Tel: 514-956-7503
Fax: 514-956-7504
Internet: www.megs.ca
Email : support@megs.ca

Montreal	St-Laurent	Tel : 514-956-7503	Fax : 514-956-7504
Ottawa	Nepean	Tel : 613-226-4228	Fax : 613-226-4229
Quebec	Quebec	Tel : 418-834-7447	Fax : 418-834-3774

MSDS: Carbon Dioxide (Dry Ice)

PRODUCT INFORMATION

PRODUCT: Carbon Dioxide (Dry Ice)
TRADE NAME: Dry Ice, Solid Carbon Dioxide, Carbonice
CHEMICAL NAME: Carbon Dioxide,
SYNONYMS: Carbon Dioxide, Solid
FORMULA: CO_2
CHEMICAL FAMILY: Carbonate
SUPPLIER'S NAME: MEGS Inc.
SUPPLIER'S ADDRESS: 2675 De Miniac
Ville St-Laurent, Québec, H4S1E5
EMERGENCY PHONE NUMBER: (514) 956-7503
MOLECULAR WEIGHT: 44.01
PRODUCT USE: Refrigerant and Various Others
PRODUCT IDENTIFICATION NUMBER: UN 1845

HAZARDOUS INGREDIENTS

CHEMICAL ID	CONCENTRATION	CAS #	LD(50)	LC(50)
	99+%			
Carbon Dioxide		124-38-9	None	LC_{LO} Inhl-hmn 10%/1min

PHYSICAL DATA

PHYSICAL STATE: Solid emanating vapour (subliming)
APPEARANCE: Milk-white odourless solid, colourless
ODOR: Odourless gas
ODOR THRESHOLD: Not applicable
SPECIFIC GRAVITY (H_2O = 1): See Vapour Density (air = 1)
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: 1.861 kg/m³ @ 15°C, 101.3 kPa

COEFFICIENT OF WATER/OIL DISTRIBUTION: @ 15°C, Bunsen Coefficient = 1.0106

FIRE OR EXPLOSION HAZARD

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

REACTIVITY DATA

CHEMICAL STABILITY: Relatively non-reactive
INCOMPATIBLE MATERIALS: None
CONDITIONS OF REACTIVITY: None
HAZARDOUS DECOMPOSITION PRODUCTS: Gas in an electrical discharge yields carbon monoxide and oxygen

TOXICOLOGICAL PROPERTIES

ROUTES OF ENTRY:

SKIN CONTACT: Continuous dermal contact with solid carbon dioxide could cause frostbite or cryogenic "burns".

SKIN ABSORPTION: None

EYE: None

INHALATION: Low concentration (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: Keep solid carbon dioxide out of the reach of children as they may place it in their mouth and/or swallow it resulting in cryogenic "burns" of frostbite

of the mouth or oesophageal-gastric system.

ACUTE OVER EXPOSURE EFFECTS: Carbon dioxide is the most powerful cerebral vasodilator known. Inhaling concentrations greater than 10% cause 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 (ACGIH 1995-1996)

IRRITANCY OF PRODUCT: See Skin Contact and Ingestion, above.

SENSITIZATION TO MATERIAL: None

CARCINOGENICITY, REPRODUCTIVE EFFECTS: None

TERATOGENICITY, MUTAGENICITY: None

TOXICOLOGICALLY SYNERGISTIC PRODUCTS: None

PREVENTIVE MEASURES

PERSONAL PROTECTIVE EQUIPMENT: Loose fitting, insulated gloves. Safety goggles or glasses. Safety shoes and solid CO2 handling "tongs".

SPECIFIC ENGINEERING CONTROLS: (FOR GASEOUS CARBON DIOXIDE) 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 temperatures carbon dioxide is compatible with most plastics and elastomers. Also see CGA Pamphlet G-6-3 Carbon Dioxide Cylinder Filling and Handling Procedures for Beverage Plants.

LEAK AND SPILL PROCEDURES: See Handling Procedures and Equipment, below.

WASTE DISPOSAL: See Handling Procedures and Equipment, below.

HANDLING PROCEDURES AND EQUIPMENT: Solid carbon dioxide is generally delivered to a customer in Kraft-paper-wrapped blocks which weigh approximately 50 pounds and are approximately one half a cubic foot in volume.

The product should be stored in insulated containers which open from the top having loose-fitting lids so that the carbon dioxide vapour from sublimation of the solid may be allowed to escape into the atmosphere.

The insulated storage container should be located in an area where there is adequate ventilation so as to prevent the accumulation of carbon dioxide vapours above the TWA. Carbon dioxide vapours are approximately one half time heavier than air. Also see CGA Pamphlet G-6, Carbon Dioxide.

STORAGE REQUIREMENTS: See Handling Procedures and Equipment above.

TDG CLASSIFICATION: 9.1

WHMIS CLASSIFICATION: None

SPECIAL SHIPPING INFORMATION: None

FIRST AID MEASURES

SPECIFIC FIRST AID PROCEDURES: PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO CARBON DIOXIDE (DRY ICE). 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: PERSONS WITH POTENTIAL EXPOSURE TO CARBON DIOXIDE (DRY ICE) SHOULD NOT WEAR CONTACT LENSES.

Flush contaminated eye(s) with copious quantities of water. Part eyelids to assure complete flushing. Continue for a minimum of 15 minutes.

SKIN CONTACT: Frostbite: 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: 07/01/2010

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