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**MSDS: Carbon Dioxide Gas**

### PRODUCT INFORMATION

**PRODUCT:** Carbon Dioxide  
**TRADE NAME:** Aligal 2  
**CHEMICAL NAME:** Carbon Dioxide  
**SYNONYMS:** Carbon Dioxide  
**FORMULA:** CO<sub>2</sub>  
**CHEMICAL FAMILY:** Carbonate  
**SUPPLIER'S NAME:** MEGS Inc.  
**SUPPLIER'S ADDRESS:** 2675 De Miniac  
Ville St-Laurent, Qc, H4S 1E5  
**EMERGENCY PHONE NUMBER:** (514) 956-7503  
**MOLECULAR WEIGHT:** 44.01  
**PRODUCT USE:** Various  
**PRODUCT IDENTIFICATION UN 1013**  
**NUMBER:**

### HAZARDOUS INGREDIENTS

CHEMICAL ID	CONCENTRATION	CAS #	LD(50)	LC(50)
Carbon Dioxide	100%	124-38-9	None	LC <sub>Lo</sub> Inhl-hmn 10%/1min

### PHYSICAL DATA

**PHYSICAL STATE:** Liquid and gas under pressure  
**APPEARANCE:** Colorless gas  
**ODOR:** Odorless  
**ODOR THRESHOLD:** Not applicable  
**SPECIFIC GRAVITY (H<sub>2</sub>O = 1):** Not applicable (gas)  
**VAPOR PRESSURE:** @ 15°C = 5105 kPa  
**VAPOR DENSITY (air = 1):** 1.53  
**EVAPORATION RATE:** Not applicable (gas)

**BOILING POINT:** Sublimation Point = -78.5°C  
**FREEZING POINT:** -56.6°C @ 518 kPa  
**pH:** Not applicable (gas)  
**GAS DENSITY:** @ 15°C = 1.977 kg/m<sup>3</sup>  
**COEFFICIENT OF WATER/OIL @ 15°C, Bunsen Coefficient =**  
**DISTRIBUTION:** 1.0106

### **FIRE OR EXPLOSION HAZARD**

**CONDITIONS OF FLAMMABILITY:** Nonflammable gas  
**MEANS OF EXTINCTION:** Nonflammable gas  
**FLASHPOINT AND METHOD OF DETERMINATION:** Nonflammable gas  
**UPPER EXPLOSION LIMIT (% BY VOL):** Nonflammable gas  
**LOWER EXPLOSION LIMIT (% BY VOL):** Nonflammable gas  
**AUTO-IGNITION TEMPERATURE:** Nonflammable gas  
**FLAMMABILITY CLASSIFICATION:** Nonflammable gas  
**HAZARDOUS COMBUSTION PRODUCTS:** Nonflammable gas  
**EXPLOSION DATA:** Nonflammable gas  
**SENSITIVITY TO STATIC DISCHARGE:** None

### **REACTIVITY DATA**

**CHEMICAL STABILITY:** Stable  
**INCOMPATIBLE MATERIALS:** None  
**CONDITIONS OF REACTIVITY:** None  
**HAZARDOUS DECOMPOSITION PRODUCTS:** None

### **TOXICOLOGICAL PROPERTIES**

**ROUTES OF ENTRY:**

**SKIN CONTACT:** None

**SKIN ABSORPTION:** None

**EYE:** None

**INHALATION:** Low concentrations (3-5 molar %) cause increased respiration and headache. Eight to 15 molar % concentrations cause headache, nausea and vomiting which may lead to unconsciousness if not moved to open air or given oxygen. Higher concentrations cause rapid circulatory insufficiency leading to

coma and death.

**INGESTION:** None

**ACUTE OVER EXPOSURE EFFECTS:** Carbon dioxide is the most powerful cerebral vasodilator known. Inhaling large concentrations causes rapid circulatory insufficiency leading to coma and death.

**CHRONIC OVER EXPOSURE EFFECTS:** Chronic, harmful effects are not known from repeated inhalation of low (3-5 molar %) concentrations.

**EXPOSURE LIMITS:** TWA = 5,000 molar ppm; STEL = 30,000 molar ppm (AGGIH 1995-1996)

**IRRITANCY OF PRODUCT:** None

**SENSITIZATION TO MATERIAL:** None

**CARCINOGENICITY, REPRODUCTIVE EFFECTS:** None

**TERATOGENICITY, MUTAGENICITY:** None

**TOXICOLOGICALLY SYNERGISTIC PRODUCTS:** None

## **PREVENTIVE MEASURES**

**PERSONAL PROTECTIVE EQUIPMENT:** Safety goggles or glasses, safety shoes.

**SPECIFIC ENGINEERING CONTROLS:** Dry carbon dioxide can be handled with most common structural materials. Moist carbon dioxide is corrosive by its formation of carbonic acid. For these applications, 316, 309 and 310 stainless steels may be used as well as Hastelloy® A, B & C and Monel®. Ferrous nickel alloys are slightly corroded.

At normal temperature carbon dioxide is compatible with most plastics and elastomers.

**LEAK AND SPILL PROCEDURES:** EVACUATE ALL PERSONNEL FROM AFFECTED AREA.

Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is on container or container valve, contact the closest MEGS location.

**WASTE DISPOSAL:** Do not attempt to dispose of waste or unused quantities.

Return in the shipping container properly labeled, with any valve outlet plugs or caps secured and valve protection cap in place to MEGS for proper disposal. For emergency disposal, contact the closest MEGS location.

**HANDLING PROCEDURES AND EQUIPMENT:** USE ONLY IN WELL-VENTILATED 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. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder. Keep cylinder away from heat and flame. Do not tamper with (valve) safety device.

**STORAGE REQUIREMENTS:** Protect cylinders from physical damage. Store in cool, dry, well-ventilated area of non combustible construction away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 52°C. Cylinders must be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in - first out" inventory system to prevent full cylinders being stored for excessive periods of time.

**TDG CLASSIFICATION:** 2.2

**WHMIS CLASSIFICATION:** A

**SPECIAL SHIPPING INFORMATION:** Always secure cylinders in an upright position before transporting them. NEVER transport cylinders in trunks of vehicles, enclosed vans, truck cabs or in passenger compartments. Transport cylinders secured in open flatbed or in open pick-up type vehicles.

<b>FIRST AID MEASURES</b>
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**SPECIFIC FIRST AID PROCEDURES:** PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO CARBON DIOXIDE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS

**INHALATION:** 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 assisted resuscitation and supplemental oxygen. Assure that vomited material does not obstruct the airway by use of positional drainage. Medical assistance should be sought immediately.

**EYE CONTACT:** In the event of liquid or cold gas exposure; flush contaminated eye(s) with copious quantities of water. Part eyelids to assure complete flushing. Continue for a minimum of 15 minutes.

**SKIN CONTACT:** testFrostbite: FLUSH AFFECTED AREAS WITH LUKEWARM WATER. DO NOT USE HOT WATER. A physician should see the patient promptly if the cryogenic "burn" has resulted in blistering of the dermal surface or deep tissue freezing.

## **PREPARATION INFORMATION**

**PREPARED BY:** Safety Department

**DATE PREPARED:** 09/01/1999

**LAST REVISION DATE:** 02/01/2011

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