

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 17/12/2010 Revision date: 04/01/2019 Supersedes: 16/08/2018 Version: 5.1

HPG-045

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

Product identifier

Product form : Substance

: CARBON MONOXIDE 99.995% CHEMICALLY PURE Substance name

EC Index-No. : 006-001-00-2 (Unlabeled) EC-No. : 211-128-3 (Unlabeled) CAS-No. : 630-08-0 (Unlabeled)

Product code : HPG-045

Other means of identification Also applicable to: HPG-045-EA

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

1.2.1. Relevant identified uses

Main use category : Professional use

Industrial/Professional use spec : For professional use only

1.2.2. Uses advised against

No additional information available

Details of the supplier of the safety data sheet

Cambridge Isotope Laboratories, Inc. 50 Frontage Road

Andover, MA 01810 USA

cilsales@isotope.com

USA: 1-800-322-1174 Int: 1-978-749-8000 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

Classification of the substance or mixture

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

Flam, Gas 1 H220 Press. Gas (Comp.) H280 Acute Tox. 3 (Inhalation) H331 Repr. 1A H360 STOT RE 1 H372

Full text of hazard classes and H-statements : see section 16

Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

F+; R12 T; R23/R48 T;R60,61

Full text of R-phrases: see section 16

GHS-US classification

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

Full text of H statements : see section 16

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Adverse physicochemical, human health and environmental effects

No additional information available

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

H360 - May damage fertility or the unborn child

H372 - Causes damage to organs 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/vapors/spray.

P264 - Wash hands, forearms and face 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 gloves/protective clothing/eye protection/face protection.

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 - May damage fertility or the unborn child

H372 - Causes damage to organs through prolonged or repeated exposure

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/vapors/spray.

P264 - Wash hands, forearms and face 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 gloves/protective clothing/eye protection/face protection.

P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing

P308+P313 - If exposed or concerned: Get medical advice/attention.

P311 - Call a doctor

P314 - Get medical advice/attention if you feel unwell.

P321 - Specific treatment (see Hazardous component(s) for labeling on this label) P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

P381 - 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 hazardous or special waste collection point, in

accordance with local, regional, national and/or international regulation

2.3. Other hazards

No additional information available

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SECTION 3: Composition/Information on ingredients

3.1. Substances

Name	Product identifier	%	Classification according to Directive 67/548/EEC
CARBON MONOXIDE 99.995% CHEMICALLY PURE	(CAS-No.) 630-08-0 (Unlabeled) (EC-No.) 211-128-3 (Unlabeled) (EC Index-No.) 006-001-00-2 (Unlabeled)	100	F+; R12 T; R23/R48 T ;R60,61 R5
Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
CARBON MONOXIDE 99.995% CHEMICALLY PURE	(CAS-No.) 630-08-0 (Unlabeled) (EC-No.) 211-128-3 (Unlabeled) (EC Index-No.) 006-001-00-2 (Unlabeled)	100	Flam. Gas 1, H220 Press. Gas (Comp.), H280 Acute Tox. 3 (Inhalation), H331 Repr. 1A, H360 STOT RE 1. H372

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

Name	Product identifier	%	GHS-US classification
CARBON MONOXIDE 99.995% CHEMICALLY PURE (Main constituent)	(CAS-No.) 630-08-0 (Unlabeled)	100	Flam. Gas 1, H220 Press. Gas (Liq.), 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

First-aid measures after skin contact

4.1. Description of first aid measures

First-aid measures general : If you feel unwell, seek medical advice (show the label where possible). Evacuate danger area.

First-aid measures after inhalation : When symptoms occur: go into open air and ventilate suspected area. If not breathing, give

artificial respiration. Get medical advice/attention.

Wash with plenty of soap and water. Get immediate medical advice/attention.

First-aid measures after eye contact : Rinse cautiously with water for several minutes.

First-aid measures after ingestion : Never give anything by mouth to an unconscious person. Rinse mouth out with water. Get

medical advice/attention.

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

Symptoms/effects after inhalation : Toxic if inhaled.

Symptoms/effects after skin contact : May be harmful in contact with skin. May cause moderate irritation.

Symptoms/effects after eye contact : May cause eye irritation.

Symptoms/effects after ingestion : May be harmful if swallowed.

Chronic symptoms : May damage the unborn child. May damage fertility.

