

# MATERIAL SAFETY DATA SHEET

## PRODUCT IDENTIFIER Carbon Dioxide, Refrigerated Liquid

### SECTION I- Product Information\*

|                                  |                                     |
|----------------------------------|-------------------------------------|
| <b>MANUFACTURER:</b>             | EPCO Carbon Dioxide Products, Inc.  |
| <b>OFFICE PHONE:</b>             | 1-800-259-3726                      |
| <b>24-HOUR EMERGENCY:</b>        | 1-800-259-8095                      |
| <b>SHIPPING NAME:</b>            | Carbon Dioxide, Refrigerated Liquid |
| <b>UN NUMBER:</b>                | 2187                                |
| <b>CAS NUMBER:</b>               | 124-38-9                            |
| <b>TDG CLASSIFICATION:</b>       | 2.2                                 |
| <b>WHMIS CLASSIFICATION:</b>     | A                                   |
| <b>CHEMICAL NAME:</b>            | Carbon Dioxide                      |
| <b>MOLECULAR WEIGHT:</b>         | 44.01                               |
| <b>CHEMICAL FAMILY:</b>          | Oxide of Carbon                     |
| <b>FACT NAME &amp; SYNONYMS:</b> | Carbonic Acid Gas                   |
| <b>CHEMICAL FORMULA:</b>         | CO <sub>2</sub>                     |
| <b>Uses:</b>                     | Various                             |

### SECTION II – Hazardous Ingredients of Material

| Hazardous Ingredients | Approx. Conc. % | LD30 | LD50 |
|-----------------------|-----------------|------|------|
| Carbon Dioxide        | 100%            | None | None |

### SECTION III – Physical Data

|                                      |   |
|--------------------------------------|---|
| <b>APPEARANCE &amp; ODOR:</b>        | Colorless and odorless.<br>Sharp nasal sensation at high concentration. |
| <b>PHYSICAL STATE (AT N.P.T.):</b>   | Gas   |
| <b>SPECIFIC GRAVITY (WATER = 1):</b> | 0.713   |
| <b>ODOR THRESHOLD (ppm):</b>         | Not Available   |
| <b>BOILING POINT:</b>                | Not Applicable  |
| <b>FREEZING POINT:</b>               | Sublimates at 1 atm at -78.5°C / -109.3°F                               |
| <b>SPECIFIC GRAVITY (AIR = 1):</b>   | 1.52 (@ 21°C / 70°F)  |
| <b>GAS DENSITY (g/ml):</b>           | 0.00197 (@ 0°C / 32°F)  |
| <b>VAPOR PRESSURE:</b>               | 5778 kPa. 838 psig (@ 21.1°C / 70°F)                                    |
| <b>pH:</b>                           | Not Applicable  |

EPCO Carbon Dioxide Products, Inc.  
Prepared by:  
Production Department

PAGE: 1 of 6  
DATE: 05/23/2010

# MATERIAL SAFETY DATA SHEET

## PRODUCT IDENTIFIER Carbon Dioxide, Refrigerated Liquid

### SECTION III – Physical Data {Cont.'}

|  |                       |
|--|-----------------------|
| % VOLATILE (BY VOLUME):                | 100                   |
| LIQUID DENSITY (g/ml):                 | 0.713 (@ 25°C / 77°F) |
| EVAPORATION RATE:                      | Not Applicable        |
| SOLUBILITY IN WATER (vol./vol.):       | 0.9 (@ 20°C / 68°F)   |
| COEFFICIENT OF WATER/OIL DISTRIBUTION: | Not Available         |

### SECTION IV – Fire and Explosion Hazard of Material

#### FLAMMABILITY

If yes, under which conditions? Non flammable  
 Yes  No Will not support combustion.

#### MEANS OF EXTINCTION

If containers are exposed to fire, evacuate all personnel from danger area. Cool containers with water spray from maximum distance. Fight source fire with media appropriate to it.

