

## SAFETY DATA SHEET

## Carbon monoxide, compressed

Issue Date: 16.01.2013  
Last revised date: 02.05.2016

Version: 1.1

SDS No.: 000010021698  
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**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier**

Product name: Carbon monoxide, compressed

**Additional identification**

Chemical name: carbon monoxide

Chemical formula: CO

INDEX No. 006-001-00-2

CAS-No. 630-08-0

EC No. 211-128-3

REACH Registration No. 01-2119480165-39-0000

**1.2 Relevant identified uses of the substance or mixture and uses advised against**

Identified uses: Industrial and professional. Perform risk assessment prior to use.  
Catalytic agent Transfilling gas or liquid, Use as an Intermediate (transported, on-site isolated). Use for electronic component manufacture. Use of gas to manufacture pharmaceutical products. Using gas alone or in mixtures for the calibration of analysis equipment. Using gas as a monomer in polymer production. Using gas as feedstock in chemical processes. Using gas for metal treatment. Formulation of mixtures with gas in pressure receptacles.

Uses advised against Consumer use.

**1.3 Details of the supplier of the safety data sheet****Supplier**

Linde AG, Linde Gas Division  
Seitnerstraße 70  
D-82049 Pullach

Telephone: +49 (0) 89 7446 0

E-mail: Info@de.linde-gas.com

**1.4 Emergency telephone number: +49 (0) 89 7446 0**

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**Carbon monoxide, compressed**Issue Date: 16.01.2013  
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2/17**SECTION 2: Hazards identification****2.1 Classification of the substance or mixture**

Classification according to Directive 67/548/EEC or 1999/45/EC as amended.

F+; R12 Repr. 1; R61 T; R23 T; R48/23

The full text for all R-phrases is displayed in section 16.

Classification according to Regulation (EC) No 1272/2008 as amended.

**Physical Hazards**

|                      |                |   |
|----------------------|----------------|---|
| Flammable gas        | Category 1     | H220: Extremely flammable gas.                            |
| Gases under pressure | Compressed gas | H280: Contains gas under pressure; may explode if heated. |

**Health Hazards**

|  |             |   |
|--|-------------|---|
| Acute toxicity (Inhalation - gas)                  | Category 3  | H331: Toxic if inhaled.   |
| Toxic to reproduction                              | Category 1A | H360D: May damage the unborn child.                                   |
| Specific Target Organ Toxicity - Repeated Exposure | Category 1  | H372: Causes damage to organs through prolonged or repeated exposure. |

**2.2 Label Elements**

Contains: carbon monoxide



Signal Words: Danger

Hazard Statement(s):

H220: Extremely flammable gas.  
H280: Contains gas under pressure; may explode if heated.  
H331: Toxic if inhaled.  
H360D: May damage the unborn child.  
H372: Causes damage to organs through prolonged or repeated exposure.

**Precautionary Statement**

Prevention:

P202: Do not handle until all safety precautions have been read and understood.  
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P260: Do not breathe gas/vapors.

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**Response:** P304+P340+P315: IF INHALED: Remove person to fresh air and keep comfortable for breathing. Get immediate medical advice/attention.  
P308+P313: IF exposed or concerned: Get medical advice/attention.  
P377: Leaking gas fire: Do not extinguish, unless leak can be stopped safely.  
P381: Eliminate all ignition sources if safe to do so.

**Storage:** P403: Store in a well-ventilated place.  
P405: Store locked up.

**Disposal:** None.

**Supplemental label information**

Restricted to professional users.

2.3 Other hazards: None.

**SECTION 3: Composition/information on ingredients****3.1 Substances**

|                         |  |
|-------------------------|--|
| Chemical name           | carbon monoxide  |
| INDEX No.:              | 006-001-00-2   |
| CAS-No.:                | 630-08-0   |
| EC No.:                 | 211-128-3  |
| REACH Registration No.: | 01-2119480165-39-0000  |
| Purity:                 | 100%   |
|                         | The purity of the substance in this section is used for classification only, and does not represent the actual purity of the substance as supplied, for which other documentation should be consulted. |
| Trade name:             | -  |

**SECTION 4: First aid measures**

**General:** Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

**4.1 Description of first aid measures**

**Inhalation:** Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

**Eye contact:** Adverse effects not expected from this product.

**Skin Contact:** Not relevant, due to the form of the product.

**Ingestion:** Ingestion is not considered a potential route of exposure.

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**4.2 Most important symptoms and effects, both acute and delayed:** May be fatal if inhaled. Symptoms may include: Dizziness. Headache. Nausea, vomiting. Loss of co-ordination. Symptoms may be delayed.

