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MSDS: Carbon Dioxide – Oxygen Mixture (Carbogen)

PRODUCT INFORMATION

PRODUCT: Carbon Dioxide-Oxygen Mixture
TRADE NAME: 3-7% Carbon Dioxide in Oxygen
CHEMICAL NAME: 3-7 Molar % Carbon Dioxide in Oxygen
SYNONYMS: Carbon Dioxide and Oxygen, Mixtures
FORMULA: 3-7 Molar % CO₂ in O₂
CHEMICAL FAMILY: Gas mixture
MANUFACTURER'S NAME: MEGS Inc.
MANUFACTURER'S ADDRESS: 2675 De Miniac
Ville St-Laurent, Qc, H4S 1E5
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: 32.37 - 32.85
PRODUCT USE: Various
PRODUCT IDENTIFICATION UN 3156, Compressed gas oxidizing,
NUMBER: n.o.s.

HAZARDOUS INGREDIENTS

CHEMICAL ID	CONCENTRATION	CAS #	LD(50)	LC(50)
	3-7%			
Carbon Dioxide		124-38-9	None	LC _{Lo} Inhl-hmn 10%/1min
Oxygen	97-93%	7782-44-7	None	None

PHYSICAL DATA

PHYSICAL STATE: Gas under pressure
APPEARANCE: Colorless gas
ODOR: Odorless

ODOR THRESHOLD: Not applicable
SPECIFIC GRAVITY (H₂O = 1): See Vapor Density (air = 1)
VAPOR PRESSURE: Not applicable (gas)
VAPOR DENSITY (air = 1): 1.12 - 1.14
EVAPORATION RATE: Not applicable (gas)
BOILING POINT: CO₂ Sublimation Point = -78.5°C;
O₂ = -182.97°C
FREEZING POINT: CO₂: -56.6°C @ 518 kPa O₂ = -
218.57°C
pH: Not applicable
GAS DENSITY: 1.37 - 1.40 kg/m³ @ 15°C, 101.3 kPa
COEFFICIENT OF WATER/OIL @ 15°C, Bunsen Coefficient
DISTRIBUTION: CO₂ = 1.0106; O₂ = 0.0342

FIRE OR EXPLOSION HAZARD

CONDITIONS OF FLAMMABILITY: This mixture is nonflammable;
however, it will vigorously accelerate
combustion.

MEANS OF EXTINCTION: Copious quantities of water for fires
with oxygen as the oxidizer. If
possible, stop the flow of the oxygen
rich gas which is supporting the fire.

**FLASHPOINT AND METHOD OF
DETERMINATION:** Nonflammable mixture

UPPER EXPLOSION LIMIT (% BY VOL): Nonflammable mixture

LOWER EXPLOSION LIMIT (% BY VOL): Nonflammable mixture

AUTO-IGNITION TEMPERATURE: Nonflammable mixture

FLAMMABILITY CLASSIFICATION: Nonflammable mixture

**HAZARDOUS COMBUSTION
PRODUCTS:** Nonflammable mixture

EXPLOSION DATA: Nonflammable mixture

SENSITIVITY TO STATIC DISCHARGE: Nonflammable mixture

REACTIVITY DATA

CHEMICAL STABILITY: Stable
INCOMPATIBLE MATERIALS: Flammable materials
CONDITIONS OF REACTIVITY: Ambient temperature
**HAZARDOUS DECOMPOSITION
PRODUCTS:** None

TOXICOLOGICAL PROPERTIES

ROUTES OF ENTRY:

SKIN CONTACT: None

SKIN ABSORPTION: None

EYE: None

INHALATION: Breathing mixtures with high oxygen concentrations (greater than 75 molar percent) causes symptoms of hyperoxia which include cramps, nausea, dizziness, hypothermia amblyopia, respiratory difficulties, bradycardia, fainting spells and convulsions capable of leading to death. For additional data on hyperoxia, refer to Compressed Gas Association's Pamphlet P-14. The carbon dioxide present in the mixture should cause the respiration rate to be increased.

INGESTION: None

ACUTE OVER EXPOSURE EFFECTS: The toxicological property is that of hyperoxia which leads to pneumonia. Concentrations of oxygen between 25 and 75 molar percent present a risk of inflammation of organic matter in the body.

CHRONIC OVER EXPOSURE EFFECTS: None

EXPOSURE LIMITS: TWA for CO₂ = 5,000 molar ppm. Its STEL = 30,000 molar ppm. (ACGIH 1995-1996).

IRRITANCY OF PRODUCT: None

SENSITIZATION TO MATERIAL: None

CARCINOGENICITY, REPRODUCTIVE EFFECTS: None known

TERATOGENICITY, MUTAGENICITY: None known

TOXICOLOGICALLY SYNERGISTIC PRODUCTS: None

PREVENTIVE MEASURES

PERSONAL PROTECTIVE EQUIPMENT: Protective gloves, as required, of any material. Safety goggles or glasses. Safety shoes, safety shower.

SPECIFIC ENGINEERING CONTROLS: Carbon steels and low alloy steels are acceptable for use at lower pressures. For high pressure applications use stainless steels, copper and its alloys, nickel and its alloys, brass, bronze, silicon

alloys, Monel®, Inconel® or beryllium. Lead and silver or lead and tin alloys are good gasketing materials. Teflon® and Kel-F® are the preferred non-metal gaskets. Equipment to contain high oxygen content mixtures must be "cleaned for oxygen service". See Compressed Gas Association Pamphlet G-4.1.

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 and valve outlet threaded plugs must remain in place unless container is secured with valve outlet piped to the point of use. 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. Do not tamper with (valve) safety device. Close valve after each use and when empty.

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 and away from full or empty stored cylinder which contain flammable products. 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 (5.1)

WHMIS CLASSIFICATION: A,C

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.

FIRST AID MEASURES

SPECIFIC FIRST AID PROCEDURES: PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO OXYGEN. RESCUE PERSONNEL SHOULD BE COGNIZANT OF EXTREME FIRE HAZARD ASSOCIATED WITH OXYGEN-RICH ATMOSPHERES.

INHALATION: Conscious persons should be assisted to an uncontaminated area and breathe fresh air. They should be kept warm and quiet. The physician should be informed that the victim is experiencing (has experienced) hyperoxia.

Unconscious persons should be moved to an uncontaminated area and given assisted respiration. When breathing has been restored, treatment should be as above. Continued treatment should be symptomatic and supportive.

EYE CONTACT: Not applicable

SKIN CONTACT: Not applicable

PREPARATION INFORMATION

PREPARED BY: Safety Department

DATE PREPARED: 09/01/2001

LAST REVISION DATE: 05/21/2007

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