

0.1% to 20.0% Carbon Monoxide In Nitrogen

1 PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: 0.1% to 20.0% Carbon Monoxide In Nitrogen
Synonyms: Cal Gas, 2 Part Mix
Common Name: Carbon Monoxide in Nitrogen
SDS Number: NLB 2075
Revision Date: 6/1/2018
Version: 2
CAS Number: Not Applicable, Gas Mixture
EPA Number: Not Applicable
RCRA Number: Not Applicable
Chemical Family: Nonflammable Gas Mixture
Product Use: Calibration of analytical instrumentation

Supplier Details: NorLab
898 W. Gowen Rd
Boise, ID 83705

Contact: Quality Dept.
Phone: 208-336-1643
Fax: 208-433-6160
Internet: www.norlab-gas.com

For Transportation Emergency Contact CHEMTREC 800-424-9300

2 HAZARDS IDENTIFICATION

Classification of Substance

GHS Classification in Accordance with 29 CFR 1910 (OSHA HCS):
Physical, Gases Under Pressure, Compressed Gas
Health, Acute toxicity, 4 Inhalation
Health, Specific target organ toxicity - Repeated exposure, 2
Health, Reproductive toxicity, 1

GHS Label Elements, Including Precautionary Statements

GHS Signal Word: **DANGER**

GHS Hazard Pictograms:



GHS Hazard Statements:

H280 - Contains gas under pressure; may explode if heated
H332 - Harmful if inhaled
H373 - May cause damage to organs through prolonged or repeated exposure
H360 - May damage fertility or the unborn child
CGA-HG04 - MAY FORM EXPLOSIVE MIXTURES WITH AIR.
OSHA-H01 - MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION.

GHS Precautionary Statements:

P202 - Do not handle until all safety precautions have been read and understood.
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray.
P271 - Use only outdoors or in a well-ventilated area.
P304+340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P309+311 - IF exposed or you feel unwell: Call a POISON CENTER or doctor/physician.
P403+233 - Store in a well ventilated place. Keep container tightly closed.
CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52 °C (125 °F).
CGA-PG05 - Use a back flow preventive device in the piping.
CGA-PG06 - Close valve after each use and when empty.
CGA-PG10 - Use only with equipment rated for cylinder pressure.

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CGA-PG12 - Do not open valve until connected to equipment prepared for use.

Hazards not Otherwise Classified (HNOC) or not Covered by GHS

Route of Entry: Inhalation
Target Organs: Cardiovasuclar system, lungs, blood, central nervous system.
Inhalation: This product contains up to 20% carbon monoxide. Inhalation of relative high concentrations of this gas may cause symptoms of carbon monoxide exposure.

Carbon monoxide is a chemical asphyxiant. Inhaled carbon monoxide binds with blood hemoglobin to form carboxyhemoglobin. Carboxyhemoglobin cannot take part in normal oxygen transport, greatly reducing the blood's ability to transport oxygen. Depending on concentration of carbon monoxide and duration of exposure, symptoms may include headache, dizziness, heart palpitations, weakness, confusion, nausea, and even convulsions, eventual unconsciousness and death. Lack of oxygen from carbon monoxide over exposure may produce immediate as well as delayed neurological effects. Carbon monoxide may also adversely affect fetal development.

Skin Contact: Contact with rapidly expanding gas near the point of release may cause frostbite with redness, skin color change to gray or white, and blistering.

Eye Contact: Contact with rapidly expanding gas near the point of release may cause frostbite.

Ingestion: None known. Ingestion is unlikely as product is a gas at room temperature.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Ingredients		
CAS#	%	Chemical Name
630-08-0	0.1-20.0%	Carbon monoxide
7727-37-9	80.0-99.9%	Nitrogen

4 FIRST AID MEASURES

Inhalation: **PROMPT REMOVAL FROM THE CONTAMINATED AREA AND IMMEDIATE MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS.** Conscious persons should be assisted to an uncontaminated area and be treated with supplemental oxygen. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area and be given artificial respiration and oxygen at the same time. The administering of the oxygen at an elevated pressure (up to 2 to 2.5 atmospheres) has shown to be beneficial as has treatment in a hyperbaric chamber. The physician should be informed that the patient has inhaled toxic quantities of carbon monoxide.