#### SPECIAL PROCEDURES \*

Do not direct water at source of leak or venting safety device, as icing may occur.

|                                      |                |
|--------------------------------------|----------------|
| FLASHPOINT (°C) AND METHOD:          | None           |
| LOWER EXPLOSION LIMIT (% BY VOLUME): | None           |
| UPPER EXPLOSION LIMIT (% BY VOLUME): | None           |
| AUTO IGNITION TEMPERATURE (°C):      | None           |
| TDG FLAMMABILITY CLASSIFICATION:     | Non Flammable  |
| HAZARDOUS COMBUSTION PRODUCTS:       | None           |
| SENSITIVITY TO MECHANICAL IMPACT:    | None           |
| RATE OF BURNING:                     | Non Applicable |
| SENSITIVITY TO STATIC DISCHARGE:     | None           |

### SECTION V – Reactivity Data

#### Chemical Stability

Yes  No If no, under what conditions?  
Stable at normal temperatures and pressures.

EPCO Carbon Dioxide Products, Inc.  
 Prepared by:  
 Production Department

PAGE: 2 of 6  
 DATE: 05/23/2010

## MATERIAL SAFETY DATA SHEET

### PRODUCT IDENTIFIER Carbon Dioxide, Refrigerated Liquid

#### SECTION V – Reactivity Data (Cont'd)

Incompatibility to Other Substances

Yes  No

If yes,  
which ones?

Reactivity

Yes  No

If yes, under  
which conditions?

In the presence of moisture, will  
form carbonic acid which may  
corrode some metals.

#### SECTION VI – Toxicological Properties of Material

ROUTE OF ENTRY

Skin Contact

Skin Absorption

Eye Contact

Inhalation Acute

Inhalation Chronic

Ingestion

EFFECTS OF ACUTE EXPOSURE TO MATERIAL

Skin

Escaping liquid transforms to very cold solid and gas (-78°C/-109°F) which may cause frostbite. Solid sublimates and can cool materials it is in contact with to -78° (-109°) which can cause frostbite if touched.

Eye

Escaping liquid transforms to very cold solid and gas (-78°C/-109°F) which may cause frostbite.

Inhalation

Carbon Dioxide is present in air at 0.03% and, at higher levels in exhaled breath. Low concentrations (3-5%) increase the respiration rate and can cause headache. Levels of 8% to 15% cause headache, nausea, vomiting and may lead to unconsciousness. Higher concentrations can cause coma and death.

Ingestion

Swallowing of solid will cause severe burns. Keep out of reach of children.

EFFECTS OF CHRONIC EXPOSURE TO MATERIAL

No known chronic effects to repeated exposures of low concentrations (3-5%)

EPCO Carbon Dioxide Products, Inc.

Prepared by:

Production Department

PAGE: 3 of 6

DATE: 05/23/2010

## MATERIAL SAFETY DATA SHEET

### PRODUCT IDENTIFIER Carbon Dioxide, Refrigerated Liquid

#### SECTION VI – Toxicological Properties of Material (Cont'd)

|                            |   |                            |
|----------------------------|---|----------------------------|
| EXPOSURE LIMIT (S):        | STEL  | 30,000 ppm (3%) ACGIH      |
|                            | TWA   | 5,000 ppm (5%) ACGIH, OSHA |
|                            | LCLo  | 90% 5 min. human           |
| IRRITANCY OF MATERIAL:     | Sharp sensation on nasal membranes at higher concentration. |                            |
| SENSITIZATION OF MATERIAL: | None  |                            |
| CARCINOGENICITY:           | None  |                            |
| REPRODUCTIVE EFFECTS:      | None  |                            |
| TERATOGENICITY:            | None  |                            |
| MUTAGENICITY:              | None  |                            |
| SYNERGISTIC MATERIALS:     | None  |                            |

