



CARBON MONOXIDE (13C, 99%) (<5% 18O)

Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 17/12/2010

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Supersedes: 12/04/2013

Version: 4.0

CLM-189-5

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Substance
Substance name : CARBON MONOXIDE (13C, 99%) (<5% 18O)
EC index no : 006-001-00-2
EC no : 211-128-3
CAS No : 1641-69-6
Product code : CLM-189-5
Formula : *CO

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

1.2.1. Relevant identified uses

No additional information available

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Cambridge Isotope Laboratories, Inc.
50 Frontage Road
Andover, MA 01810
USA

USA: 1-800-322-1174 Int: 1-978-749-8000
cilsales@isotope.com www.isotope.com

Emergency telephone number

Emergency numbers:

Chemtrec: 1-800-424-9300 (24 hours)
International: 1-703-741-5970 (24 hours)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Flam. Gas 1 H220
Compressed gas H280
Acute Tox. 3 (Inhalation) H331
Repr. 1A H360FD
STOT RE 1 H372

Full text of H-phrases: see section 16

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

Repr.Cat.1; R60
Repr.Cat.1; R61
F+; R12
T; R48/23
R5

Full text of R-phrases: see section 16

Classification (GHS-US)

Flam. Gas 1 H220
Compressed gas H280
Acute Tox. 3 (Inhalation) H331
Repr. 1A H360
STOT RE 1 H372

Adverse physicochemical, human health and environmental effects

Blood, Nerves.

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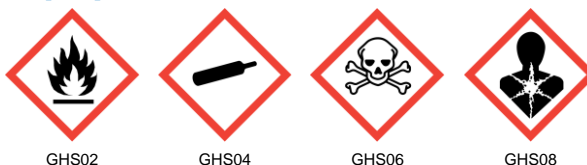
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2.2. Label elements

Labeling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :



Signal word (CLP) :

Danger

Hazard statements (CLP) :

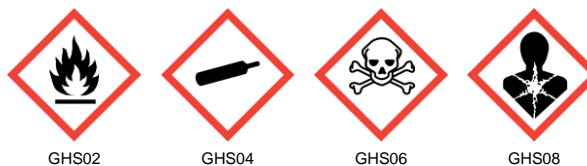
H220 - Extremely flammable gas
H280 - Contains gas under pressure; may explode if heated
H331 - Toxic if inhaled
H360FD - May damage fertility. May damage the unborn child
H372 - Causes damage to organs (blood) through prolonged or repeated exposure

Precautionary statements (CLP) :

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
P260 - Do not breathe dust, fume, gas, mist, spray, vapors
P264 - Wash Both hands thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P271 - Use only outdoors or in a well-ventilated area
P280 - Wear protective clothing, protective gloves
P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing
P308+P313 - IF exposed or concerned: Get medical advice/attention

GHS-US labeling

Hazard pictograms (GHS-US) :



Signal word (GHS-US) :

Danger

Hazard statements (GHS-US) :

H220 - Extremely flammable gas
H280 - Contains gas under pressure; may explode if heated
H331 - Toxic if inhaled
H360 - (Dermal, Inhalation, oral)
H372 - Causes damage to organs (blood) through prolonged or repeated exposure (Dermal, Inhalation, oral)

Precautionary statements (GHS-US) :

P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P210 - Keep away from heat, hot surfaces, open flames, sparks. - No smoking
P260 - Do not breathe dust, fume, gas, mist, spray, vapors
P261 - Avoid breathing dust, fume, gas, mist, spray, vapors
P264 - Wash Both hands thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P271 - Use only outdoors or in a well-ventilated area
P280 - Wear protective clothing, protective gloves
P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P308+P313 - IF exposed or concerned: Get medical advice/attention
P311 - Call a POISON CENTER or doctor/physician
P314 - Get medical advice and attention if you feel unwell
P321 - Specific treatment (see Hazard pictograms (CLP) on this label)
P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely
P381 - In case of leaking gas fire, eliminate all ignition sources if safe to do so
P403 - Store in a well-ventilated place
P403+P233 - Store in a well-ventilated place. Keep container tightly closed
P405 - Store locked up
P410+P403 - Protect from sunlight. Store in a well-ventilated place
P501 - Dispose of contents/container to Comply with applicable regulations.