**4.3 Indication of any immediate medical attention and special treatment needed**

**Hazards:** May be fatal if inhaled.

**Treatment:** In case of exposure, provide oxygen.

**SECTION 5: Firefighting measures**

**General Fire Hazards:** Heat may cause the containers to explode.

**5.1 Extinguishing media**

**Suitable extinguishing media:** Use water spray to reduce vapors or divert vapor cloud drift. Water. Dry powder. Foam.

**Unsuitable extinguishing media:** Carbon Dioxide.

**5.2 Special hazards arising from the substance or mixture:** None.

**5.3 Advice for firefighters**

**Special fire fighting procedures:** In case of fire: Stop leak if safe to do so. Keep run-off water out of sewers and water sources. Dike for water control. Continue water spray from protected position until container stays cool. Use extinguishants to contain the fire. Isolate the source of the fire or let it burn out.

**Special protective equipment for fire-fighters:** Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Guideline: EN 469 Protective clothing for firefighters. Performance requirements for protective clothing for firefighting. EN 15090 Footwear for firefighters. EN 659 Protective gloves for firefighters. EN 443 Helmets for fire fighting in buildings and other structures. EN 137 Respiratory protective devices - Self-contained open-circuit compressed air breathing apparatus with full face mask - Requirements, testing, marking.

**SECTION 6: Accidental release measures**

**6.1 Personal precautions, protective equipment and emergency procedures:** Evacuate area. Provide adequate ventilation. Consider the risk of potentially explosive atmospheres. Eliminate all ignition sources if safe to do so. Monitor the concentration of the released product. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. EN 137 Respiratory protective devices - Self-contained open-circuit compressed air breathing apparatus with full face mask - Requirements, testing, marking.

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- 6.2 Environmental Precautions:** Prevent further leakage or spillage if safe to do so. Reduce vapour with fog or fine water spray. Keep run-off water out of sewers and water sources. Dike for water control.
- 6.3 Methods and material for containment and cleaning up:** Provide adequate ventilation. Eliminate sources of ignition.
- 6.4 Reference to other sections:** Refer to sections 8 and 13.

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**SECTION 7: Handling and storage:****7.1 Precautions for safe handling:**

Only experienced and properly instructed persons should handle gases under pressure. Avoid exposure - obtain special instructions before use. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Purge system with dry inert gas (e.g. helium or nitrogen) before gas is introduced and when system is placed out of service. Purge air from system before introducing gas. Containers, which contain or have contained flammable or explosive substances, must not be inerted with liquid carbon dioxide. Assess the risk of a potentially explosive atmosphere and the need for suitable equipment i.e. explosion-proof. Take precautionary measures against static discharges. Keep away from ignition sources (including static discharges). Provide electrical earthing of equipment and electrical equipment usable in explosive atmospheres. Use only non-sparking tools. Installation of a cross purge assembly between the container and the regulator is recommended. Excess pressure must be vented through an appropriate scrubber system. Refer to supplier's handling instructions. The substance must be handled in accordance with good industrial hygiene and safety procedures. Ensure the complete system has been (or is regularly) checked for leaks before use. Protect containers from physical damage; do not drag, roll, slide or drop. Do not remove or deface labels provided by the supplier for the identification of the container contents. When moving containers, even for short distances, use appropriate equipment eg. trolley, hand truck, fork truck etc. Secure cylinders in an upright position at all times, close all valves when not in use. Provide adequate ventilation. Suck back of water into the container must be prevented. Do not allow backfeed into the container. Avoid suckback of water, acid and alkalis. Keep container below 50°C in a well ventilated place. Observe all regulations and local requirements regarding storage of containers. When using do not eat, drink or smoke. Store in accordance with local/regional/national/international regulations. Never use direct flame or electrical heating devices to raise the pressure of a container. Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use. Damaged valves should be reported immediately to the supplier. Close container valve after each use and when empty, even if still connected to equipment. Never attempt to repair or modify container valves or safety relief devices. Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment. Keep container valve outlets clean and free from contaminants particularly oil and water. If user experiences any difficulty operating container valve discontinue use and contact supplier. Never attempt to transfer gases from one container to another. Container valve guards or caps should be in place.