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 : Water spray, dry chemical powder, alcohol-resistant foam, carbon dioxide (CO2).

5.2. Special hazards arising from the substance or mixture

No additional information available

5.3. Advice for firefighters

Firefighting instructions : Fight fire with normal precautions from a reasonable distance. Wear a self contained breathing apparatus. Do not enter fire area without proper protective equipment, including respiratory

protection.

Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

Wear recommended personal protective equipment.

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SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : Avoid breathing vapors, mist, gas. Avoid dust formation. Beware of vapours accumulating to

form explosive concentrations. Vapours can accumulate in low areas.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information

refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Prevent entry to sewers and public waters. Do not allow to enter drains or water courses. Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

For containment : Clean up promptly by sweeping or vacuum.

Methods for cleaning up : This material and its container must be disposed of in a safe way, and as per local legislation.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling

: Provide adequate ventilation to minimize dust and/or vapor concentrations.

Hygiene measures

: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Store in a well-ventilated place. Keep container tightly closed. 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 99.995% CHEMICALLY PURE (630-08-0 (Unlabeled))		
Italy - Portugal - USA ACGIH	ACGIH TWA (ppm)	25.00000000 ppm USA. ACGIH Threshold Limit Values (TLV)
Italy - Portugal - USA ACGIH	Remark (ACGIH)	Carboxyhemoglobinemia Substances for which there is a Biological Exposure Index or Indices (see BEI® section)
USA NIOSH	NIOSH REL (TWA) (mg/m³)	40 mg/m³ USA. NIOSH Recommended Exposure Limits
USA NIOSH	NIOSH REL (TWA) (ppm)	35 ppm USA. NIOSH Recommended Exposure Limits
USA NIOSH	NIOSH REL (ceiling) (mg/m³)	229 mg/m³ USA. NIOSH Recommended Exposure Limits
USA NIOSH	NIOSH REL (ceiling) (ppm)	200 ppm USA. NIOSH Recommended Exposure Limits
USA OSHA	OSHA PEL (TWA) (mg/m³)	55 mg/m³ USA Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
USA OSHA	OSHA PEL (TWA) (ppm)	50 ppm USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
USA OSHA	OSHA PEL (STEL) (ppm)	25 ppm California permissible exposure limits for chemical contaminants (Title 8, Article 107)
USA OSHA	OSHA PEL (Ceiling) (mg/m³)	29 mg/m³ California permissible exposure limits for chemical contaminants (Title 8, Article 107)
USA OSHA	OSHA PEL (Ceiling) (ppm)	200 ppm California permissible exposure limits for chemical contaminants (Title 8, Article 107)
USA OSHA	Remark (OSHA)	The value in mg/m3 is approximate

8.2. Exposure controls

Appropriate engineering controls : Wash ha

 Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

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









Materials for protective clothing : Wear suitable protective clothing and gloves. Hand protection Wear suitable protective clothing and gloves.

Eye protection Wear eye protection. Chemical goggles or face shield with safety glasses.

Skin and body protection Wear suitable protective clothing, gloves and eye/face protection.

Respiratory protection In case of inadequate ventilation wear respiratory protection. Approved supplied air respirator.

Environmental exposure controls : Avoid release to the environment.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties 9.1.

: Gas Physical state

Appearance : Compressed Gas Molecular mass 28.01 g/mol (Labeled)

Color Colorless

Odor No data available Odor threshold No data available рΗ No data available Relative evaporation rate (butyl acetate=1) No data available : -205 °C (-337 °F) - lit Melting point Freezing point : No data available : -191.5 °C (-312.7 °F) - lit **Boiling point** Flash point : No data available

: 609 °C (1128 °F) Auto-ignition temperature Decomposition temperature : No data available Flammability (solid, gas) : No data available Vapor pressure No data available : 0.97 (Air = 1.0)Relative vapor density at 20 °C : No data available Relative density : No data available Solubility No data available Log Pow Log Kow No data available : No data available Viscosity, kinematic No data available Viscosity, dynamic

Lower explosion limit: 12.5% (V) Explosive properties Upper explosion limit: 74 % (V)

Oxidizing properties No data available **Explosion limits** : No data available

Other information

No additional information available

SECTION 10: Stability and reactivity

Reactivity

No additional information available

Chemical stability

Stable if stored under recommended conditions.

