

# Material Safety Data Sheet

Printing date 10/27/2011

Version 11

Reviewed on 10/27/2011

## 1 Identification of substance

· **Product details**

· **Trade name:** Carbon Monoxide

· **Article number:** 013-01-0010

· **Creation date:** 08/03/2006

· **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**

630-08-0 Carbon Monoxide

· **Identification number(s)**

· **EINECS Number:** 211-128-3

· **Index number:** 006-001-00-2

## 3 Hazards identification

· **Hazard description:**

Repr. Cat. 1

· **WHMIS-symbols:**

A - Compressed gas



· **HMIS-ratings (scale 0 - 4)**

HEALTH	2	Health = 2
FIRE	4	Fire = 4
REACTIVITY	0	Reactivity = 0

· **NFPA ratings (scale 0 - 4)**



(Contd. on page 2)

# Material Safety Data Sheet

Printing date 10/27/2011

Version 11

Reviewed on 10/27/2011

**Trade name: Carbon Monoxide**

(Contd. of page 1)

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

- Flammable.

- **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**

- 2.2/1 - Extremely flammable gas.

**Warning**

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

- **Prevention:**

- Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

- **Response:**

- Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

- Eliminate all ignition sources if safe to do so.

- **Storage:**

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

- 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:**  
CO<sub>2</sub>, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **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.

CDN

(Contd. on page 3)

## Material Safety Data Sheet

Printing date 10/27/2011

Version 11

Reviewed on 10/27/2011

Trade name: Carbon Monoxide

(Contd. of page 2)

\* **7 Handling and storage**· **Handling:**· **Information for safe handling:**

Open and handle cylinder with care.

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.

Protect against electrostatic charges.

Keep respiratory protective device available.

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:**

Sources of ignition should be removed from storage area.

· **Further information about storage conditions:**

Keep cylinder valve tightly closed.

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:****630-08-0 Carbon Monoxide (23 - 100%)**

EL Short-term value: 100 ppm

Long-term value: 25 ppm

R

EV Short-term value: 115 mg/m<sup>3</sup>, 100 ppmLong-term value: 29 mg/m<sup>3</sup>, 25 ppm· **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.

Store protective clothing separately.

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.

(Contd. on page 4)

CDN

## Material Safety Data Sheet

Printing date 10/27/2011

Version 11

Reviewed on 10/27/2011

Trade name: Carbon Monoxide

(Contd. of page 3)

## · 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>	-205.1°C
<b>Boiling point/Boiling range:</b>	-191°C

<b>Flash point:</b>	< 0°C Not applicable.
---------------------	--------------------------

<b>Flammability (solid, gaseous):</b>	Flammable.
---------------------------------------	------------

<b>Ignition temperature:</b>	605°C
------------------------------	-------

<b>Danger of explosion:</b>	Formation of explosive air/vapor mixtures are possible.
-----------------------------	---

<b>Explosion limits:</b>	
<b>Lower:</b>	12.5 Vol %
<b>Upper:</b>	74 Vol %

<b>Solubility in / Miscibility with Water at 20°C:</b>	0.028 g/l
--	-----------

\* **10 Stability and reactivity**

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

**630-08-0 Carbon Monoxide**

Inhalative LC50/1hr 3760 ppm (rat)

## · Primary irritant effect:

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

(Contd. on page 5)

CDN

## Material Safety Data Sheet

Printing date 10/27/2011

Version 11

Reviewed on 10/27/2011

Trade name: Carbon Monoxide

(Contd. of page 4)

· **Sensitization:** No sensitizing effects known.\* **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:** UN1016
- **Packing group:** -
- **Proper shipping name (technical name):** CARBON MONOXIDE, COMPRESSED
- **Label:** 2.3+2.1
- **Packaging group:** -

· **Maritime transport IMDG:**

- **IMDG Class:** 2.3
- **UN Number:** 1016
- **Label:** 2.3+2.1
- **Packaging group:** -
- **EMS Number:** F-D,S-U
- **Marine pollutant:** No
- **Proper shipping name:** CARBON MONOXIDE, COMPRESSED

· **Air transport ICAO-TI and IATA-DGR:**

- **ICAO/IATA Class:** 2
- **UN/ID Number:** 1016
- **Label:** 2.3+2.1
- **Packaging group:** -
- **Proper shipping name:** CARBON MONOXIDE, COMPRESSED

(Contd. on page 6)

-CDN-

## Material Safety Data Sheet

Printing date 10/27/2011

Version 11

Reviewed on 10/27/2011

Trade name: Carbon Monoxide

(Contd. of page 5)

· UN "Model Regulation": UN1016, CARBON MONOXIDE, COMPRESSED, 2.3 (2.1)

**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 listed.

## · Cancerogenity categories

## · EPA (Environmental Protection Agency)

Substance is not listed.

## · NTP (National Toxicology Program)

Substance is not listed.

## · 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 &amp; 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 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:

Repr. Cat. 1

(Contd. on page 7)

# Material Safety Data Sheet

Printing date 10/27/2011

Version 11

Reviewed on 10/27/2011

**Trade name: Carbon Monoxide**

(Contd. of page 6)

· **Risk phrases:**

Flammable.

· **Safety phrases:**

Keep away from sources of ignition - No smoking.

In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Avoid exposure - obtain special instructions before use.

## \* 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.

### 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).

### 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

LD50: Lethal Dose, 50 Percent

N/A: Not Applicable