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**7.2 Conditions for safe storage,  
including any incompatibilities:**

All electrical equipment in the storage areas should be compatible with the risk of a potentially explosive atmosphere. Segregate from oxidant gases and other oxidants being stored. Containers should not be stored in conditions likely to encourage corrosion. Stored containers should be periodically checked for general conditions and leakage. Keep away from food, drink and animal feeding stuffs. Container valve guards or caps should be in place. Store containers in location free from fire risk and away from sources of heat and ignition. Keep away from combustible material.

**7.3 Specific end use(s):**

None.

**SECTION 8: Exposure controls/personal protection**

**8.1 Control Parameters**

**Occupational Exposure Limits**

| Chemical name   | type | Exposure Limit Values | Source  |
|-----------------|------|-----------------------|---|
| carbon monoxide | MAK  | 30 ppm 35 mg/m3       | Germany. DFG MAK List (advisory OELs). Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area (DFG) (2011) |
|                 | AGW  | 30 ppm 35 mg/m3       | Germany. TRGS 900, Limit Values in the Ambient Air at the Workplace (09 2012)   |

**Biological Limit Values**

| Chemical name   | Exposure Limit Values | Source           |
|---|-----------------------|------------------|
| carbon monoxide (Co-Hb: Sampling time: End of shift.) | 5 % (Blood)           | DE BAT (09 2013) |

**DNEL-Values**

| Critical component | type                                       | Value     | Remarks |
|--------------------|--|-----------|---------|
| carbon monoxide    | Worker - inhalative, long-term - systemic  | 23 mg/m3  | -       |
|                    | Worker - inhalative, short-term - systemic | 117 mg/m3 | -       |
|                    | Worker - inhalative, long-term - local     | 23 mg/m3  | -       |
|                    | Worker - inhalative, short-term - local    | 117 mg/m3 | -       |

**PNEC-Values**

| Critical component | type | Value | Remarks             |
|--------------------|------|-------|---------------------|
| carbon monoxide    |      |       | PNEC not available. |

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## 8.2 Exposure controls

**Appropriate engineering controls:**

Consider a work permit system e.g. for maintenance activities. Ensure adequate air ventilation. Provide adequate general and local exhaust ventilation. Keep concentrations well below occupational exposure limits. Gas detectors should be used when toxic quantities may be released. Gas detectors should be used when quantities of flammable gases or vapours may be released. Systems under pressure should be regularly checked for leakages. Product to be handled in a closed system and under strictly controlled conditions. Only use permanent leak tight installations (e.g. welded pipes). Take precautionary measures against static discharges. Do not eat, drink or smoke when using the product.

**Individual protection measures, such as personal protective equipment****General information:**

A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered. Keep self contained breathing apparatus readily available for emergency use. Keep suitable chemically resistant protective clothing readily available for emergency use. Personal protective equipment for the body should be selected based on the task being performed and the risks involved. Protect eyes, face and skin from contact with product. Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

**Eye/face protection:**

Wear eye protection to EN 166 when using gases.  
Guideline: EN 166 Personal Eye Protection.

**Skin protection****Hand Protection:**

Wear working gloves while handling containers  
Guideline: EN 388 Protective gloves against mechanical risks.

**Body protection:**

Wear fire/flame resistant/retardant clothing.  
Guideline: ISO/TR 2801:2007 Clothing for protection against heat and flame -- General recommendations for selection, care and use of protective clothing.

**Other:**

Wear safety shoes while handling containers  
Guideline: ISO 20345 Personal protective equipment - Safety footwear.

**Respiratory Protection:**

Reference should be made to European Standard EN 689 for methods for the assessment of exposure by inhalation to chemical agents and national guidance documents for methods for the determination of hazardous substances. The selection of the Respiratory Protective Device (RPD) must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected RPD. Never use any kind of filtering respiratory protection equipment when working with this substance due to it having poor or no warning properties.  
Guideline: EN 137 Respiratory protective devices - Self-contained open-circuit compressed air breathing apparatus with full face mask - Requirements, testing, marking.