Depending on the concentration of the carbon monoxide present, this product may act as a simple asphyxiate or a chemical asphyxiate. This mixture contains sufficient oxygen to support life.

Inhaled carbon monoxide binds with blood hemoglobin to form carboxyhemoglobin. Carboxyhemoglobin cannot take part in normal oxygen transport, greatly reducing the blood's ability to transport oxygen. Depending on levels and duration of exposure, symptoms may include headache, dizziness, heart palpitations, weakness, confusion, nausea, and even convulsions, eventual unconsciousness and death.

Some experimental evidence indicates teratogenic and reproductive effects.

Skin Contact: None required for gas. For frostbite, immerse skin in lukewarm water. **DO NOT USE HOT WATER.** Obtain immediate medical attention.

Eye Contact: None required for gas. If frostbite is suspected, flush eyes with cool water for 15 minutes and obtain immediate medical attention.

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Ingestion: Not anticipated, product is a gas at normal conditions

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FIRE FIGHTING MEASURES

Flammability: Not Flammable
Flash Point: Not Available
Flash Point Method: Not Applicable
Burning Rate: Not Available
Autoignition Temperature: Not Available
Lower Explosive Limit: 12.5% (CO)
Upper Explosive Limit: 74.0% (CO)

Fire and Explosion Hazards:

Having almost the same density as air, carbon monoxide will not diffuse by rising. Flammable in air over a very wide range. It reacts violently with oxygen difluoride and barium peroxide. Cylinders may rupture violently or vent rapidly from pressure when involved in a fire situation.

Extinguishing Media:

Stop the flow of gas before extinguishing fire. Water, dry chemical, carbon dioxide.

Fire Fighting Instructions:

If possible, stop the flow of gas. Inerting the atmosphere to reduce oxygen levels may extinguish flame, allowing capping of leaking container. Do not attempt this unless specifically trained. Reduce the rate of flow and inject an inert gas, if possible, before completely stopping the flow to prevent flashback. Do not extinguish the fire until the supply is shut off as otherwise an explosive re-ignition may occur. If the fire is extinguished and the flow of gas continues, use increased ventilation to prevent build-up of explosive atmosphere. Use non-sparking tools to close container valves.

Use water spray to cool surrounding containers. Be cautious of a Boiling Liquid Evaporating Vapor Explosion, BLEVE, if flame is impinging on surrounding containers. Direct 500 GPM water stream onto containers above liquid level with remote monitors. Limit the number of personnel in proximity of fire and evacuate surrounding areas in all directions.

Firefighters should wear respiratory protection (SCBA) and full turnout or Bunker gear. Continue to cool fire-exposed cylinders until well after flames are extinguished.

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ACCIDENTAL RELEASE MEASURES

Isolate hazard area, evacuate personnel and deny entry to unauthorized/unprotected individuals. Extinguish all ignition sources and ventilate closed spaces and low areas. Personnel entering area should wear appropriate protective equipment including respiratory protection suitable for unknown concentrations. Personnel should not reenter hazard area until carbon monoxide has sufficiently dispersed and adequate oxygen re-established. If a leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is in container of container valve, contact the appropriate emergency telephone number listed in Section 1 or call your closest Norco/NorLab location.

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HANDLING AND STORAGE

Handling Precautions:

Carbon monoxide can be handled in all commonly used metals up to approximately 500 psig (3450 kPa). Above that pressure it forms toxic and corrosive carbonyl compounds with some metals. Carbon steels, aluminum alloys, copper and copper alloys, low carbon stainless steels and nickel-based alloys such as Hastelloy A, B & C are recommended for higher pressure applications.

Use only in well ventilated areas. Valve protection caps must remain in place unless cylinder is secured with valve outlet piped to use point. Do not drag, slide, or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure regulator when connecting cylinder to lower pressure (, 3000 psig) piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.

Storage Requirements:

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area of non-combustible construction, away from heavy traffic areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 125 deg. F (52 deg. C). Cylinders should be

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stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders from being stored for excessive periods of time. Post "NO SMOKING OR OPEN FLAMES" signs in the storage or use area.

For additional recommendations, consult Compressed Gas Association's Pamphlet P-1.

