

Material Safety Data Sheet

Printing date 10/10/2008

Version 2

Reviewed on 10/10/2008

1 Identification of substance

- **Product details**

- **Trade name: Entonox**

- **Article number:** 344-02-0006

- **Creation date:** 10/10/2008

- **Manufacturer/Supplier:**

Linde Canada Limited

5860 Chedworth Way

Mississauga, Ontario L5R 0A2

Telephone (905) 501-1700

24-HOUR EMERGENCY TELEPHONE NUMBER:

(905) 501-0802

Linde

575 Mountain Avenue

Murray Hill, NJ 07974

Telephone (908) 464-8100

24-HOUR EMERGENCY TELEPHONE NUMBER:




CHEMTREC (800) 424-9300

- **Information department:** Customer Service Centre: 1-866-385-5349

2 Composition/Data on components

- **Chemical characterization**

- **Dangerous components:**

10024-97-2	Nitrous Oxide	Danger:  2.4/1	23 - 100%
		Warning:  2.5/L	
7782-44-7	Oxygen	Danger:  2.4/1	23 - 100%

3 Hazards identification

- **Hazard description:**

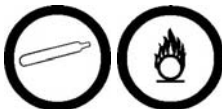


Oxidizing

- **WHMIS-symbols:**

A - Compressed gas

C - Oxidizing materials



- **HMIS-ratings (scale 0 - 4)**

HEALTH 0

Health = 0

FIRE 3

Fire = 3

REACTIVITY 0

Reactivity = 0

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- **NFPA ratings (scale 0 - 4)**



Health = 0
Fire = 3
Reactivity = 0

- **Information pertaining to particular dangers for man and environment:**

The product has to be labelled due to the calculation procedure of international guidelines.
Contact with combustible material may cause fire.

- **Classification system:**

The classification is in line with internationally approved calculation standards. It is expanded, however, by information from technical literature and by information furnished by supplier companies.

- **GHS label elements**

**Danger**

2.4/1 - May cause or intensify fire; oxidizer.

**Warning**

2.5/C - Contains gas under pressure; may explode if heated.

- **Prevention:**

Keep/Store away from clothing/combustible materials.
Keep reduction valves free from grease and oil.

- **Response:**

In case of fire: Stop leak if safe to do so.

- **Storage:**

Store in a well-ventilated place.
Protect from sunlight. Store in a well-ventilated place.

4 First aid measures

- **After inhalation:** Supply fresh air; consult doctor in case of complaints.
- **After skin contact:** Generally the product does not irritate the skin.
- **After eye contact:** Rinse opened eye for at least 15 minutes under running water. Then consult a doctor.
- **After swallowing:** Not applicable

5 Fire fighting measures

- **Suitable extinguishing agents:**
CO₂, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Protective equipment:** Wear self-contained respiratory protective device.

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6 Accidental release measures

- **Person-related safety precautions:**
 Wear protective equipment. Keep unprotected persons away.
 Ensure adequate ventilation.
 Eliminate ignition sources
 Stop leak - ONLY if possible to do so without risk.
- **Measures for environmental protection:** Prevent seepage into sewage system, workpits and/or cellars.
- **Measures for cleaning/collecting:** Ensure adequate ventilation.

7 Handling and storage

- **Handling:**
- **Information for safe handling:**
 Handle with care. Avoid jolting, friction, and impact.
 Use only in well ventilated areas.
 Store cylinders upright with valve protection cap in place and firmly secured to prevent falling or being knocked over.
- **Information about protection against explosions and fires:**
 Keep ignition sources away - Do not smoke.
 Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50°C. Do not pierce or burn, even after use.
- **Storage:**
- **Requirements to be met by storerooms and receptacles:**
 Do not expose cylinder to temperatures higher than 50°C (122 °F)
- **Information about storage in one common storage facility:**
 Store separately from cylinders containing flammables by a minimum distance of 20' or by a barrier of non-combustible material at least 5' high having a fire resistant rating of at least 30minutes.
 Sources of ignition should be removed from storage area.
- **Further information about storage conditions:**
 Store cylinder in a well ventilated area.
 Store in accordance with local fire code and/or building code or any pertaining regulations.

8 Exposure controls and personal protection

- **Additional information about design of technical systems:**
 Adequate local ventilation.
 Safety showers and eyewash stations should be nearby.

· **Components with limit values that require monitoring at the workplace:**

10024-97-2 Nitrous Oxide (23 - 100%)

EL	25 ppm
R	

- **Additional information:** The lists that were valid during the creation were used as basis.
- **Personal protective equipment:**
- **General protective and hygienic measures:**
 Wash hands before breaks and at the end of work.

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Protective clothing should be kept free of oil and grease.

PPE should be inspected and maintained regularly to retain its effectiveness.

- **Breathing equipment:**

Use atmosphere-supplying respirators (e.g. supplied-air: demand, pressure-demand, or continuous-flow or self-contained breathing apparatus: demand or pressure-demand or combination supplied-air with auxiliary self-contained air supply atmosphere-supplying respirator) in case of insufficient ventilation.

