

**PRODUCT NAME: OXYGEN IN NITROGEN MIXTURE**

### 1. Product and Company Identification

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

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

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

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

**PRODUCT NAME:** OXYGEN IN NITROGEN MIXTURE

**CHEMICAL NAME:** Oxygen in Nitrogen

**COMMON NAMES/SYNONYMS:** Industrial grade air, Oxygen nitrogen mixture, Zero Air

**TDG (Canada) CLASSIFICATION:** 2.2(5.1), (O<sub>2</sub> > 23.5%)

**WHMIS CLASSIFICATION:** A, C (O<sub>2</sub> > 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 LIMITS<sup>1</sup>:

INGREDIENT	% VOLUME	PEL-OSHA <sup>2</sup>	TLV-ACGIH <sup>3</sup>	LD <sub>50</sub> or LC <sub>50</sub> Route/Species
Oxygen FORMULA: O <sub>2</sub> CAS: 7782-44-7 RTECS #: RS2060000	2.0-98.0	Not Available	Not Available	Not Available
Nitrogen FORMULA: N <sub>2</sub> CAS: 7727-37-9 RTECS #: QW9700000	2.0-98.0	None Established	Simple Asphyxiant	Not Available

<sup>1</sup> As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)

<sup>2</sup> Refer to individual state or provincial regulations, as applicable, for limits which may be more stringent than those listed here.

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

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

### 3. Hazards Identification

#### EMERGENCY OVERVIEW

Odorless colorless nonflammable gas. Mixtures which contain > 23.5% oxygen act as oxidizers – will accelerate combustion and increase the risk of fire and explosion in combustible or flammable materials. Mixtures with less than 19.5% oxygen act as a simple asphyxiant. Effects may include headaches, dizziness and loss of consciousness. Non-toxic. Prolonged inhalation of high concentrations may cause coughing and lung effects. Contents under pressure. Use and store below 125 °F.

**PRODUCT NAME: OXYGEN IN NITROGEN MIXTURE**

**ROUTE OF ENTRY:**

Skin Contact No	Skin Absorption No	Eye Contact No	Inhalation Yes	Ingestion No
--------------------	-----------------------	-------------------	-------------------	-----------------

**HEALTH EFFECTS:**

Exposure Limits No	Irritant No	Sensitization No
Teratogen No	Reproductive Hazard No	Mutagen No
Synergistic Effects None known		

Carcinogenicity: -- NTP: No IARC: No OSHA: No

**EYE EFFECTS:** None anticipated.

**SKIN EFFECTS:** None anticipated.

**INGESTION EFFECTS:** Ingestion is unlikely since oxygen is a gas at room temperature.

**INHALATION EFFECTS:** Note: Not to be used as breathing air!

Mixtures which contain < 19.5% oxygen may act as simple asphyxiants. Effects of oxygen deficiency resulting from simple asphyxiants may include: rapid breathing, diminished mental alertness, impaired muscular coordination, faulty judgement, depression of all sensations, emotional instability, and fatigue. As asphyxiation progresses, nausea, vomiting, prostration, and loss of consciousness may result, eventually leading to convulsions, coma, and death.

Oxygen is not acutely toxic under normal pressure. Prolonged inhalation of high oxygen concentrations (> 75%) may affect coordination, attention, and cause tiredness or respiratory irritation. Oxygen is more toxic when inhaled at elevated pressures. Depending upon pressure and duration of exposure, pure oxygen at elevated pressures (i.e.: divers) may cause cramps, dizziness, difficulty breathing, convulsions, edema, and death.

Elevated oxygen concentrations in incubators has caused visual impairment and blindness in premature infants. High oxygen concentrations primarily affect eyes which are not fully developed (see Section 11). Oxygen deficiency during pregnancy has produced developmental abnormalities in humans and experimental animals.

**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.

**PRODUCT NAME: OXYGEN IN NITROGEN MIXTURE**

**INHALATION:** PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS. Victims should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. If breathing has stopped administer artificial resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive.

### 5. Fire Fighting Measures

Conditions of Flammability: Not flammable		
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 vent rapidly or rupture violently from pressure when involved in a fire situation.

**EXTINGUISHING MEDIA:** Water spray to keep cylinders cool.

**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.

### 7. Handling and Storage

**Electrical classification:** Nonhazardous

Do not use as breathing air.

Dry air is noncorrosive and may be used with all materials of construction. Moisture causes metal oxides formed with air to be hydrated so that they include volume and lose their protective role (rust formation). Concentrations of SO<sub>2</sub>, Cl<sub>2</sub>, salt, etc. in the moisture enhances the rusting of metals in air.

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 system. Do not insert any object (i.e.: screwdriver) into valve cap openings as this can damage the valve causing leakage.

