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BOC GASES

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: CARBON DIOXIDE IN OXYGEN AND NITROGEN

1. Product and Company Identification

BOC Gases,
Division of,
The BOC Group, Inc.
575 Mountain Avenue
Murray Hill, NJ 07974

BOC Gases
Division of
BOC Canada Limited
5975 Falbourn Street, Unit 2
Mississauga, Ontario L5R 3W6

TELEPHONE NUMBER: (908) 464-8100
24-HOUR EMERGENCY TELEPHONE NUMBER:
CHEMTREC (800) 424-9300

TELEPHONE NUMBER: (905) 501-1700
24-HOUR EMERGENCY TELEPHONE NUMBER:
(905) 501-0802
EMERGENCY RESPONSE PLAN NO: 2-0101

PRODUCT NAME: CARBON DIOXIDE IN OXYGEN AND NITROGEN
CHEMICAL NAME: Carbon Dioxide in Oxygen and Nitrogen
COMMON NAMES/SYNONYMS: Not Available
TDG (Canada) CLASSIFICATION: 2.2
WHMIS CLASSIFICATION: A, C (O₂ > 23.5%)

PREPARED BY: Loss Control (908)464-8100/(905)501-1700
PREPARATION DATE: 6/1/95
REVIEW DATES: 11/11/03

2. Composition, Information on Ingredients

EXPOSURE LIMITS¹:

INGREDIENT	% VOLUME	PEL-OSHA ²	TLV-ACGIH ³	LD ₅₀ or LC ₅₀ Route/Species
Carbon Dioxide FORMULA: CO ₂ CAS: 124-38-9 RTECS #: FF6400000	0.0001-30.0	5000 ppm TWA	5000 ppm TWA 30,000 ppm STEL	Not Available
Oxygen FORMULA: O ₂ CAS: 7782-44-7 RTECS #: RS2060000	2.5-66.0	Not Available	Not Available	Not Available
Nitrogen FORMULA: N ₂ CAS: 7727-37-0 RTECS #: QW9700000	9.0-87.5	None Established	Simple Asphyxiant	Not Available

¹ Refer to individual state or provincial regulations, as applicable, for limits which may be more stringent than those listed here.

² As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)

³ As stated in the ACGIH 2003 Threshold Limit Values for Chemical Substances and Physical Agents.

IDLH (Carbon dioxide): 40,000 ppm

OSHA Regulatory Status: This material is classified as hazardous under OSHA regulations.

PRODUCT NAME: CARBON DIOXIDE IN OXYGEN AND NITROGEN

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: None known.

POTENTIAL ENVIRONMENTAL EFFECTS: Not expected to be toxic to fish and wildlife.

4. First Aid Measures

EYES: None required.

SKIN: None required.

INGESTION: None required.

INHALATION: PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS. 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 mouth-to-mouth resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive.

5. Fire Fighting Measures

Conditions of Flammability: Nonflammable		
Flash point: None	Method: Not Applicable	Autoignition Temperature: None
LEL(%): None		UEL(%): None
Hazardous combustion products: None		
Sensitivity to mechanical shock: None		
Sensitivity to static discharge: None		

FIRE AND EXPLOSION HAZARDS:

Mixtures which contain > 23.5% oxygen will accelerate fire and support or initiate combustion/explosion of organic matter and other oxidizable material. Cylinder may rupture violently from pressure when involved in a fire situation.

EXTINGUISHING MEDIA:

Nonflammable. Use any media suitable for surrounding fire. Use water spray to cool fire exposed containers.

FIRE FIGHTING INSTRUCTIONS:

For mixtures which contain > 23.5% oxygen, stop the flow of gas supporting fire. Firefighters should wear respiratory protection (SCBA) and full turnout or Bunker gear. Continue to cool fire-exposed cylinders until well after flames are extinguished.

