


1. PRODUCT AND COMPANY IDENTIFICATION

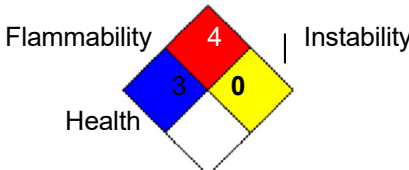
Product Code: 00001
Product Name: Carbon Monoxide
Company Name: Gas Innovations

18005 E. Hwy 225
 La Porte, TX 77571

Web site address: www.gasinnovations.com **Phone Number:** +1 (281)471-2200
Emergency Contact: 3E (within United States) +1 (866)303-2640
Intended Use: Industrial Use +1 (352)323-3500

2. HAZARDS IDENTIFICATION

Flammable Gases:	Category 1
Gas Under Pressure:	Compressed gas
Symbol:	
GHS Signal Word:	Danger
GHS Hazard Phrases:	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 (central nervous system) through prolonged or repeated exposure. CGA-HG04 - May form explosive mixtures with air. CGA-HG10 - Asphyxiating even with adequate oxygen.
GHS Precaution Phrases:	P281 - Use personal protective equipment as required. P201 - Obtain special instructions before use. P202 - Do not handle until all safety precautions have been read and understood. P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking. P260 - Do not breathe gas. 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 eye protection, face protection, protective gloves , protective clothing.
GHS Response Phrases:	P304+340 - 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 attention/advice if you feel unwell. P321 - Specific treatment see Section 4 reference to supplemental first aid instruction - if immediate measures are required. P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely. P381 - Eliminate all ignition sources if safe to do so.
GHS Storage and	P405 - Store locked up.

Disposal Phrases:	P403+233 - Store container tightly closed in well-ventilated place. P410+403 - Protect from sunlight and store in well-ventilated place. P501 - Dispose of contents/containers in accordance with local/regional/national/international regulations. CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C/125 °F CGA-PG10 - Use only with equipment rated for cylinder pressure CGA-PG14 - Approach suspected leak area with caution CGA-PG18 - When returning cylinder, install leak tight valve outlet cap or plug CGA-PG21 - Open valve slowly
Additional Hazards Information	Use a back flow preventative device in the piping. Do not open the valve until connected to equipment prepared for use. Close valve after each use and when empty.
Hazard Rating System:	
NFPA:	Special Hazard
Potential Health Effects (Acute and Chronic):	Chemical asphyxiant. Exposure to low concentrations for extended periods may result in dizziness or unconsciousness and may lead to death.
Inhalation:	Category 3 – Toxic if inhaled.
Skin Contact:	May be harmful if absorbed through the skin. May cause skin irritation.
Eye Contact:	May cause eye irritation.
Ingestion:	May be harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

CAS #	Hazardous Components (Chemical Name)	Concentration
630-08-0	Carbon Monoxide	100 %

4. FIRST AID MEASURES

Emergency and First Aid Procedures:	Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.
In Case of Inhalation:	If breathed in, move a person into fresh air. If not breathing gives artificial respiration. If breathing is difficult, oxygen should be administered by qualified personnel. The administering of oxygen at an elevated pressure (up to 2 to 2.5 atmospheres) has been shown to be beneficial as has treatment in a hyperbaric chamber. Consult a physician.
In Case of Skin Contact:	Wash skin with soap and water. If skin irritation occurs, get medical advice/attention. If frostbite or freezing occurs, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets.
In Case of Eye Contact:	Immediately flush your eyes with plenty of water for at least 15 minutes. Hold eyelids apart and flush eyes with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Have eyes examined and tested by medical personnel.
In Case of Ingestion:	Not expected to be a primary route of exposure. If swallowed, get medical attention.
Signs and Symptoms of Exposure:	Effects are due to lack of oxygen. Moderate concentration may cause headache, drowsiness, dizziness, excitation, excess salivation, vomiting, and unconsciousness.

