.

## 15. Regulatory Information

**SARA TITLE III NOTIFICATIONS AND INFORMATION**
**SARA TITLE III HAZARD CLASSES:** Acute Health Hazard

## 16. Other Information

Compressed gas cylinders shall not be refilled without the express written permission of the owner. Shipment of a compressed gas cylinder which has not been filled by the owner or with his/her (written) consent is a violation of transportation regulations.

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