

MATERIAL SAFETY DATA SHEET

Carbon Monoxide Gas Mixture



File No.: 1016

Carbon Monoxide Gas Mixture:
(Carbon Monoxide in a Nitrogen or Air Balance Gas)
Carbon Monoxide / Oxygen / Nitrogen

1. Chemical Product and Company Identification

SpecAir Specialty Gases, Chemicals & Technology
22 Albiston Way
Auburn, ME
04210

TELEPHONE NUMBER: 800-292-6218
FAX NUMBER: 207-777-6215
E-MAIL: Info@SpecAir.com

24-HOUR EMERGENCY NUMBER: 1-800-535-5053

PRODUCT NAME: Carbon Monoxide Gas Mixture
CHEMICAL NAME: Carbon Monoxide, Nitrogen, Oxygen
COMMON NAMES/ SYNONYMS: Carbon Monoxide in Air, Carbon Monoxide in Nitrogen
TDG (Canada) CLASSIFICATION: 2.2
WHIMIS CLASSIFICATION: A

2. Composition / Information on Ingredients

	% VOLUME	PEL-OSHA2	TLV-ACGIH3	LD50 OR LC50 Route/Species
Carbon Monoxide Formula: CO CAS Number: 630-08-0 RTECS#: FG3500000	0.0001% to 6.0%	50 PPM TWA	25 PPM TWA	LC50 3760 ppm inhalation/rat 1 Hr. time adj. CGA P-20
Oxygen Formula: O2 CAS # 7782-44-7 RTECS#: RS206000	19.5% to 23.5%	None	None	Not Available
Nitrogen Formula: N2 CAS: 7727-37-9 RTECS#: QW9700000	76.5% to 99.9999%	None Established	None Established Simple Asphyxiant	Not Available

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Nonflammable, colorless, odorless gas. This product contains up to 6% carbon monoxide. Inhalation of carbon monoxide can reduce the ability of the blood to carry oxygen to the body and may adversely affect fetal development. Effects depend on the level of exposure and may include headaches, dizziness, convulsions, loss of consciousness and death. Product contains sufficient oxygen to support respiration and combustion. Contents under pressure. Use and store below 125°F (52°C).

ROUTE OF ENTRY:

Skin Contact	Skin Absorption	Eye Contact	Inhalation	Ingestion
No	No	No	Yes	No

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CARCINOGENICITY:

NTP: No

IARC: No

OSHA: No

Eye Effects:

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

Skin Effects:

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

Ingestion Effects:

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

Inhalation Effects:

This product contains up to 6% 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 carboxy hemoglobin. Carboxy hemoglobin 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.

NFPA Hazard Codes

Health:	0
Flammability:	0
Reactivity:	0

HMIS Hazard Codes

Health:	0
Flammability:	0
Reactivity:	3

Rating System

0=	No Hazard
1=	Slight Hazard
2=	Moderate Hazard
3=	Serious Hazard
4=	Severe Hazard

4. FIRST AID MEASURES

Eyes:

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

Skin:

Remove contaminated clothing and flush affected area with large quantities of water. If irritation persists or frostbite is suspected, seek medical attention.

Ingestion:

Product is a gas.

Inhalation:

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO THIS PRODUCT. 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.

5. FIRE-FIGHTING MEASURES

Fire and Explosion Hazards:

Nonflammable. This product contains concentrations of carbon monoxide (up to 6%) below the LEL of 12.5% for carbon monoxide in air. This gas mixture contains sufficient oxygen to support combustion. Cylinder may vent rapidly or rupture violently from pressure when involved in a fire situation.

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Extinguishing Media:

None required. Use media appropriate for surrounding materials.

Fire Fighting Instructions:

If possible, stop the flow of gas supply. Use water spray to cool adjacent cylinders and areas well after flames are extinguished. Firefighters should wear respiratory protection (SCBA) and full turnout or Bunker gear.

6. ACCIDENTAL RELEASE MEASURES

Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with inert gas prior to attempting repairs. If leak is in container or valve, contact the appropriate emergency telephone number listed in section 1 or calls your closest Maine Oxy / SpecAir location.

7. HANDLING AND STORAGE

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 the 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.

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°F (52°C). Cylinders should be 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.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Use local exhaust to prevent accumulation above the exposure limit. Use general mechanical ventilation in accordance with electrical codes.

Eye/Face Protection:

Safety goggles or glasses as appropriate for the job.

Skin Protection:

Protective gloves made of suitable material (i.e. butyl rubber) appropriate for the job.

Respiratory Protection:

Positive pressure air line with full-face mask and escape bottle or self-contained breathing apparatus should be available for emergency use.

Other/General Protection:

Safety shoes

9. PHYSICAL AND CHEMICAL PROPERTIES

PARAMETER:	VALUE:
Physical state	: Gas
Evaporation point	: N/A
pH	: N/A
Odor and appearance	: Colorless, odorless gas

10. STABILITY AND REACTIVITY

Stability:

Stable

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Incompatible Materials:

None known.

Hazardous Decomposition Products:

None known

Hazardous Polymerization:

Will not occur.

11. TOXICOLOGICAL INFORMATION

Inhalation:

The 4 hour LC50 for carbon monoxide is 1807 ppm (rat).

Skin and Eye:

Does not cause skin or eye irritation.

Other:

Mice exposed to concentrations of carbon monoxide at 65 ppm and higher demonstrated dose-dependent effects on the fetus (i.e.: increased mortality and decreased weight) with no signs of maternal toxicity. Offspring of rats exposed at 150 ppm carbon monoxide had minor reductions in birth weight and persistent memory deficits which became more pronounced in adulthood. Fetal carboxyhemoglobin levels are generally 10 – 15% higher than maternal levels. Overexposure to carbon monoxide may also decrease the likelihood of successful pregnancy. In rats treated with carbon monoxide, the rate of successful pregnancy in the control group was 100% whereas the rate of successful pregnancy in animals treated with 30 and 90 ppm carbon monoxide was 69% and 38% respectively.

12. ECOLOGICAL INFORMATION

Product does not contain Class I or Class II ozone depleting substances. Not highly toxic. Will not bioconcentrate.

13. DISPOSAL INFORMATION

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 Maine Oxy / SpecAir for proper disposal. Non-refillable containers should be vented in a well-ventilated area then disposed of in accordance with local regulations, or returned to Maine Oxy / SpecAir.

14. TRANSPORT INFORMATION

	United States DOT	Canada TDG
Proper Shipping Name:	Compressed Gas N.O.S. (Carbon Monoxide, Nitrogen) (Carbon Monoxide, Air)	Compressed Gas N.O.S.
Hazard Class:	2.2	2.2
Identification Number:	UN1956	UN1956
Shipping Label:	Non-Flammable Gas	Non-Flammable Gas

15. REGULATORY INFORMATION

SARA Title III Notification and Information:

SARA Title III – Hazard Classes:

Acute Health hazard Sudden Release of Pressure Hazard

SARA Title II – Section 313 Supplier Notification:

This product does not contain toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and 40 CFR 372.

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16. OTHER INFORMATION

This MSDS has been prepared in accordance with the Chemicals (Hazard Information and Packaging for Supply (Amendment) Regulation 1996. The information is based on the best knowledge of SpecAir Specialty Gases and its advisors and is given in good faith, but we cannot guarantee its accuracy, reliability or completeness and therefore disclaim any liability for loss or damage arising out of use of this data. Since conditions of use are outside the control of the Company and its advisors we disclaim any liability for loss or damage when the product is used for other purposes than it is intended.