	Prolonged exposure to low concentrations of carbon monoxide can be fatal.
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5. FIRE FIGHTING MEASURES

Flash Pt:	Not applicable
Method Used:	Not Applicable
Explosive Limits:	Lower level: 12.5% (Volume in air) Upper level EL: 74 % (Volume in air)
Autoignition Pt:	609 C (1128 F)
Suitable Extinguishing Media:	Dry chemical, CO ₂ or water spray. Large fires: Use regular foam or flood with fine water spray.
Fire Fighting Instructions:	<p>Evacuate all personnel from the danger area. Stay away from the ends of tanks. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. Use self-contained breathing apparatus (SCBA) and protective clothing. Immediately cool containers with water from maximum distance. Stop flow of gas if safe to do so, while continuing cooling water spray. Remove ignition sources if safe to do so. Use non-sparking tools to close container valves. Remove containers from area of fire if safe to do so. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out.</p> <p>On-site fire brigades must comply with OSHA 29 CFR 1910.156 and applicable standards under 29 CFR 1910 Subpart L-Fire Protection.</p> <p>Do not attempt to extinguish fire unless flow of material can be stopped first. If venting or leaking gas catches fire, do not extinguish flames. Flammable vapors may spread from leak, creating an explosive reignition hazard. Vapors can be ignited by pilot lights, other flames, smoke, sparks, heaters, electrical equipment, static discharge, or other ignition sources at locations distant from product handling point. Explosive atmospheres may linger.</p> <p>EXTREMELY FLAMMABLE GAS. Carbon monoxide cannot be detected by odor. May form explosive mixtures with air. Toxic, flammable gas may spread. Before entering an area, especially a confined area, check the atmosphere with an appropriate gas-specific device. Reduce gas with fog or fine water spray. Shut off source of gas flow if safe to do so. Ventilate area or move container to a well-ventilated area.</p>
Flammable Properties and Hazards:	Flammable in air over a very wide range. Will be easily ignited by heat, sparks or flames can form explosive mixture with air and oxidizing agents. Vapors may travel to the source of ignition and flash back. Vapors from liquefied gas are initially heavier than air and spread along the ground.

6. ACCIDENTAL RELEASE MEASURES

Protective Precautions, Protective Equipment and Emergency Procedures:	Use proper personal protective equipment as indicated in Section 8. Do not eat, drink, or smoke when using this product. Close doors and windows of adjacent premises. Keep containers closed. Mark the danger area. Seal off low-lying areas. Keep upwind.
Environmental Precautions:	Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Prevent spreading of vapors through sewers, ventilation systems and confined areas.
Steps To Be Taken in Case Material Is Released or Spilled:	Cannot be detected by odor. Forms explosive mixtures with air. Immediately evacuate all personnel from danger area. Use self-contained breathing apparatus where needed. Remove all sources of ignition if safe to do so. Reduce vapors with fog or fine water spray, taking care not to spread liquid with water. Shut off flow if safe to do so. Ventilate area or move container to a well-ventilated area. Flammable vapors may spread from leak and could explode if reignited by sparks or flames. Explosive atmospheres may linger. Before entering area, especially confined areas, check atmosphere with an appropriate device. All equipment used when handling the product must be grounded.

7. HANDLING AND STORAGE

Precautions To Be Taken in Handling:	<p>Keep away from heat, sparks and flames. Keep away from sources of ignition - No smoking. Use spark-proof tools and explosion proof equipment. Use in a closed system. Avoid using pure nickel.</p> <p>Wear leather safety gloves and safety shoes when handling cylinders. Protect cylinders from physical damage; do not drag, roll, slide or drop. While moving cylinder, always keep in place removable valve cover. Damaged cylinders should be handled only by specialists. Never attempt to lift a cylinder with its cap; the cap is intended solely to protect the valve. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Never insert an object (e.g., wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Slowly open the valve. If the valve is hard to open, discontinue use and contact your supplier. Close the container valve after each use; keep closed even when empty. Never apply flame or localized heat directly to any part of the container. High temperatures may damage the container and could cause the pressure relief device to fail prematurely, venting the container contents.</p>
Precautions To Be Taken in Storing:	<p>Store only where temperature will not exceed 125°F (52°C). Post "No Smoking or Open Flames" signs in storage and use areas. There must be no sources of ignition. Separate packages and protect against potential fire and/or explosion damage following appropriate codes and requirements (e.g., NFPA 30, NFPA 55, NFPA 70, and/or NFPA 221 in the U.S.) or according to requirements determined by the Authority Having Jurisdiction (AHJ). Always secure containers upright to keep them from falling or being knocked over. Install valve protection cap, if provided, firmly in place by hand when the container is not in use. Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods. Stored containers should be periodically checked for general condition and leakage.</p>
Other Precautions:	<p>When handling a product under pressure, use piping and equipment adequately designed to withstand the pressures to be encountered. Never work on a pressurized system. Use a back flow preventive device in the piping. Gases can cause rapid suffocation because of oxygen deficiency; stored and use with adequate ventilation. If a leak occurs, close the container valve and blow down the system in a safe and environmentally correct manner in compliance with all international, federal/national, state/provincial, and local laws; then repair the leak. Never place a container where it may become part of an electrical circuit. Containers should not be stored in conditions likely to encourage corrosion.</p>

