

# **1. Chemical Product and Company Identification**

Burtek Dry Ice 2460 Grand Avenue West Des Moines, IA 50265 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-OSHA1 TLV-ACGIH2 LD50 or LC50 Route/Species

Carbon Dioxide FORMULA: CO2 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.

### **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 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.

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

**EXPOSURE LIMITS:** INGREDIENT % VOLUME PEL-OSHA2 TLV-ACGIH3 LD50 or OC50 **Route/Species** Carbon Dioxide FORMULA: CO2 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.

# 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 diamino 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.

## **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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