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|                                  |   |
|----------------------------------|---|
| Thermal hazards:                 | No precautionary measures are necessary.  |
| Hygiene measures:                | Obtain special instructions before use. Specific risk management measures are not required beyond good industrial hygiene and safety procedures. Do not eat, drink or smoke when using the product. |
| Environmental exposure controls: | For waste disposal, see section 13 of the SDS.  |

**SECTION 9: Physical and chemical properties**

## 9.1 Information on basic physical and chemical properties

## Appearance

|  |  |
|--|--|
| Physical state:                          | Gas  |
| Form:                                    | Compressed gas   |
| Color:                                   | Colorless  |
| Odor:                                    | Odorless   |
| Odor Threshold:                          | Odor threshold is subjective and is inadequate to warn of over exposure. |
| pH:                                      | not applicable.  |
| Melting Point:                           | -205 °C  |
| Boiling Point:                           | -191,6 °C (1.013,25 hPa)   |
| Sublimation Point:                       | not applicable.  |
| Critical Temp. (°C):                     | -140,0 °C  |
| Flash Point:                             | Not applicable to gases and gas mixtures                                 |
| Evaporation Rate:                        | Not applicable to gases and gas mixtures                                 |
| Flammability (solid, gas):               | Flammable gas  |
| Flammability Limit - Upper (%):          | 74,2 %(V)  |
| Flammability Limit - Lower (%):          | 10,9 %(V)  |
| Vapor pressure:                          | > 101,325 kPa (20 °C)  |
| Vapor density (air=1):                   | 0,968 AIR=1  |
| Relative density:                        | No data available.   |
| Solubility(ies)                          |  |
| Solubility in Water:                     | 29 g/l (20 °C)   |
| Partition coefficient (n-octanol/water): | 1,78   |
| Autoignition Temperature:                | 620 °C   |
| Decomposition Temperature:               | Not known.   |
| Viscosity                                |  |
| Kinematic viscosity:                     | No data available.   |
| Dynamic viscosity:                       | (20 °C) No data available.   |
| Explosive properties:                    | Not applicable.  |
| Oxidizing properties:                    | not applicable.  |

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9.2 Other information: None.  
Molecular weight: 28,01 g/mol (CO)

**SECTION 10: Stability and reactivity**

10.1 Reactivity: No reactivity hazard other than the effects described in sub-section below.

10.2 Chemical Stability: Stable under normal conditions.

10.3 Possibility of hazardous reactions: Can form a potentially explosive atmosphere in air. May react violently with oxidants.

10.4 Conditions to avoid: Avoid moisture in the installation. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

10.5 Incompatible Materials: Air and oxidizers. Moisture. For material compatibility see latest version of ISO-11114.

10.6 Hazardous Decomposition Products: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

**SECTION 11: Toxicological information**

General information: Carbon monoxide: Has been shown to produce adverse effects to the cardiovascular, central nervous, and reproductive systems in laboratory animals and chronically exposed humans.

**11.1 Information on toxicological effects**

Acute toxicity - Oral Product Based on available data, the classification criteria are not met.

Acute toxicity - Dermal Product Based on available data, the classification criteria are not met.

Acute toxicity - Inhalation Product  
Toxic if inhaled.

carbon monoxide  
LC 50 (Rat, 4 h): 1300 ppm  
LC 50 (Rat, 1 h): 3760 ppm

Repeated dose toxicity  
carbon monoxide  
LOAEC (Rat, Inhalation): 200 ppm (Target Organ(s): Respiratory system)

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**Skin Corrosion/Irritation****Product**

Based on available data, the classification criteria are not met.

carbon monoxide

Not classified as an irritant.

**Serious Eye Damage/Eye Irritation****Product**

Based on available data, the classification criteria are not met.

carbon monoxide

Not classified as an irritant.

**Respiratory or Skin Sensitization****Product**

Based on available data, the classification criteria are not met.

carbon monoxide

No known effects from this product.

**Germ Cell Mutagenicity****Product**

Based on available data, the classification criteria are not met.

carbon monoxide

There is no evidence of mutagenic potential.

**Carcinogenicity****Product**

Based on available data, the classification criteria are not met.

carbon monoxide

No evidence of carcinogenic effects.

**Reproductive toxicity****Product**

May damage fertility or the unborn child.

carbon monoxide

May damage fertility or the unborn child.

**Reproductive toxicity (Fertility)**

carbon monoxide

NOAEC (embryotoxicity): 65 ppm

**Developmental toxicity (Teratogenicity)**

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LOAEC: 125 ppm

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**Specific Target Organ Toxicity - Single Exposure****Product**

Based on available data, the classification criteria are not met.

carbon monoxide

Route of Exposure: Inhalation

Target Organ(s): Blood

Causes damage to red blood cells (haemolytic poison). Carbon monoxide binds reversibly to haemoglobin (Hb) to form carboxyhaemoglobin (CoHb), reducing the capacity of the blood to transport oxygen.