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

CAS #	Partial Chemical Name	OSHA TWA	ACGIH TWA	NIOSH IDLH
630-08-0	Carbon Monoxide	50 ppm 55 mg/m ³	25 ppm	DLH: 1200 ppm Ceiling: 200 ppm Ceiling: 229 mg/m ³ TWA: 35 ppm TWA: 40 mg/m ³
ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value. OSHA PEL: Occupational Safety and Health Administration - Permissible Exposure Limits. NIOSH IDLH: Immediately Dangerous to Life or Health				
Respiratory Equipment (Specify Type):		When workplace conditions warrant respirator use, follow a respiratory protection program that meets OSHA 29 CFR 1910.134, ANSI Z88.2, or MSHA 30 CFR 72.710 (where applicable). Use an air-supplied or air-purifying cartridge if the action level is exceeded. Ensure that the respirator has the appropriate protection factor for the exposure level. If cartridge type respirators are used, the cartridge must be appropriate for the chemical exposure (e.g., an organic vapor cartridge).		

	For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus (SCBA). Positive pressure supplied air respirators may be required for high airborne contaminant concentrations.
Eye Protection:	Wear safety glasses when handling cylinders, vapor-proof goggles and a face shield during cylinder change out or whenever contact with product is possible. Select eye protection in accordance with OSHA 29 CFR 1910.133. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.
Protective Gloves:	Wear neoprene gloves during cylinder change out or wherever contact with product is possible.
Other Protective Clothing: Engineering Controls (Ventilation etc.):	Wear metatarsal shoes for cylinder handling, and protective clothing where needed. Use explosion-proof ventilation equipment.
Work/Hygienic/Maintenance Practices:	Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. Regular cleaning of equipment, work area and clothing is recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical States:	[X] Gas [] Liquid [] Solid
Appearance and Odor:	Colorless & Odorless Gas.
Critical pressure:	3499 kPa
Log Pow:	1.78
Melting Point:	-205° C (-337° F)
Boiling Point:	-192° C (-313° F)
Decomposition Temperature:	No data available
Autoignition Pt:	609° C (1128 °F)
Flash Pt:	-194° C (-311.8°F)
Method used:	Not Applicable
Explosive Limits:	Lower level: 12.5% (Volume in air) Upper level EL: 74 % (Volume in air)
Specific Gravity (Water = 1):	1.2501 - kg/m ³ at 0 C (32.0 F)
Vapor Pressure (vs. Air or mm Hg):	760 mmHg @ 25 °C
Vapor Density (air=1)	0.97
Evaporation Rate:	No data.
Solubility in Water:	41 g/L at 20.0 C (68.0 F)
pH:	NA
Percent Volatile:	No data.
Molecular Formula:	CO
Molar mass:	28.01 g/mol

10. STABILITY AND REACTIVITY

Reactivity:	Can form explosive mixture with air and oxidizing agents.
Stability:	Unstable [] Stable [X]
Conditions To Avoid - Instability:	Heat, flames and sparks. No smoking. Avoid inhalation of material or combustion by-products. Keep out of water supplies and sewers.
Incompatibility Materials to Avoid:	Oxidizing agents. Oxygen, flammable materials, metal oxides. Halogenated compounds, Metals (when wet), Sulfur and Sulfite compounds, Lithium, metals

Hazardous Decomposition or Byproducts:	Carbon monoxide will decompose above 752F (400C) to form carbon dioxide and carbon.
Possibility of Hazardous Reactions:	Will occur [] Will not occur [X]
Conditions To Avoid - Hazardous Reactions:	No data available.