Possibility of hazardous reactions

No additional information available

Conditions to avoid

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

Incompatible materials

Strong oxidizing agents, potassium, sodium/sodium oxides.

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10.6. Hazardous decomposition products

Carbon oxides (CO, CO2).

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Inhalation: Toxic if inhaled.

CARBON MONOXIDE 99.995% CHEMICALLY PURE (630-08-0 (Unlabeled))	
LC50 inhalation rat (ppm)	1807 ppm/4h
ATE CLP (gases)	700.000 ppmV/4h
ATE CLP (vapors)	3.000 mg/l/4h
ATE CLP (dust, mist)	0.500 mg/l/4h

Skin corrosion/irritation : Not classified
Serious eye damage/irritation : Not classified
Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified

Reproductive toxicity : May damage fertility or the unborn child.

Specific target organ toxicity - single exposure : Not classified

Specific target organ toxicity - repeated

exposure

: Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard : Signs and symptoms of exposure: Blood disorders

Potential Adverse human health effects and

symptoms

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.

Symptoms/effects after inhalation : Toxic if inhaled.

Symptoms/effects after skin contact : May be harmful in contact with skin. May cause moderate irritation.

Symptoms/effects after eye contact : May cause eye irritation.

Symptoms/effects after ingestion : May be harmful if swallowed.

Chronic symptoms : May damage the unborn child.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general

: The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Other adverse effects

No additional information 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.

Product/Packaging disposal recommendations : Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed

professional waste disposal service to dispose of this material.

Ecology - waste materials : Dispose of as unused product.

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SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

14.1. **UN** number

UN-No.(DOT) : 1016 DOT NA no. UN1016

14.2. **UN proper shipping name**

Proper Shipping Name (DOT) : Carbon monoxide, compressed

: 2.3 - Class 2.3 - Poisonous gas 49 CFR 173.115 Class (DOT)

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

: 314;315

Additional information

DOT Packaging Bulk (49 CFR 173.xxx)

Emergency Response Guide (ERG) Number : 119

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

2.3 - Toxic gases Hazard labels (ADR)

2.1 - Flammable gases



Orange plates

263 1016

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

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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 99.995% CHEMICALLY PURE (630-08-0 (Unlabeled))	
SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302.
SARA Section 311/312 Hazard Classes	Fire hazard Delayed (chronic) health hazard Immediate (acute) health hazard Sudden release of pressure hazard
SARA Section 313 - Emission Reporting	Not subject to reporting requirements of the United States SARA Section 313.

15.2. International regulations

CANADA

CARBON MONOXIDE 99.995% CHEMICALLY PURE (630-08-0 (Unlabeled))

Listed on the Canadian DSL (Domestic Substances List)

15.2.1. National regulations

No additional information available

15.3. US State regulations

CARBON MONOXIDE 99.995% CHEMICALLY PURE(630-08-0 (Unlabeled))	
U.S California - Proposition 65 - Carcinogens List	No
U.S California - Proposition 65 - Developmental Toxicity	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 Pennsylvania - RTK (Right to Know) List U.S New Jersey - Right to Know Hazardous Substance List U.S Massachusetts - Right To Know List

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:

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Acute Tox. 3 (Inhalation)	Acute toxicity (inhalation) Category 3	
Flam. Gas 1	Flammable gases Category 1	
Press. Gas (Comp.)	Gases under pressure Compressed gas	
Repr. 1A	Reproductive toxicity Category 1A	
STOT RE 1	Specific target organ toxicity (repeated exposure) Category 1	
H220	Extremely flammable gas	

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H280	Contains gas under pressure; may explode if heated
H331	Toxic if inhaled
H360	May damage fertility or the unborn child
H372	Causes damage to organs through prolonged or repeated exposure
R12	Extremely flammable
R23	Toxic by inhalation
F+	Extremely flammable
Т	Toxic

: 3 - Materials that, under emergency conditions, can cause NFPA health hazard

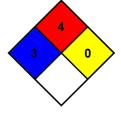
serious or permanent injury.

NFPA fire hazard : 4 - Materials that rapidly or completely vaporize at

atmospheric pressure and normal ambient temperature or that are readily dispersed in air and burn readily.

: 0 - Material that in themselves are normally stable, even

under fire conditions.



Hazard Rating

NFPA reactivity

Health : 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is

given

Flammability : 4 Severe Hazard : 0 Minimal Hazard Physical

CIL Substance 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

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