**Specific Target Organ Toxicity - Repeated Exposure****Product**

Causes damage to organs through prolonged or repeated exposure.

carbon monoxide

Route of Exposure: Inhalation

Target Organ(s): Heart

Risk of serious health injuries in case of long term exposure.

**Aspiration Hazard****Product**

Not applicable to gases and gas mixtures.

**SECTION 12: Ecological information****12.1 Toxicity****Acute toxicity****Product**

No ecological damage caused by this product.

**12.2 Persistence and Degradability****Product**

Not applicable to gases and gas mixtures.

carbon monoxide

Will not undergo hydrolysis.

**Biodegradation**

carbon monoxide

Not readily biodegradable. Inorganic compound.

**12.3 Bioaccumulative Potential****Product**

The product is expected to biodegrade and is not expected to persist for long periods in an aquatic environment.

carbon monoxide

Because of the low log Kow, accumulation in organisms is not expected.

**12.4 Mobility in Soil****Product**

Because of its high volatility, the product is unlikely to cause ground or water pollution.

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carbon monoxide Because of its high volatility, the product is unlikely to cause ground or water pollution.

**12.5 Results of PBT and vPvB  
assessment**

**Product** Not classified as PBT or vPvB.

**12.6 Other Adverse Effects:**

**Global Warming Potential**

Global warming potential: 1,9  
Contains greenhouse gas(es) not covered by 842/2006/EC. When discharged in large quantities may contribute to the greenhouse effect.

carbon monoxide Global warming potential: 1,9

**SECTION 13: Disposal considerations**

**13.1 Waste treatment methods**

**General information:** Must not be discharged to atmosphere. Consult supplier for specific recommendations.

**Disposal methods:** Refer to the EIGA code of practice (Doc.30 "Disposal of Gases", downloadable at <http://www.eiga.org>) for more guidance on suitable disposal methods. Dispose of container via supplier only. Discharge, treatment, or disposal may be subject to national, state, or local laws.

**European Waste Codes**

**Container:** 16 05 04\*: Gases in pressure containers (including halons) containing dangerous substances.

**SECTION 14: Transport information**

**ADR**

|                                    |                             |
|------------------------------------|-----------------------------|
| 14.1 UN Number:                    | UN 1016                     |
| 14.2 UN Proper Shipping Name:      | CARBON MONOXIDE, COMPRESSED |
| 14.3 Transport Hazard Class(es)    |                             |
| Class:                             | 2                           |
| Label(s):                          | 2.3, 2.1                    |
| Hazard No. (ADR):                  | 263                         |
| Tunnel restriction code:           | (B/D)                       |
| 14.4 Packing Group:                | –                           |
| 14.5 Environmental hazards:        | not applicable              |
| 14.6 Special precautions for user: | –                           |

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## RID

14.1 UN Number: UN 1016  
14.2 UN Proper Shipping Name: CARBON MONOXIDE, COMPRESSED  
14.3 Transport Hazard Class(es):  
Class: 2  
Label(s): 2.3, 2.1  
14.4 Packing Group: -  
14.5 Environmental hazards: not applicable  
14.6 Special precautions for user: -

## IMDG

14.1 UN Number: UN 1016  
14.2 UN Proper Shipping Name: CARBON MONOXIDE, COMPRESSED  
14.3 Transport Hazard Class(es):  
Class: 2.3  
Label(s): 2.3, 2.1  
EmS No.: F-D, S-U  
14.3 Packing Group: -  
14.5 Environmental hazards: not applicable  
14.6 Special precautions for user: -

## IATA

14.1 UN Number: UN 1016  
14.2 Proper Shipping Name: Carbon monoxide, compressed  
14.3 Transport Hazard Class(es):  
Class: 2.3  
Label(s): -  
14.4 Packing Group: -  
14.5 Environmental hazards: not applicable  
14.6 Special precautions for user: -  
Other information  
Passenger and cargo aircraft: Forbidden.  
Cargo aircraft only: Forbidden.

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: not applicable

## Additional identification:

Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers ensure that they are firmly secured. Ensure that the container valve is closed and not leaking. Container valve guards or caps should be in place. Ensure adequate air ventilation.