- **Protection of hands:**



Protective gloves.

- **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

- **Eye protection:** Safety glasses

9 Physical and chemical properties

- **General Information**

Form:	Gaseous.
Color:	Not Applicable
Odor:	Odorless

- **Change in condition**

Boiling point/Boiling range: -182°C

- **Flash point:**

Not applicable.

- **Flammability (solid, gaseous):** Contact with combustible material may cause fire.

- **Danger of explosion:**

Explosive when mixed with combustible material.

10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.

- **Dangerous reactions**

May react violently with reducing agents.

Violently oxidises organic substances.

May react violently with combustible substances.

- **Dangerous products of decomposition:** No dangerous decomposition products known.

11 Toxicological information

- **Acute toxicity:**

- **LD/LC50 values that are relevant for classification:** LC50 > 5000ppm

- **Primary irritant effect:**

- **on the skin:** No irritating effect.

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- **on the eye:** No irritating effect.
- **Sensitization:** No sensitizing effects known.

12 Ecological information

- **General notes:** Generally not hazardous for water.

13 Disposal considerations

- **Product:**
- **Recommendation:** Unused product should be returned to vendor.
- **Uncleaned packagings:**
- **Recommendation:** Cylinder and unused product should be returned to vendor. Disposable cylinder must be disposed of in accordance with local regulations.
- **Recommended cleansing agent:** None applicable.

14 Transport information

- **TDG and DOT regulations:**



- **Hazard class:** 2
- **Identification number:** UN3156
- **Proper shipping name (technical name):** COMPRESSED GAS, OXIDIZING, N.O.S.
- **Label:** 2.2+5.1

- **Maritime transport IMDG:**



- **IMDG Class:** 2
- **UN Number:** 3156
- **Label:** 2.2+5.1
- **Marine pollutant:** No
- **Proper shipping name:** COMPRESSED GAS, OXIDIZING, N.O.S.

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· Air transport ICAO-TI and IATA-DGR:


- **ICAO/IATA Class:** 2
- **UN/ID Number:** 3156
- **Label:** 2.2+5.1
- **Propper shipping name:** COMPRESSED GAS, OXIDIZING, N.O.S.

- **UN "Model Regulation":** UN3156, COMPRESSED GAS, OXIDIZING, N.O.S., 2.2 (5.1)

15 Regulations

· Sara
· Section 355 (extremely hazardous substances):

None of the ingredient is listed.

· Section 313 (Specific toxic chemical listings):

None of the ingredients is listed.

· TSCA (Toxic Substances Control Act):

All ingredients are listed.

· Proposition 65
· Chemicals known to cause cancer:

None of the ingredients is listed.

· Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed.

· Chemicals known to cause reproductive toxicity for males:

None of the ingredients is listed.

· Chemicals known to cause developmental toxicity:

None of the ingredients is listed.

· Cancerogenity categories
· EPA (Environmental Protection Agency)

None of the ingredients is listed.

· NTP (National Toxicology Program)

None of the ingredients is listed.

· TLV (Threshold Limit Value established by ACGIH)

10024-97-2 Nitrous Oxide

A4

· NIOSH-Ca (National Institute for Occupational Safety and Health)

None of the ingredients is listed.

· OSHA-Ca (Occupational Safety & Health Administration)

None of the ingredients is listed.

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- **Canadian substance listings:**

- **Canadian Domestic Substances List (DSL)**

All ingredients are listed.

- **Canadian Ingredient Disclosure list (limit 0.1%)**

10024-97-2 Nitrous Oxide

- **Canadian Ingredient Disclosure list (limit 1%)**

None of the ingredients is listed.

- **Product related hazard informations:**

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

- **Hazard symbols:**

Oxidizing

- **Risk phrases:**

Contact with combustible material may cause fire.

- **Safety phrases:**

Keep in a cool place.

Keep container in a well-ventilated place.

Keep away from combustible material.

This material and its container must be disposed of as hazardous waste.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Please refer to the section 3 for NFPA and HMIS Hazard Codes.

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- **Department issuing MSDS:** Customer Service Centre: 1-866-385-5349

- **Abbreviations and Acronyms:**

ACGIH: American Conference of Governmental Industrial Hygienists

CAS: Chemical Abstract Service (Division of the American Chemical Society)

DOT: US Department of Transportation

EINECS: European Inventory of Existing Commercial Chemical Substances

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

HMIS: Hazardous Material Identification System

IATA: International Air Transportation Association

IATA-DGR: Dangerous Goods Regulations by the "International Air Transportation Association"

ICAO: International Civil Aviation Association

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ICAO-TI: Technical Instructions by the "International Civil Aviation Organization (ICAO)
IMDG: International Marine Code for Dangerous Goods
WHIMS: Workplace Hazardous Material Information System
LC50: Lethal Concentration, 50 Percent
LD50: Lethal Dose, 50 Percent
N/A: Not Applicable

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