2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

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Name	Product identifier	%	Classification according to Directive 67/548/EEC
CARBON MONOXIDE (13C, 99%) (<5% 18O) (Main constituent)	(CAS No) 1641-69-6 (EC no) 211-128-3 (EC index no) 006-001-00-2	100	Repr.Cat.1; R60 Repr.Cat.1; R61 F+; R12 T; R48/23 R5

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
CARBON MONOXIDE (13C, 99%) (<5% 18O) (Main constituent)	(CAS No) 1641-69-6 (EC no) 211-128-3 (EC index no) 006-001-00-2	100	Flam. Gas 1, H220 Compressed gas, H280 Acute Tox. 3 (Inhalation), H331 Repr. 1A, H360FD STOT RE 1, H372

Full text of R-, H- and EUH-phrases: see section 16

Name	Product identifier	%	Classification (GHS-US)
CARBON MONOXIDE (13C, 99%) (<5% 18O) (Main constituent)	(CAS No) 1641-69-6	100	Flam. Gas 1, H220 Compressed gas, H280 Acute Tox. 3 (Inhalation), H331 Repr. 1A, H360 STOT RE 1, H372

Full text of H-phrases: see section 16

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

- First-aid measures general : Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.
- First-aid measures after inhalation : If breathed in, move person to fresh air. If not breathing, give artificial respiration. Consult a physician.
- First-aid measures after skin contact : Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.
- First-aid measures after eye contact : Flush eyes with water as a precaution.
- First-aid measures after ingestion : Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2. Most important symptoms and effects, both acute and delayed

- Symptoms/injuries after inhalation : May be harmful if inhaled. May cause respiratory tract irritation.
- Symptoms/injuries after skin contact : May be harmful if absorbed through skin. May cause skin irritation.
- Symptoms/injuries after eye contact : May cause eye irritation.
- Symptoms/injuries after ingestion : May be harmful if swallowed.

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

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

- suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.

5.2. Special hazards arising from the substance or mixture

- Fire hazard : Flammable in the presence of an oxidizing gas (eg air), a source of ignition, and when the concentration of the gas is between the lower and upper explosive limits. Keep away from heat, sparks, open flames, hot surfaces, oxidizing gases. No smoking.
- Reactivity : Not available.

5.3. Advice for firefighters

- Firefighting instructions : Use water spray to cool unopened containers.
- Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Emergency procedures : Use personal protective equipment. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation. Evacuate personnel to safe area.

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6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3. Methods and material for containment and cleaning up

For containment : Clean up promptly by sweeping or vacuum.

6.4. Reference to other sections

No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed : Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Normal measures for preventive fire protection.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Store tightly closed in a dry and cool place.

Storage conditions : Store at room temperature away from light and moisture.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

CARBON MONOXIDE (13C, 99%) (<5% 18O) (1641-69-6)

Italy - Portugal - USA ACGIH	ACGIH TWA (ppm)	25.0000000000 ppm
USA OSHA	OSHA PEL (TWA) (ppm)	50.0000000000 ppm

8.2. Exposure controls

Personal protective equipment : Gloves. Protective clothing. Protective goggles. Self-contained breathing apparatus.



Eye protection : Wear safety glasses with side shields (or goggles) and a face shield.

Skin and body protection : Wear complete suit protecting against chemicals according to concentration and amount of substance.

