

# Material Safety Data Sheet

Printing date 10/06/2014

Version 13

Reviewed on 10/06/2014

## 1 Identification of substance

- **Product details**

- **Trade name:** Oxygen (Refrigerated Liquid)

- **Article number:** 025-01-0004

- **Creation date:** 08/11/2006

- **Manufacturer/Supplier:**

Linde Canada Limited	Linde	.
5860 Chedworth Way	575 Mountain Avenue	.
Mississauga, Ontario L5R 0A2	Murray Hill, NJ 07974	.
Telephone (905) 501-1700	Telephone (908) 464-8100	.
24-HOUR EMERGENCY TELEPHONE NUMBER:	24-HOUR EMERGENCY TELEPHONE NUMBER	.
: (905) 501-0802	CHEMTREC (800) 424-9300 OR	.
	Linde National Operations Center (800) 232-4726	.

Pse ensure that this MSDS is received by the appropriate person.

- **Information department:**

Customer Service Centre: 1-866-385-5349

In the U.S., for 24-hour emergency assistance, contact the Linde National Operations Center at 1-800-232-4726 or CHEMTREC at 1-800-424-9300

## 2 Composition/Data on components

- **Chemical characterization:**

- **CAS No. Description**

7782-44-7 Oxygen

- **Identification number(s)**

- **EINECS Number:** 231-956-9

- **Index number:** 008-001-00-8

## 3 Hazards identification

- **Hazard description:**



Oxidizing

- **WHMIS-symbols:**

Liquified gas.

A - Compressed gas

C - Oxidizing materials



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

HEALTH	3
FIRE	0
REACTIVITY	2

Health = 3

Fire = 0

Reactivity = 2

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Trade name: Oxygen (Refrigerated Liquid)

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## · NFPA ratings (scale 0 - 4)



Health = 3

Fire = 0

Reactivity = 0

## · Information pertaining to particular dangers for man and environment:

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 Void

## 4 First aid measures

### · After inhalation:

Remove source of contamination or have victim move to fresh air. If not breathing, give artificial respiration. Obtain medical attention immediately.

### · After skin contact:

Wash contaminated area with running water for at least 15-20 minutes, while removing contaminated clothing. Obtain medical attention. Launder contaminated clothing before re-use.

### · 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: Use fire fighting measures that suit the environment.

### · Protective equipment: Wear self-contained respiratory protective device.

## 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 container in a secured area. Limit access to authorized personnel only. Report any incidents involving thefts, misuse, or inventory shortages to law enforcement and the supplier. Security shall be provided in accordance with all local, state (provincial) and federal regulations.

### · 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.

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- **Storage:**

- **Requirements to be met by storerooms and receptacles:**

Do not expose cylinder to temperatures higher than 50°C (122 °F)  
Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency exits. 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.

- **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:** None.

## 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:** Not required.

- **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.  
Protective clothing and PPE should be kept free of oil and grease, generally in clean condition  
PPE should be inspected and maintained regularly to retain 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**

<b>Form:</b>	Gaseous.
<b>Color:</b>	Colorless
<b>Odor:</b>	Odorless

- **Change in condition**

<b>Melting point/Melting range:</b>	-219°C
<b>Boiling point/Boiling range:</b>	-182°C

- **Flash point:** Not applicable.

- **Danger of explosion:** Explosive when mixed with combustible material.

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- **Solubility in / Miscibility with Water at 20°C:** 39 g/l  
Not miscible or difficult to mix.

## 10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Materials to be avoided:**
- **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 - None available
- **Primary irritant effect:**
- **on the skin:** No irritating effect.
- **on the eye:** No irritating effect.
- **Sensitization:** No sensitizing effects known.

## 12 Ecological information

- **Additional 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:** 2.2
- **Identification number:** UN1073
- **Packing group:** -
- **Proper shipping name (technical name):** OXYGEN, REFRIGERATED LIQUID
- **Label:** 2.2+5.1

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· Packaging group: -

· Maritime transport IMDG:



· IMDG Class: 2.2

· UN Number: 1073

· Label: 2.2+5.1

· Packaging group: -

· EMS Number: F-C,S-W

· Marine pollutant: No

· Proper shipping name: OXYGEN, REFRIGERATED LIQUID

· Air transport ICAO-TI and IATA-DGR:



· ICAO/IATA Class: 2.2

· UN/ID Number: 1073

· Label: 2.2+5.1

· Packaging group: -

· Proper shipping name: OXYGEN, REFRIGERATED LIQUID

· UN "Model Regulation": UN1073, OXYGEN, REFRIGERATED LIQUID, 2.2 (5.1)

## 15 Regulations

· Sara

· Section 355 (extremely hazardous substances):

Substance is not listed.

· Section 313 (Specific toxic chemical listings):

Substance is not listed.

· TSCA (Toxic Substances Control Act):

Substance is listed.

· Proposition 65

· Chemicals known to cause cancer:

Substance is not listed.

· Chemicals known to cause reproductive toxicity for females:

Substance is not listed.

· Chemicals known to cause reproductive toxicity for males:

Substance is not listed.

· Chemicals known to cause developmental toxicity:

Substance is not listed.

· Cancerogenity categories

· EPA (Environmental Protection Agency)

Substance is not listed.

· NTP (National Toxicology Program)

Substance is not listed.

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**· TLV (Threshold Limit Value established by ACGIH)**

Substance is not listed.

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

Substance is not listed.

**· OSHA-Ca (Occupational Safety & Health Administration)**

Substance is not listed.

**· Canadian substance listings:**
**· Canadian Domestic Substances List (DSL)**

Substance is listed.

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

Substance is not listed.

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

Substance is not 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:**

After contact with skin, was immediately with plenty.....(to be specified by the manufacturer)

Keep out of the reach of children.

Keep away from combustible material.

## 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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**GENERAL DISCLAIMER**

For terms and conditions, including limitation of liability, please refer to the purchase agreement in effect between Linde Inc. (or any of its affiliates and subsidiaries) and the purchaser.

**· 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

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization (ICAO)"

IMDG: International Marine Code for Dangerous Goods

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WHIMS: Workplace Hazardous Material Information System

LC50: Lethal Concentration, 50 Percent

LD50: Lethal Dose, 50 Percent

EL: Exposure Limit per ACGIH TLV

EV: Permissible Exposure Limit per OSHA

N/A: Not Applicable

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