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EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

All ventilation should be designed in accordance with OSHA standard (29 CFR 1910.94). Use local exhaust at filling zones and where leakage and dust formation is probable. Use mechanical (general) ventilation for storage areas. Use appropriate ventilation as required to keep Exposure limits in Air below TLV & PEL limits. Maintain atmospheric Oxygen content at or above 19.5%

Personal Protective Equipment:

Carbon monoxide cas#:(630-08-0) [0.1-20.0%]
Nitrogen cas#:(7727-37-9) [80.0-99.9%]

Personal protective equipment

Respiratory protection: Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection: Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching gloves outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. Full contact Material: butyl-rubber Minimum layer thickness: 0.3 mm Break through time: 480 min Material tested: Butoject (KCL 897 / Aldrich Z677647, Size M)

Splash protection: Material: Chloroprene Minimum layer thickness: 0.6 mm Break through time: 30 min Material tested: Camapren (KCL 722 / Aldrich Z677493, Size M) data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374 If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an Industrial Hygienist familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Eye protection: Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection: Complete suit protecting against chemicals, Flame retardant antistatic protective clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures: Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

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Components with workplace control parameters

CEIL 200 ppm USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
229 mg/m3

Sampling for the carbon monoxide ceiling shall be averaged over 5 minutes but an instantaneous reading over 1500 ppm shall not be exceeded.

TWA 50 ppm USA. Occupational Exposure Limits (OSHA) - Table Z- 1 - Limits for Air Contaminants
55 mg/m3

The value in mg/m3 is approximate.

TWA 25 ppm USA. ACGIH Threshold Limit Values (TLV)

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Carboxyhemoglobinemia Substances for which there is a Biological Exposure Index or Indices.

TWA	35 ppm 40 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
TWA	35 ppm 40 mg/m3	USA. NIOSH Recommended Exposure Limits
CEIL	200 ppm 229 mg/m3	USA. NIOSH Recommended Exposure Limits

9	PHYSICAL AND CHEMICAL PROPERTIES
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Appearance:	Colorless Gas	Odor:	Odorless
Physical State:	Gas	Molecular Formula:	Mixture
Odor Threshold:	Not Applicable	Solubility:	Very Slight
Particle Size:	Not Applicable	Percent Volatile:	100%
Specific Gravity or Density:	Not Available	Freezing or Melting Point:	Not Determined
Viscosity:	Not Applicable	Flash Point:	Not Determined
Boiling Point:	Not Determined	Upper Flammability Limit 74% / 12.5% (CO) and Lower Flammability Limit:	
Flammability:	Not Flammable		

10	STABILITY AND REACTIVITY
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Chemical Stability:	Stable
Conditions to Avoid:	Avoid open flames and high temperatures.
Materials to Avoid:	Strong Oxidizers, bromine trifluoride, chlorine trifluoride, lithium
Hazardous Decomposition:	Carbon Oxides and Nitrogen Oxides (NOx)
Hazardous Polymerization:	Will not occur

11	TOXICOLOGICAL INFORMATION
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Carbon monoxide cas#:(630-08-0) [0.1-20.0%]

Information on toxicological effects

Acute toxicity:

Oral LD50 Inhalation LC50 LC50 Inhalation - rat - 4 h - 1807 ppm

Dermal LD50 no data available

Other information on acute toxicity

Skin corrosion/irritation: no data available

Serious eye damage/eye irritation: no data available

Respiratory or skin sensitization: no data available

Germ cell mutagenicity: no data available

Carcinogenicity:

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: no data available

Teratogenicity: Known human reproductive toxicant

Specific target organ toxicity - single exposure (Globally Harmonized System):no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System):no data available

Inhalation - Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard: no data available

Potential health effects: Inhalation May be harmful if inhaled. May cause respiratory tract irritation. Ingestion May be harmful if swallowed. Skin May

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be harmful if absorbed through skin. May cause skin irritation. Eyes May cause eye irritation.