<b>PRODUCT NAME: OXYGEN IN NITROGEN MIXTURE</b>
---

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas, emergency exits, flammables and combustibles. Do not allow the temperature where cylinders are stored to exceed 125 °F (52 °C). Cylinders should 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. Post "NO SMOKING OR OPEN FLAMES" signs in areas where oxidizing mixtures are used or stored. There should be no sources of ignition in the storage or use area.

For additional storage recommendations, consult Compressed Gas Association's Pamphlets P-1.

## 8. Exposure Controls, Personal Protection

**ENGINEERING CONTROLS:** Local exhaust to prevent accumulation of high concentrations and maintain air oxygen levels between 19.5 and 23.5%.

**EYE/FACE PROTECTION:** Safety goggles or glasses.

**SKIN PROTECTION:** Protective gloves made of any suitable material.

**RESPIRATORY PROTECTION:** For gas mixtures that do not contain sufficient oxygen, a positive pressure NIOSH approved air-supplying respirator systems (SCBA or airline/escape bottle) using at a minimum Grade D air should be available for emergency release.

**OTHER/GENERAL PROTECTION:** Safety shoes.

## 9. Physical and Chemical Properties

<b>PARAMETER</b>	<b>VALUE</b>	<b>UNITS</b>
Physical state (gas, liquid, solid)	: Gas	
Vapor pressure	: Above critical temp.	
Vapor density (Air = 1)	: Not Available	
Evaporation point	: Not Available	
Boiling point	: Not Available	
Freezing point	: Not Available	
PH	: Not Applicable	
Specific gravity at STP	: 1.0	
Oil/water partition coefficient	: Not Available	
Solubility (H <sub>2</sub> O)	: Slightly soluble	
Odor threshold	: Not Applicable	
Odor and appearance	: Colorless, odorless 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:** None

**HAZARDOUS POLYMERIZATION:** Will not occur.

## 11. Toxicological Information

### INHALATION:

NOTE: Compressed air is not intended for breathing use, since it's oxygen contents may be below that which supports life. Refer to individual data sheets on oxygen and nitrogen for their toxicological properties.

Mixtures with less than 19.5% oxygen are inactive biologically and essentially nontoxic. The major hazard is that of oxygen deficiency due to displacement.

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.

**OTHER:** Oxygen deficiency during pregnancy has produced developmental abnormalities in humans and experimental animals.

## 12. Ecological Information

Product does not contain Class I or Class II ozone depleting substances. Not toxic. Will not bioconcentrate.

## 13. Disposal Considerations

Do not attempt to dispose of residual 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 BOC Gases or authorized distributor for proper disposal.

## 14. Transport Information\*

PARAMETER	United States DOT	Canada TDG
PROPER SHIPPING NAME:	Compressed gas, n.o.s./ Compressed gas, oxidizing, n.o.s. (Nitrogen, Oxygen)	Compressed gas, n.o.s./ Compressed gas, oxidizing, n.o.s. (Oxygen)
HAZARD CLASS:	2.2/2.2(5.1)	2.2/2.2(5.1)
IDENTIFICATION NUMBER:	UN 1956/UN 3156	UN 1956/UN 3156
SHIPPING LABEL:	NONFLAMMABLE GAS/ NONFLAMMABLE GAS, OXIDIZER	NONFLAMMABLE GAS/ NONFLAMMABLE, OXIDIZER

\*Transportation information is dependent on oxygen concentration. At concentrations greater than 23.5% oxygen, this product is classified as Compressed gases, oxidizing, n.o.s. At oxygen concentrations less than or equal to 23.5%, this product is classified as compressed gases, n.o.s.

## 15. Regulatory Information

### SARA TITLE III NOTIFICATIONS AND INFORMATION

#### SARA TITLE III - HAZARD CLASSES:

Acute Health Hazard

Fire Hazard (O<sub>2</sub> > 23.5%)

#### SARA TITLE III - SECTION 313 SUPPLIER NOTIFICATION:

This product does not contain toxic chemicals subject to reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372.

**U.S. TSCA/Canadian DSL:** All ingredients are listed on the U.S. Toxic Substances Control Act (TSCA) inventory or exempt from listing and on the Canadian Domestic Substance List (DSL).

**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

Health: 0  
 Flammability: 0  
 Instability: 0  
 OXIDIZER (O<sub>2</sub> > 23.5%)

### HMIS HAZARD CODES

Health: 0  
 Flammability: 0  
 Reactivity: 0

### RATINGS SYSTEM

0 = No Hazard  
 1 = Slight Hazard  
 2 = Moderate Hazard  
 3 = Serious Hazard  
 4 = Severe Hazard

**Note:** The Reactivity Hazard Rating is based on the 2<sup>nd</sup> Edition of the National Paint and Coatings Association's (NPCA's) Hazardous Materials Identification System (HMIS<sup>®</sup>). 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.

PRODUCT NAME: OXYGEN IN NITROGEN MIXTURE

**DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES:**

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).