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MATERIAL SAFETY DATA SHEET

PRODUCT IDENTIFIER: **CARBON DIOXIDE**

Product Name(s): CARBON DIOXIDE Formula: CO₂

Synonym(s): CARBONIC ANHYDRIDE,
CARBONIC ACID GAS Chemical Family: ANHYDRIDES

PRODUCT USE(S): Carbonation of Beverages, Chemical W.H.M.I.S. Classification
Synthesis, Freezing, pH control. Class(es): A

HAZARDOUS INGREDIENTS:

INGREDIENT PARAMETERS	C.A.S. / P.I.N. NUMBER(S)	CONC. % VOL./VOL.	L.D. 50 (Species & Route)	L.C. 50 (Species & Route)
CARBON DIOXIDE	124389/1013	APPR. 100	NOT APPL.	LCLo 90% inhI-man/5min.

PHYSICAL DATA

PHYSICAL STATE:	Gas @ N.T.P.
ODOUR AND APPEARANCE:	Colourless and Odourless. Sharp nasal sensation at high concentrations.
ODOUR THRESHOLD:	Not available
SPECIFIC GRAVITY (air=1):	1.53 (@ 21.1°C and 1 atm.)
VAPOUR PRESSURE:	5,824 kPa/838 psig (@ 21.1°C/70 °F)
VAPOUR DENSITY:	1.977 kg/m ³ (@ 21.1°C and 1 atm.)
EVAPORATION RATE:	Not Appl.
BOILING POINT:	Not Appl.
FREEZING POINT:	Sublimates at -78.4°C/-109.2°F (1 atm.)
pH:	Not Applicable
COEFFICIENT OF WATER/OIL DISTRIBUTION:	Not Applicable
SOLUBILITY IN WATER:	0.9 (@20 °C (vol./vol.)
% VOLATILES:	100

FOR TRANSPORT EMERGENCY CALL COLLECT CANUTEC TEL: 1-613-996-6666

UYI 105-2

FIRE OR EXPLOSION HAZARDS

CONDITIONS OF FLAMMABILITY:	Non flammable. Will not support combustion.
MEANS OF EXTINCTION:	Cool containers with water if exposed to surrounding fires.
FLASH POINT:	NONE
UPPER FLAMMABLE LIMIT: NONE	LOWER FLAMMABLE LIMIT: NONE
AUTOIGNITION TEMPERATURE:	NONE
HAZARDOUS COMBUSTION PRODUCTS:	CO ₂ , CO.
SENSITIVITY TO MECHANICAL IMPACT:	NONE
SENSITIVITY TO STATIC DISCHARGE:	NONE
SPECIAL PROCEDURES:	Evacuate areas where a leak or a spill is present. Fight the surrounding fires at the case may be. Escaping Carbon Dioxide may displace air. Ensure appropriate air supply when approaching or entering the area. Containers may rupture if subject to localized heating.

REACTIVITY DATA

CONDITIONS OF CHEMICAL UNSTABILITY:	Stable at N.P.T. (1 atm. and 20°C).
INCOMPATIBILITY:	NONE
CONDITIONS OF REACTIVITY:	CO ₂ may corrode iron and other metals in presence of moisture.
HAZARDOUS DECOMPOSITION PRODUCTS:	NONE

TOXICOLOGICAL PROPERTIES

ROUTE OF ENTRY	
SKIN (CONTACT):	YES
SKIN (ABSORPTION):	NO
EYE CONTACT:	YES
INHALATION:	YES
INGESTION:	NO
EFFECTS OF ACUTE EXPOSURE:	May displace air in enclosed spaces. At concentration 3 to 5% may increase at the rate of respiration. At concentrations of 8 to 15% may cause headache, nausea, vomiting, unconsciousness. Higher concentrations may cause coma and death.
EFFECTS OF CHRONIC EXPOSURE:	NONE KNOWN
EXPOSURE LIMITS:	T.L.V./T.W.A. 5,000 ppm. S.T.E.L. 30,000 ppm.
IRRITANCY:	May cause sharp sensation of irritation to the nose membranes.
SENSITIZATION:	NONE
CARCINOGENICITY:	NONE
REPRODUCTIVE TOXICITY:	NONE
TERATOGENICITY:	NONE
MUTAGENICITY:	NONE
TOXIC SYNERGISTIC PRODUCTS:	NONE

FIRST AID

EYE: CO2 may harm the unprotected eye if delivered at pressures higher than atmospheric. Obtain medical attention if damages are suspected or present.

INGESTION: Not applicable

INHALATION: Move victim to fresh air if possible. Administer C.P.R. If breathing has stopped. If breathing is difficult give oxygen. Obtain medical attention.

SKIN: Cold Carbon Dioxide may cause frostbite. Treat frostbite if present. Obtain medical attention.

PREVENTIVE MEASURES

PERSONAL PROTECTION

EYE: Safety glasses or goggles to protect from accidental leaks under pressure.

HAND: Work gloves.

FEET: Safety footwear where applicable.

CLOTHING: Long sleeves, trousers recommended.

RESPIRATOR: Use air supply if oxygen deficiency is suspected following leaks or spills.

ENGINEERING CONTROLS: Provide good ventilation. Carbon Dioxide is heavier than air and may displace air in work areas. Ventilation should be designed to maintain CO2 concentrations below the T.L.V..

SPILL AND LEAK PROCEDURE:

Shutoff the source if without risk . Use SCBA to enter confined spaces. Monitor for CO2 concentration and oxygen concentration prior to re-entry. Gas will dissipate depending on site/area ventilation.

WASTE DISPOSAL:

Do not discard empty cylinders, Return the cylinder where applicable. Waste cylinders may have to be disposed in accordance to Federal, Provincial and Municipal requirements.

HANDLING PROCEDURES & EQUIPMENT:

Use in well ventilated areas. Keep container upright when in use. Keep away from flames, electrical sparks. Use appropriate carts for moving containers. Secure container when in use. Close the container valve when NOT in use, or when empty. Secure (restrain) during transportation or use. Use backflow preventive devices (checkvalves) piping & tubing to avoid suckbacks. Protect container valves when not in use.

STORAGE REQUIREMENTS:

Store in well ventilated areas. Keep away from open flames, heat. Store at temperatures below 52°C (125°F).

SPECIAL SHIPPING INFORMATION:

Transport upright in well-ventilated vehicle. Do not transport in trunk of enclosed vehicle. Commercial (cylinders) quantities may NOT be transported in passenger compartments.

T.D.G. SHIPPING NAME:	CARBON DIOXIDE	T.D.G. CLASSIFICATION CLASS(ES):	2.2
T.D.G. P.I.N. / U.N. :	1013		

PREPARED BY: **JOSEF GAS**
TEL: (416) 658-1212

EFFECTIVE DATE: JANUARY 2016