Signs and Symptoms of Exposure: Blood disorders

Synergistic effects: no data available

Additional Information: RTECS: FG3500000

Nitrogen cas#:(7727-37-9) [80.0-99.9%]

Information on toxicological effects

Acute toxicity:

Oral LD50 no data available

Inhalation LC50

Dermal LD50

Other information on acute toxicity

Skin corrosion/irritation: no data available

Serious eye damage/eye irritation: no data available

Respiratory or skin sensitization: no data available

Germ cell mutagenicity: no data available

Carcinogenicity:

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: no data available

Teratogenicity: no data available

Specific target organ toxicity - single exposure (Globally Harmonized System):no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System):no data available

Aspiration hazard: no data available

Potential health effects: Inhalation May be harmful if inhaled. May cause respiratory tract irritation. Ingestion May be harmful if swallowed. Skin May be harmful if absorbed through skin. May cause skin irritation. Eyes May cause eye irritation.

Signs and Symptoms of Exposure: May be harmful., Nausea, Headache, Vomiting

Synergistic effects: no data available

Additional Information: RTECS: QW9700000

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ECOLOGICAL INFORMATION

Carbon monoxide cas#:(630-08-0) [0.1-20.0%]

Information on ecological effects

Toxicity: no data available

Persistence and degradability: no data available

Bioaccumulative potential: no data available

Mobility in soil: no data available

PBT and vPvB assessment: no data available

Other adverse effects: no data available

Nitrogen cas#:(7727-37-9) [80.0-99.9%]

Information on ecological effects

Toxicity: no data available

Persistence and degradability: no data available

Bioaccumulative potential: no data available

Mobility in soil: no data available

PBT and vPvB assessment: no data available

Other adverse effects: no data available

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DISPOSAL CONSIDERATIONS

Dispose of in accordance with local regulations. Do not attempt to dispose of waste or unused quantities in returnable cylinders. Return in the shipping container, properly labeled, with any valve outlet plugs or caps secure and valve protection cap in place to NorLab for proper disposal. Non-refillable containers should be vented in a well-ventilated area then disposed of in compliance with local regulations, or returned to NorLab.

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TRANSPORT INFORMATION

UN1956, Compressed gas, n.o.s., 2.2

Proper Shipping Name US:

UN 1956, Compressed Gas N.O.S., (Carbon Monoxide, Nitrogen), 2.2

Proper Shipping Name Canada:

UN 1956, Compressed Gas N.O.S., (Carbon Monoxide, Nitrogen), 2.2



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REGULATORY INFORMATION

Component (CAS#) [%] - CODES

Carbon monoxide (630-08-0) [0.1-20.0%] MASS, NJEHS, OSHAWAC, PA, PROP65, TSCA, TXAIR

Nitrogen (7727-37-9) [80.0-99.9%] MASS, PA, TSCA



WARNING

This product can expose you to chemicals including Carbon monoxide, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Regulatory CODE Descriptions

MASS = MA Massachusetts Hazardous Substances List

NJEHS = NJ Extraordinarily Hazardous Substances

OSHA WAC = OSHA Workplace Air Contaminants

PA = PA Right-To-Know List of Hazardous Substances

PROP65 = CA Prop 65

TSCA = Toxic Substances Control Act

TXAIR = TX Air Contaminants with Health Effects Screening Level

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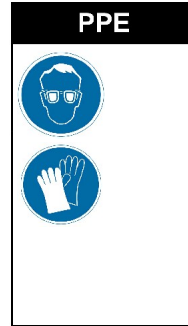
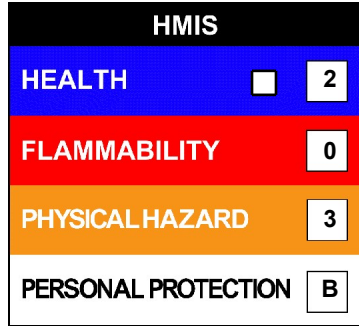
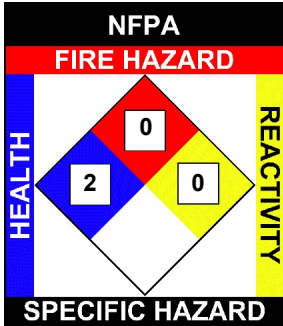
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OTHER INFORMATION

NFPA: Health = 2, Fire = 0, Reactivity = 0, Specific Hazard = n/a

HMIS III: Health = 2, Fire = 0, Physical Hazard = 3

HMIS PPE: B - Safety Glasses, Gloves



Disclaimer:

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