



MATERIAL SAFETY DATA SHEET

PRODUCT NAME: ETHANOL ($\leq 0.01\%$) IN NITROGEN

1. Chemical 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 Falbourne 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: 20101

PRODUCT NAME: ETHANOL ($\leq 0.01\%$) IN NITROGEN

CHEMICAL NAME: Ethanol ($\leq 0.01\%$) in nitrogen

COMMON NAMES/SYNONYMS: Ethanol ($\leq 0.01\%$) in nitrogen

TDG (Canada) CLASSIFICATION: 2.2

WHMIS CLASSIFICATION: A

PREPARED BY: Loss Control (908)464-8100/(905)501-1700

PREPARATION DATE: 6/1/95

REVIEW DATES: 6/18/96

2. Composition, Information on Ingredients

INGREDIENT	% VOLUME	PEL-OSHA ¹	TLV-ACGIH ²	LD ₅₀ or LC ₅₀ Route/Species
ETHANOL FORMULA: C ₂ H ₅ OH CAS: 64-17-5 RTECS #: KQ6300000	≤ 0.01	1000 ppm	1000 ppm	LC50: 20,000 ppm/10 H inhalation/rat
NITROGEN FORMULA: N ₂ CAS: 7727-37-9 RTECS: QW97000002	≥ 99.99	Simple Asphyxiant	Simple Asphyxiant	Not Available

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

² As stated in the ACGIH 1994-95 Threshold Limit Values for Chemical Substances and Physical Agents

3. Hazards Identification

EMERGENCY OVERVIEW

Colorless, non-flammable gas with slight alcohol odor which may cause asphyxiation in high concentrations. Gas may accumulate in confined or poorly ventilated areas, displacing oxygen and causing unconsciousness or death. Use only with adequate ventilation

ROUTE OF ENTRY:

Skin Contact No	Skin Absorption No	Eye Contact No	Inhalation Yes	Ingestion Yes
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HEALTH EFFECTS:

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

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

EYE EFFECTS:

Adverse effects are not anticipated. A vapor concentration of 0.25% ethanol had no notable effect on the eyes.

SKIN EFFECTS:

Adverse effects are not anticipated.

INGESTION EFFECTS:

Unlikely; product is a gas.

INHALATION EFFECTS:

Release of sufficient quantities of this product may cause asphyxiation or suffocation by displacing oxygen content in the air.

SIGNS AND SYMPTOMS:

The following effects of asphyxiation are representative and it is possible that none of these symptoms may occur: Loss of balance or dizziness; tightness in the frontal area of the forehead; tingling of the tongue, fingertips or toes; weakened speech leading to the inability to utter sounds; rapid reduction in the ability to perform movements; reduced consciousness of surroundings; lethargy; loss of tactile sensations; and heightened mental activity.

Symptoms of ethanol toxicity would not be anticipated at ethanol concentrations present in this product.

NFPA HAZARD CODES

Health: 1
Flammability: 0
Reactivity: 0

HMIS HAZARD CODES

Health: 1
Flammability: 0
Reactivity: 0

RATINGS SYSTEM

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

4. First Aid Measures

EYES:

Flush eyes with large amounts of water for at least 15 minutes holding eyelids open to ensure adequate rinsing. If irritation persists, seek medical attention.

SKIN:

Remove contaminated clothing and flush affected area with large quantities of water. If irritation persists, seek medical attention.

INGESTION:

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Unlikely; product is a gas.

INHALATION:

PROMPT REMOVAL FROM THE CONTAMINATED AREA AND IMMEDIATE MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS.

Immediately remove to fresh air. If breathing is difficult, administer oxygen. If breathing has stopped, give artificial respiration. Seek immediate medical attention.

5. Fire Fighting Measures

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

FIRE AND EXPLOSION HAZARDS:

The majority of this product constitutes a nonflammable, inert gas. Containers may explode when exposed to heat or flames.

EXTINGUISHING MEDIA:

Any - Use media appropriate for surrounding fire.

FIRE FIGHTING INSTRUCTION:

Stop the flow of gas if it can be done without risk. Continue to cool surrounding containers until well after flames are extinguished. Firefighters should wear a full-facepiece, NIOSH/MSHA-approved self-contained breathing apparatus (SCBA) operated in positive pressure mode and full turnout gear.

If flame is extinguished and flow of gas continues, increase ventilation to prevent flammable mixture formation in low areas or pockets.

6. Accidental Release Measures

Isolate hazard area, evacuate personnel and deny entry to unauthorized/unprotected individuals. Personnel entering area should wear appropriate protective equipment including respiratory protection suitable for unknown concentrations. Personnel should not re-enter hazard area until adequate oxygen is re-established. If a leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is in container of 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.

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Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve protection 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 (< 3000 psig) 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.

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area of non-combustible construction away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 125 °F. Cylinders should be stored upright and firmly secured to prevent **FALLING OR BEING KNOCKED OVER**. Use a "first in-first out" inventory system to prevent full cylinders being stored for excessive periods of time.

For additional recommendations, consult Compressed Gas Association Pamphlet P-1 and G-12.