11. TOXICOLOGICAL INFORMATION

Reproductive toxicity:	Category 1A - May damage fertility or the unborn child		
Specific target organ toxicity:	Single exposure - Category 1 (circulatory system, , nervous system) Repeated exposure - Causes damage to organs (central nervous system)		
	LC50 inhalation rat (ppm) - 1880 ppmV/4h		
	ATE US (gases) - 1880 ppmV/4h		
Irritation or Corrosion:	None that are directly attributable to normal use of this material		
Chronic Toxicological Effects:	No data available.		
Carcinogenicity:	NTP - No	IARC Monographs - No	OSHA Regulated - No



12. ECOLOGICAL INFORMATION

General Ecological Information:	Classification criteria are not met. No ecological damage caused by this product.
Persistence and Degradability:	Will not undergo hydrolysis. Not readily biodegradable. Not applicable for inorganic gases.
Bio accumulative Potential:	Not expected.
Mobility in Soil:	No data available. Because of its high volatility, the product is unlikely to cause ground or water pollution.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method:	Do not attempt to dispose of residual or unused quantities. Return container to supplier. Dispose of contents/containers in accordance with local/regional/national/international regulations. Waste gas should be flared through a suitable burner with flash back arrestor. Do not discharge into areas where there is a risk of forming an explosive mixture with air
Waste Disposal Method:	D001

14. TRANSPORT INFORMATION

LAND TRANSPORT (US DOT):	
DOT Proper Shipping name:	Carbon monoxide, compressed
DOT Hazard Class:	2.3 – Poison gas 2.1- Flammable gas
UN/NA number:	UN1016
Labels:	 
Required labels:	2.3 – Poison gas 2.1- Flammable gas

DOT Packaging Non-Bulk (49 CFR 173.xxx):	302
DOT Packaging Bulk (49 CFR 173.xxx):	314:315
DOT Special Provisions (49 CFR 172.102):	4
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75):	25Kg
IMDG Information:	
Shipping Name:	Carbon monoxide, compressed.
Hazard Class:	2.3
UN:	UN1016
Required labels:	2.3 – Poison gas 2.1- Flammable gas
Sea Transport:	
Transport document description (IMDG):	UN 1016 CARBON MONOXIDE, COMPRESSED
UN-No. (IMDG):	1016
Proper Shipping Name (IMDG):	CARBON MONOXIDE, COMPRESSED
MFAG-No:	119
Air Transport:	
Transport document description (IATA):	UN 1016 CARBON MONOXIDE, COMPRESSED
UN-No. (IATA):	1016
Proper Shipping Name (IATA):	CARBON MONOXIDE, COMPRESSED

15. REGULATORY INFORMATION

EPA SARA (Superfund Amendments and Reauthorization Act of 1986) Lists

CAS #	Hazardous Components (Chemical Name)	S. 302 (EHS)	S. 304 RQ	S. 313 (TRI)
630-08-0	Carbon Monoxide			
CAS #	Hazardous Components (Chemical Name)	Other US EPA or State Lists		
630-08-0	Carbon Monoxide	CA: Yes; MA: Yes; MN: Yes; NJ: Yes; PA: Yes;		
CAS #	Hazardous Components (Chemical Name)	International Regulatory Lists		
630-08-0	Carbon Monoxide	AU: Yes; PH: Yes; JP-ISHL: Yes; JP – ENCS: Yes; KR KECI -ANNEX 1: Yes; KR KECI -ANNEX 2: NO; KR – REACH CCA: No; CN: Yes; NZ: Yes; MX: Yes; TW: Yes;		

16. OTHER INFORMATION

Revision Date:	07/30/2024
Additional Information About This Product:	No data available.
NFPA Ratings:	0= Minimal Hazard
	1= Slight Hazard
	2= Moderate Hazard
	3= Serious Hazard

	4= Severe Hazard
Company Policy or Disclaimer:	<p>The information, recommendations, and suggestions herein were compiled from reference material and other sources believed to be reliable. However, the SDS's accuracy or completeness is not guaranteed by Gas Innovations or its affiliates, nor is any responsibility assumed or implied for any loss or damage resulting from inaccuracies or omissions. Since conditions of use are beyond our control, no warranties of merchantability of fitness for a particular purpose are expressed or implied. This SDS is not intended as a license to operate under, or a recommendation to infringe on, any patents. Appropriate warnings and safe handling procedures should be provided to handlers and users.</p>