

Material Safety Data Sheet

Printing date 12/11/2009

Version 9

Reviewed on 12/11/2009

1 Identification of substance

· **Product details**

· **Trade name: Carbon Dioxide (Refrigerated Liquid)**

· **Article number:** 023-01-0004

· **Creation date:** 08/11/2006

· **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 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

2 Composition/Data on components

· **Chemical characterization:**

· **CAS No. Description**

124-38-9 Carbon Dioxide

· **Identification number(s)**

· **EINECS Number:** 204-696-9

3 Hazards identification

· **Hazard description:** Refrigerated liquified gas.

· **WHMIS-symbols:**

Refrigerated liquid

A - Compressed gas



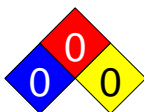
· **HMIS-ratings (scale 0 - 4)**

HEALTH 0 Health = 0

FIRE 0 Fire = 0

REACTIVITY 0 Reactivity = 0

· **NFPA ratings (scale 0 - 4)**



Health = 0

Fire = 0

Reactivity = 0

(Contd. on page 2)

CDN

Material Safety Data Sheet

Printing date 12/11/2009

Version 9

Reviewed on 12/11/2009

Trade name: Carbon Dioxide (Refrigerated Liquid)

(Contd. of page 1)

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

Danger of suffocation at accumulation in lower-lying or closed rooms.

Cold burns and frostbite.

- **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**



Warning

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

- **Storage:**

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:** In cases of frost bites, rinse with plenty of water. Do not remove clothing.
- **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.
 - 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.
- **Additional information:** No dangerous substances are released.

* 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.

(Contd. on page 3)

CDN

Material Safety Data Sheet

Printing date 12/11/2009

Version 9

Reviewed on 12/11/2009

Trade name: Carbon Dioxide (Refrigerated Liquid)

(Contd. of page 2)

- **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:**
Sources of ignition should be removed from storage area.
- **Further information about storage conditions:** Keep cylinder valve tightly closed.

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:**

124-38-9 Carbon Dioxide (23 - 100%)

EL	Short-term value: 15000 ppm Long-term value: 5000 ppm
EV	Short-term value: 54.000 mg/m ³ , 30.000 ppm Long-term value: 9.000 mg/m ³ , 5.000 ppm

- **Additional information:** The lists that were valid during the creation were used as basis.

- **Personal protective equipment:**

- **General protective and hygienic measures:**

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:**

Self Contained Breathing Apparatus (SCBA), or
Air Line respirator with 15 minute escape pack, SCBA as back-up

- **Protection of hands:** Cryogenic leather gauntlets/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 goggles with face shield

- **Body protection:** Leather safety shoes/boots

- **Skin Protection:** Long sleeve shirt and long trousers/overalls (should not be tucked in)

9 Physical and chemical properties

- **General Information**

Form:	Refrigerated liquefied gas
Color:	Colorless
Odor:	Odorless

- **Change in condition**

Melting point/Melting range: -56.6°C

Boiling point/Boiling range: -78°C

- **Flash point:** Not applicable.

- **Danger of explosion:** Product does not present an explosion hazard.

(Contd. on page 4)

CDN

Material Safety Data Sheet

Printing date 12/11/2009

Version 9

Reviewed on 12/11/2009

Trade name: Carbon Dioxide (Refrigerated Liquid)

(Contd. of page 3)

- **Solubility in / Miscibility with Water at 20°C:** 2000 g/l

* 10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Dangerous reactions** No dangerous reactions known.
- **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.
- **Additional toxicological information:**
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.
The substance is not subject to classification.

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:** UN2187
- **Proper shipping name (technical name):** CARBON DIOXIDE, REFRIGERATED LIQUID

(Contd. on page 5)

CDN

Material Safety Data Sheet

Printing date 12/11/2009

Version 9

Reviewed on 12/11/2009

Trade name: Carbon Dioxide (Refrigerated Liquid)

(Contd. of page 4)

· Label 2.2

· Maritime transport IMDG:



· IMDG Class: 2
 · UN Number: 2187
 · Label: 2.2
 · Marine pollutant: No
 · Proper shipping name: CARBON DIOXIDE, REFRIGERATED LIQUID

· Air transport ICAO-TI and IATA-DGR:



· ICAO/IATA Class: 2
 · UN/ID Number: 2187
 · Label: 2.2
 · Proper shipping name: CARBON DIOXIDE, REFRIGERATED LIQUID

· UN "Model Regulation": UN2187, CARBON DIOXIDE, REFRIGERATED LIQUID, 2.2

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.

(Contd. on page 6)

Material Safety Data Sheet

Printing date 12/11/2009

Version 9

Reviewed on 12/11/2009

Trade name: Carbon Dioxide (Refrigerated Liquid)

(Contd. of page 5)

· **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 listed.

· **Product related hazard informations:**

Observe the general safety regulations when handling chemicals.

The substance is not subject to classification according to the sources of literature known to us.

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.

· **Safety phrases:**

Keep container tightly closed in a cool place.

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

WHIMS: Workplace Hazardous Material Information System

LC50: Lethal Concentration, 50 Percent

(Contd. on page 7)

Material Safety Data Sheet

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Version 9

Reviewed on 12/11/2009

Trade name: Carbon Dioxide (Refrigerated Liquid)

LD50: Lethal Dose, 50 Percent
N/A: Not Applicable

(Contd. of page 6)

CDN