Respiratory protection : When appropriate, use NIOSH/CEN approved respirator.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Gas
Appearance	: Compressed Gas.
Molecular mass	: 29.0
Color	: No data available.
Odor	: No data available.
Odor threshold	: No data available
pH	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Melting point	: -205 °C (- 337 °F) - lit
Freezing point	: No data available
Boiling point	: -191.5 °C (- 312.7 °F) - lit
Flash point	: No data available
Self ignition temperature	: 609 °C (1,128 °F)
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: No data available
Relative vapor density at 20 °C	: 0.97 - (Air = 1.0)
Relative density	: No data available

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Solubility	: No data available
Log Pow	: No data available
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Explosive limits	: 12.5 - 74 % (V)

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Not available.

10.2. Chemical stability

Stable if stored under recommended conditions.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

Heat, flames and sparks. Extremes of temperature and direct sunlight.

10.5. Incompatible materials

Sodium/sodium oxides, Potassium, Strong oxidizing agents.

10.6. Hazardous decomposition products

Formed under fire conditions: Carbon oxides.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Toxic if inhaled.

CARBON MONOXIDE (13C, 99%) (<5% 18O) (1641-69-6)	
LC50 inhalation rat (ppm)	1807 ppm 4 h
ATE (gases)	700.000 ppmV/4h
ATE (vapors)	3.000 mg/l/4h
ATE (dust, mist)	0.500 mg/l/4h

Skin corrosion/irritation	: Not classified No data available
Serious eye damage/irritation	: Not classified No data available
Respiratory or skin sensitization	: Not available No data available
Germ cell mutagenicity	: Not available
Carcinogenicity	: Not classified
Reproductive toxicity	: Not available
Specific target organ toxicity (single exposure)	: Not classified No data available
Specific target organ toxicity (repeated exposure)	: Causes damage to organs (blood) through prolonged or repeated exposure. Inhalation - Causes damage to organs through prolonged or repeated exposure.
Aspiration hazard	: Not classified
Potential Adverse human health effects and symptoms	: Blood disorders.
Symptoms/injuries after inhalation	: May be harmful if inhaled. May cause respiratory tract irritation.
Symptoms/injuries after skin contact	: May be harmful if absorbed through skin. May cause skin irritation.
Symptoms/injuries after eye contact	: May cause eye irritation.
Symptoms/injuries after ingestion	: May be harmful if swallowed.

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SECTION 12: Ecological information

12.1. Toxicity

No additional information available

12.2. Persistence and degradability

CARBON MONOXIDE (13C, 99%) (<5% 18O) (1641-69-6)

Persistence and degradability	Not available.
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12.3. Bioaccumulative potential

CARBON MONOXIDE (13C, 99%) (<5% 18O) (1641-69-6)

Bioaccumulative potential	Not available.
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12.4. Mobility in soil

CARBON MONOXIDE (13C, 99%) (<5% 18O) (1641-69-6)

Ecology - soil	Not available.
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12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Other adverse effects

Other adverse effects : Not available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional legislation (waste) : Waste materials should be disposed of under conditions which meet Federal, State, and Local environmental control regulations.

SECTION 14: Transport information

In accordance with ADR / RID / ADNR / IMDG / ICAO / IATA

14.1. UN number

UN-No.(DOT) : UN1016

14.2. UN proper shipping name

DOT Proper Shipping Name : Carbon monoxide, compressed
Department of Transportation (DOT) Hazard Classes : 2.3 - Class 2.3 - Poisonous gas 49 CFR 173.115
Hazard labels (DOT) : 2.3 - Poison gas
2.1 - Flammable gas



DOT Special Provisions (49 CFR 172.102) : 4 - This material is poisonous by inhalation (see 171.8 of this subchapter) in Hazard Zone D (see 173.116(a) of this subchapter), and must be described as an inhalation hazard under the provisions of this subchapter.
DOT Packaging Exceptions (49 CFR 173.xxx) : None
DOT Packaging Non Bulk (49 CFR 173.xxx) : 302
DOT Packaging Bulk (49 CFR 173.xxx) : 314;315
Marine pollutant : No

14.3. Additional information

Other information : No supplementary information available.
Special transport precautions : IATA/DOT: Not permitted on passenger aircraft.