Stationary customer site vessels should operate in accordance with the manufacturer's and BOC's instruction. Do not attempt to repair, adjust or in any other way modify the operation of these vessels. If there is a malfunction or other type of operations problem with the vessel, contact the closest BOC location immediately.

Never carry a compressed gas cylinder or a container of a gas in cryogenic liquid form in an enclosed space such as a car trunk, van or station wagon. A leak can result in a fire, explosion, asphyxiation or a toxic exposure.

8. Exposure Controls, Personal Protection

EXPOSURE LIMITS¹:

INGREDIENT	% VOLUME	PEL-OSHA ²	TLV-ACGIH ³	LD ₅₀ or LC ₅₀ Route/Species
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¹ Refer to individual state of 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 1994-1995 Threshold Limit Values for Chemical Substances and Physical Agents.

ENGINEERING CONTROLS:

Use local exhaust in combination with general ventilation as necessary to maintain oxygen levels above 19.5% and control air contaminants to below acceptable exposure guidelines.

EYE/FACE PROTECTION:

Chemical safety goggles or safety glasses with face shield should be worn.

SKIN PROTECTION:

Protective gloves of butyl rubber are recommended when working with this product.

RESPIRATORY PROTECTION:

A NIOSH/MSHA-approved full-facepiece SCBA operated in positive pressure mode and/or any supplied air respirator with a full facepiece and operated in a positive pressure mode in combination with an auxiliary self contained breathing apparatus operated in positive pressure mode should be used for high or unknown concentrations. Respirators should be stored in an area not likely to be contaminated.

OTHER/GENERAL PROTECTION:

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9. Physical and Chemical Properties

PARAMETER	VALUE	UNITS
Physical state (gas, liquid, solid)	: Gas	
Vapor pressure	: Not Available	
Vapor density (Air = 1)	: Not Available	
Evaporation point	: Not Available	
Boiling point	: Not Available	°F
	:	°C
Freezing point	: Not Available	°F
	:	°C
pH	: Not Applicable	
Specific gravity	: Not Available	
Oil/water partition coefficient	: Not Available	
Solubility (H ₂ O)	: Negligible	
Odor threshold	: Not Applicable	
Odor and appearance	: Colorless gas/vapor with slight alcohol odor.	

10. Stability and Reactivity

STABILITY:

Stable under normal conditions.

INCOMPATIBLE MATERIALS:

None known.

HAZARDOUS DECOMPOSITION PRODUCTS:

Thermal decomposition may produce oxides of carbon.

HAZARDOUS POLYMERIZATION:

Will not occur.

11. Toxicological Information

EYE EFFECTS:

Human volunteers exposed to ethanol vapor at concentrations of 0.7 to 1% have observed that the eyes began to burn after several minutes.

SKIN EFFECTS:

Ethanol (400 mg) applied to rabbit skin caused mild irritation. 500 mg/24 H Ethanol applied to rabbit skin produced severe irritation.

ACUTE ORAL EFFECTS:

Ethanol is moderately toxic via ingestion.

ACUTE INHALATION EFFECTS:

Concentrations below 1,000 ppm generally produce no sign of intoxication. Ethanol is mildly toxic via inhalation:

LC50: 20,000 ppm/24H; inhalation/rat

LC50: 39 gm/m³; inhalation/mouse

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CHRONIC:

Repeated ingestion of ethanol over time can lead to alcoholism.

Alcoholic beverages are listed in group 1 by the International Agency for Research on Cancer (IARC) as a mixture which is carcinogenic to humans.

Epidemiologic studies have shown that persons who consume a moderate amount of alcohol are at 40-100% greater risk of developing breast cancer. No causal relationship has been established.

OTHER:

Experimental reproductive, teratogenic, and mutation effects have been reported for ethanol.

12. Ecological Information

ENVIRONMENTAL FATE:

Release of ethanol to the atmosphere will photodegrade in hours in polluted urban areas to an estimated range of 4 to 6 days in less polluted areas. Removal of ethanol from the air occurs via rainfall. Decomposition (via biodegradation) and volatilization in soil and water is expected to occur.

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. (Ethanol, Nitrogen)	Compressed gas, n.o.s. (Ethanol, Nitrogen)
HAZARD CLASS:	2.2	2.2
IDENTIFICATION NUMBER:	UN 1956	UN 1956
SHIPPING LABEL:	NONFLAMMABLE GAS	NONFLAMMABLE GAS

15. Regulatory Information

SARA TITLE III NOTIFICATIONS AND INFORMATION

SARA TITLE III - HAZARD CLASSES:

Acute Health Hazard

Sudden Release of Pressure Hazard

CERCLA, 40 CFR 117, 302: This product contains no Reportable Quantity (RQ) Substances.

ATMOSPHERIC STANDARDS: Ethanol is produced as an intermediate or final product of process units covered under standards of performance for equipment leaks of Volatile Organic Compounds (VOCs) in the Synthetic Organic Chemical Manufacturing Industry (SOCMI). (40 CFR 60.489).

16. Other Information

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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.

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).