**SECTION 15: Regulatory information**

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:

## EU Regulations

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Regulation (EC) No. 1907/2006 Annex XVII Substances subject to restriction on marketing and use:

| Chemical name   | CAS-No.  | Concentration |
|-----------------|----------|---------------|
| carbon monoxide | 630-08-0 | 100%          |

Directive 92/85/EEC: on the safety and health of pregnant workers and workers who have recently given birth or are breast feeding.:

| Chemical name   | CAS-No.  | Concentration |
|-----------------|----------|---------------|
| carbon monoxide | 630-08-0 | 100%          |

Directive 96/61/EC: concerning integrated pollution prevention and control (IPPC): Article 15, European Pollution Emission Registry (EPER):

| Chemical name   | CAS-No.  | Concentration |
|-----------------|----------|---------------|
| carbon monoxide | 630-08-0 | 100%          |

Directive 96/82/EC (Seveso II): on the control of major accident hazards involving dangerous substances:

| Chemical name   | CAS-No.  | Concentration |
|-----------------|----------|---------------|
| carbon monoxide | 630-08-0 | 100%          |

Directive 98/24/EC on the protection of workers from the risks related to chemical agents at work:

| Chemical name   | CAS-No.  | Concentration |
|-----------------|----------|---------------|
| carbon monoxide | 630-08-0 | 100%          |

#### National Regulations

Council Directive 89/391/EEC on the introduction of measures to encourage improvements in the safety and health of workers at work Directive 89/686/EEC on personal protective equipment Directive 94/9/EC on equipment and protective systems intended for use in potentially explosive atmospheres (ATEX) Only products that comply with the food regulations (EC) No. 1333/2008 and (EU) No. 231/2012 and are labelled as such may be used as food additives.  
This Safety Data Sheet has been produced to comply with Regulation (EU) 453/2010.

**Water Hazard Class (WGK):** WGK 1: slightly water-endangering.

**Storage Classification:** 2A: Gases

**15.2 Chemical safety assessment:** CSA has been carried out.

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**SECTION 16: Other information**

Revision Information: Not relevant.

**Key literature references and sources for data:**

Various sources of data have been used in the compilation of this SDS, they include but are not exclusive to:

Agency for Toxic Substances and Diseases Registry (ATSDR)  
(<http://www.atsdr.cdc.gov/>).

European Chemical Agency: Guidance on the Compilation of Safety Data Sheets.  
European Chemical Agency: Information on Registered Substances  
<http://apps.echa.europa.eu/registered/registered-sub.aspx#search>

European Industrial Gases Association (EIGA) Doc. 169 Classification and Labelling guide.

International Programme on Chemical Safety (<http://www.inchem.org/>)

ISO 10156:2010 Gases and gas mixtures - Determination of fire potential and oxidizing ability for the selection of cylinder valve outlets.

Matheson Gas Data Book, 7th Edition.

National Institute for Standards and Technology (NIST) Standard Reference Database Number 69.

The ESIS (European chemical Substances Information System) platform of the former European Chemicals Bureau (ECB) ESIS (<http://ecb.jrc.ec.europa.eu/esis/>).

The European Chemical Industry Council (CEFIC) ERICards.

United States of America's National Library of Medicine's toxicology data network TOXNET (<http://toxnet.nlm.nih.gov/index.html>)

Threshold Limit Values (TLV) from the American Conference of Governmental Industrial Hygienists (ACGIH).

Substance specific information from suppliers.

Details given in this document are believed to be correct at the time of publication.

**Wording of the R-phrases and H-statements in section 2 and 3**

|        |   |
|--------|---|
| H220   | Extremely flammable gas.  |
| H280   | Contains gas under pressure; may explode if heated.                                 |
| H331   | Toxic if inhaled.   |
| H360D  | May damage the unborn child.  |
| H372   | Causes damage to organs through prolonged or repeated exposure.                     |
| R12    | Extremely flammable.  |
| R23    | Toxic by inhalation.  |
| R48/23 | Toxic: danger of serious damage to health by prolonged exposure through inhalation. |
| R61    | May cause harm to the unborn child.   |

**Training information:** Users of breathing apparatus must be trained. Ensure operators understand the toxicity hazard. Ensure operators understand the flammability hazard.



## SAFETY DATA SHEET

## Carbon monoxide, compressed

Issue Date: 16.01.2013

Version: 1.1

SDS No.: 000010021698

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17/17

## Classification according to Regulation (EC) No 1272/2008 as amended.

Flam. Gas 1, H220

Acute Tox. 3, H331

Repr. 1A, H360D

STOT RE 1, H372

Press. Gas Compr. Gas, H280

## Other information:

Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out. Ensure adequate air ventilation. Ensure all national/local regulations are observed. Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.

## Last revised date:

02.05.2016

## Disclaimer:

This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.