Overland transport

Class (ADR) : 2 - Gases
Hazard identification number (Kemler No.) : 263
Classification code (ADR) : 1TF

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Danger labels (ADR) : 2.3 - Toxic gases
2.1 - Flammable gases



Orange plates :

263
1016

Tunnel restriction code : B/D
Limited quantities (ADR) : 0
EAC : 2SE
Excepted quantities (ADR) : E0

Transport by sea

DOT Vessel Stowage Location : D - The material must be stowed "on deck only" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers or one passenger per each 3 m of overall vessel length, but the material is prohibited on passenger vessels in which the limiting number of passengers is exceeded.

DOT Vessel Stowage Other : 40 - Stow "clear of living quarters"
MFAG-No : 119

Air transport

DOT Quantity Limitations Passenger aircraft/rail : Forbidden
(49 CFR 173.27)

DOT Quantity Limitations Cargo aircraft only (49 : 25 kg
CFR 175.75)

Civil Aeronautics Law : Gases under pressure/Gases toxic under pressure

14.4. Environmental hazards

Other information : No supplementary information available.

14.5. Special precautions for user

Special transport precautions : IATA/DOT: Not permitted on passenger aircraft.

14.6. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

CARBON MONOXIDE (13C, 99%) (<5% 18O) (1641-69-6)

SARA Section 311/312 Hazard Classes	Fire hazard Sudden release of pressure hazard Immediate (acute) health hazard Delayed (chronic) health hazard
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15.2. International regulations

CANADA

CARBON MONOXIDE (13C, 99%) (<5% 18O) (1641-69-6)

Listed on the Canadian DSL (Domestic Substances List) inventory.

15.2.1. National regulations

No additional information available

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15.3. US State regulations

CARBON MONOXIDE (13C, 99%) (<5% 18O)(1641-69-6)	
U.S. - California - Proposition 65 - Carcinogens List	Yes
U.S. - California - Proposition 65 - Reproductive Toxicity - Female	Yes
U.S. - California - Proposition 65 - Reproductive Toxicity - Male	Yes
State or local regulations	U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - New Jersey - Right to Know Hazardous Substance List WARNING! This product contains a chemical known by the state of California to cause birth defects or other reproductive harm.

SECTION 16: Other information

Other information : This product is not radioactive. The data given for this product are those of the corresponding unlabeled compound, unless specifically indicated otherwise. Health and safety data for labeled compounds are generally not available, but are assumed to be similar or identical to the corresponding unlabeled compound.

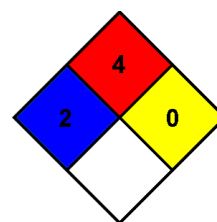
Full text of R-, H- and EUH-phrases::

Acute Tox. 3 (Inhalation)	Acute toxicity (inhalation) Category 3
Compressed gas	Gases under pressure Compressed gas
Flam. Gas 1	Flammable gases Category 1
Repr. 1A	Reproductive toxicity Category 1A
STOT RE 1	Specific target organ toxicity (repeated exposure) Category 1
H220	Extremely flammable gas
H280	Contains gas under pressure; may explode if heated
H331	Toxic if inhaled
H360FD	May damage fertility. May damage the unborn child
H372	Causes damage to organs through prolonged or repeated exposure
R12	Extremely flammable
R48/23	Toxic: danger of serious damage to health by prolonged exposure through inhalation
R5	Heating may cause an explosion
R60	May impair fertility
R61	May cause harm to the unborn child
F+	Extremely flammable
T	Toxic

NFPA health hazard : 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

NFPA fire hazard : 4 - Will rapidly or completely vaporize at normal pressure and temperature, or is readily dispersed in air and will burn readily.

NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



HMIS III Rating

Health : 2 Moderate Hazard - Temporary or minor injury may occur

Flammability : 4 Severe Hazard

Physical : 0 Minimal Hazard

CIL Multi-Solvent Mixture SDS

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product