6. Accidental Release Measures

Evacuate all personnel from affected area. Use appropriate protective equipment (See Section 8). A leak of oxidizing gas mixtures near combustible or flammable materials may present a severe fire or explosion hazard. Eliminate all ignition sources. Stop the flow of gas or remove cylinder to outdoor location if this can be done without risk. Ventilate enclosed areas. If leak is in user's equipment, be certain to purge piping with inert gas prior to attempting repairs. If leak is in container or container valve, contact the appropriate emergency telephone number listed in Section 1 or call your closest BOC location.

9. Physical and Chemical Properties

PARAMETER	VALUE	UNITS
Physical state (gas, liquid, solid)	: Gas	
Vapor pressure	: Not Available	
Vapor density (Air = 1)	: 1	
Evaporation point	: Not Available	
Boiling point	: Not Available	
Freezing point	: Not Available	
PH	: Not Available	
Specific gravity	: Not Available	
Oil/water partition coefficient	: Not Available	
Solubility (H ₂ O)	: Slightly soluble	
Odor threshold	: Not Applicable	
Odor and appearance	: Odorless, colorless gas	

10. Stability and Reactivity

STABILITY: Stable

INCOMPATIBLE MATERIALS/CONDITIONS: Oxidizing gas mixtures are incompatible with flammable, organic, and combustible materials. Avoid heat, sparks, and flames.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbonic acid in the presence of water or moisture.

HAZARDOUS POLYMERIZATION: Will not occur.

11. Toxicological Information

INHALATION: Mixtures which contain < 19.5% oxygen are non-toxic. Hazardous effects arise from release of sufficient concentrations to displace atmospheric oxygen.

Inhaling high concentrations of carbon dioxide may cause circulatory insufficiency leading to coma and death. Chronic harmful effects are not known from repeated inhalation of low (3 to 5 molar %) concentrations.

Human volunteers which inhaled 90-95% oxygen through a face mask for 6 hours showed signs of tracheal irritation and fatigue. Other symptoms (which might have been caused by placing a tube into the trachea during the experiment) included: sinusitis, conjunctivitis, fever, and symptoms of acute bronchitis. Poisoning began in dogs 36 hours after inhalation of pure oxygen at atmospheric pressure. Distress was seen within 48 hours and death within 60 hours.

SKIN AND EYE:

The incompletely developed retinal circulation is more susceptible to toxic levels of oxygen. In premature infants, arterial oxygen tension above 150 mm Hg may cause retrolental fibroplasia. Permanent blindness may occur several months later. One case of severe retinal damage in an adult was reported. An individual suffering from myasthenia gravis developed irreversible retinal atrophy after breathing 80% oxygen for 150 days.

PRODUCT NAME: CARBON DIOXIDE IN OXYGEN AND NITROGEN

California Proposition 65: This product does not contain ingredient(s) known to the State of California to cause cancer or reproductive toxicity.

Canadian Controlled Products Regulations (CPR): This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

16. Other Information

NFPA HAZARD CODES	HMIS HAZARD CODES	RATINGS SYSTEM
Health: 0	Health: 0	0 = No Hazard
Flammability: 0	Flammability: 0	1 = Slight Hazard
Instability: 0	Reactivity: 0	2 = Moderate Hazard
OXIDIZER (O ₂ > 23.5%)		3 = Serious Hazard
		4 = Severe Hazard

Note: The Reactivity Hazard Rating is based on the 2nd Edition of the National Paint and Coatings Association's (NPCA's) Hazardous Materials Identification System (HMIS[®]). Hazard ratings were based on the best available information at the time of the review. Ratings will be reassigned in accordance with Compressed Gas Association (CGA) guidelines as published in the future edition of CGA Pamphlet P-19.

ACGIH	American Conference of Governmental Industrial Hygienists
DOT	Department of Transportation
IARC	International Agency for Research on Cancer
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
SARA	Superfund Amendments and Reauthorization Act
STEL	Short Term Exposure Limit
TDG	Transportation of Dangerous Goods
TLV	Threshold Limit Value
WHMIS	Workplace Hazardous Materials Information System

Compressed gas cylinders shall not be refilled without the express written permission of the owner. Shipment of a compressed gas cylinder which has not been filled by the owner or with his/her (written) consent is a violation of transportation regulations.

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