#### SECTION VII – Preventive Measures

|  |  |
|--|--|
| Gloves:  | Insulated gloves   |
| Respiratory:   | SCBA in case of suspected leak or oxygen-deficient atmosphere. |
| Eyes:  | Goggles of full faceshield.                                    |
| Footwear:  | Safety shoes for container handling, if applicable.            |
| Clothing:  | Long sleeves/trousers recommended.                             |
| <br><u>ENGINEERING CONTROLS</u>  |  |
| Provide good ventilation to maintain more than 18% oxygen and less than 0.5% CO <sub>2</sub> (TWA). Air monitoring device is recommended.  |  |
| <br><u>LEAK AND SPILL PROCEDURE</u>  |  |
| <u>Major:</u> Evacuate danger area. Use SCBA to return to shutoff source. Allow gas to dissipate. Verify CO <sub>2</sub> and oxygen concentration of enclosed or low areas before permitting re-entry. |  |
| <br><u>WASTE DISPOSAL</u>  |  |
| No residual waste.   |  |
| <br><u>STORAGE REQUIREMENTS</u>  |  |
| Replace container cap, if applicable.  |  |
| Protect containers from physical damage.   |  |
| Store in cool, dry, well ventilated area.  |  |
| Do not allow temperature to exceed 52°C (125°F).   |  |
| Store secured in upright position with full and empty containers segregated.   |  |

EPCO Carbon Dioxide Products, Inc.

Prepared by:  
Production Department

PAGE: 4 of 6

DATE: 05/23/2010

# MATERIAL SAFETY DATA SHEET

## PRODUCT IDENTIFIER Carbon Dioxide, Refrigerated Liquid

### SECTION VII – Preventive Measures (Cont'd)

#### SPECIAL SHIPPING INFORMATION

Replace container cap, if supplied.  
 Transport secured upright in well-ventilated truck.  
 Never transport in passenger compartment, trunk or enclosed vehicle.

#### HANDLING PROCEDURES AND EQUIPMENT

When withdrawing gaseous CO<sub>2</sub> use only regulating equipment designed for CO<sub>2</sub> service and source pressure.  
 Use only in well ventilated areas.  
 Do not move container without its cap in place, if applicable.  
 Use a suitable hand truck for container movement, if applicable.  
 Secure container when in use.  
 Use a backflow preventive device to prevent suck-back.  
 Keep container away from heat, flames and sparks.  
 Close valve after each use and when empty.  
 Provide a safety relief device between any two valves.

#### CORROSIVITY

In presence of moisture, will form carbonic acid which may corrode some metals.

### SECTION VIII - First Aid Measures

- |             |   |  |
|-------------|---|--|
| Eyes:       | - | For frostbite, rinse with warm water for 15 minutes.   |
|             | - | Obtain medical attention.                              |
| Skin:       | - | For frostbite, allow affected body parts to thaw.      |
|             | - | Obtain medical attention.                              |
| Inhalation: | - | Rescue personnel should be equipped with SCBA.         |
|             | - | Move victim to fresh air.                              |
|             | - | Give oxygen, if breathing is difficult.                |
|             | - | Give artificial respiration, if breathing has stopped. |
|             | - | Ensure that vomit does not obstruct airway.            |
|             | - | Obtain medical attention.                              |
| Ingestion:  | - | Maintain breathing.                                    |
|             | - | Obtain medical attention immediately.                  |

EPCO Carbon Dioxide Products, Inc.

Prepared by:

Production Department

PAGE: 5 of 6

DATE: 05/23/2010

**MATERIAL SAFETY DATA SHEET****PRODUCT IDENTIFIER Carbon Dioxide, Refrigerated Liquid****SECTION IX – Preparation of M.S.D.S.**

Use, handling or storage of the product described in the MSDS is at the users sole risk.

EPCO Carbon Dioxide Products, Inc. shall not be liable for any loss of damage of any nature whatsoever, however arising, relating to the use, handling or storage of the product, of the statements and information contained in or omitted from this MSDS.

**Prepared By:**

EPCO Production Department

**Phone Number**

1-800-259-3726

**Date**

05/23/2010

EPCO Carbon Dioxide Products, Inc.  
Prepared by:  
Production Department

PAGE: 6 of 6  
DATE: 05/23/2010