



Material Safety Data Sheet

1. Product and Company Identification

Product name : **Carbon Monoxide**

Chemical formula : CO

Synonyms : Carbon Oxide; Carbon Oxide (CO); Carbonic Oxide; Flue Gas; UN 1016

Company : Specialty Gases of America, Inc
6055 Brent Dr.
Toledo, OH 43611

Telephone : 419-729-7732

Emergency : 800-424-9300

2. Composition/Information on Ingredients

Components	CAS Number	% Volume
Carbon Monoxide	630-08-0	100%

3. Hazards Identification

Emergency Overview

Flammable gas. May cause flash fire. Flash back hazard.
Harmful if inhaled, blood damage, difficulty breathing.

Potential Health Effects

Inhalation : Changes in body temperature, changes in blood pressure, nausea, vomiting, chest pain, difficulty breathing, irregular heartbeat, headache, drowsiness, dizziness, disorientation, hallucination, pain in extremities, tremors, loss of coordination, hearing loss, visual disturbances, eye damage, suffocation, blood disorders, convulsion, coma. May cause nausea, vomiting, loss of appetite, headache, dizziness, visual disturbances, blood disorders, heart disorders, heart damage, nerve damage, reproductive effects, birth defects, brain damage in long term exposure.

Eye contact : Frostbite, blurred vision.

Skin contact : Blisters, frostbite.

Ingestion : Ingestion of a gas is unlikely.

Chronic Health Hazard : Not applicable.

4. First Aid Measures

General advice : None.

Eye contact : Contact with liquid: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

Skin contact : If frostbite or freezing occur, 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 blanket. Get immediate medical

- attention.
- Ingestion : If a large amount is swallowed, get medical attention.
- Inhalation : If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.
- Note to physicians : For inhalation, consider oxygen.

5. Fire-Fighting Measures

- Suitable extinguishing media : Carbon dioxide, regular dry chemical.
Large fires: Use regular foam or flood with fine water spray.
- Specific hazards : Severe fire hazard. Vapor/air mixtures are explosive. Containers may rupture or explode if exposed to sufficient heat.
- Fire fighting : Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck: Let burn unless leak can be stopped immediately. For smaller tanks or cylinders, extinguish and isolate from other flammables. Evacuation radius: 800 meters (1/2 mile). Do not attempt to extinguish fire unless flow of material can be stopped first. Flood with fine water spray. Cool containers with water. Apply water from a protected location or from a safe distance. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.
- Protective equipment and Precautions for firefighters : Wear full protective fire fighting gear including self-contained breathing apparatus (SCBA) for protection against possible exposure.

6. Accidental Release Measures

- Water release : Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). Keep out of water supplies and sewers.
- Occupational spill/release : Avoid heat, flames, sparks and other sources of ignition. Stop leak if possible without personal risk. Reduce vapors with water spray. Keep unnecessary people away. Isolate hazard area and deny entry. Remove sources of ignition.
- Additional advice : None.

7. Handling and Storage

Handling

Secure cylinder when using to protect from falling. Use suitable hand truck to move cylinders.

Storage

Store in accordance with all current regulations and standards. Store in a cool, dry place. Store in a well-ventilated area. Avoid direct sunlight. Avoid heat, sparks and other sources of ignition. Subject to storage regulation: U.S. OSHA 29 CFR 1910.101. Keep separated from incompatible substances.

8. Exposure Controls / Personal Protection

Exposure limits

- ACGIH : 25 ppm TWA
- OSHA (final) : 50 ppm TWA; 55 mg/m³ TWA
- OSHA (vacated) : 35 ppm TWA; 40 mg/m³ TWA

NIOSH : 200 ppm Ceiling; 229 mg/m³ Ceiling
: 35 ppm TWA; 40 mg/m³ TWA
: 200 ppm Ceiling; 229 mg/m³ Ceiling

IDLH

1200 ppm

Engineering measures/Ventilation

Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

Personal protective equipment

Respiratory protection : The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.
350 ppm – Any supplied-air respirator.
875 ppm – Any supplied-air respirator operated in a continuous-flow mode.
1200 ppm – Any air-purifying full-face respirator (gas mask) with a chin-style, front-mounted or back-mounted canister providing protection against the compound of concern.
End of service life indicator required (ESLI).
Any self-contained breathing apparatus with a full facepiece.
Any supplied-air respirator with a full facepiece.
Emergency or planned entry into unknown concentrations or IDLH conditions – Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.
Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.
Escape – Any air-purifying full-face respirator (gas mask) with a chin-style, front-mounted or back-mounted canister providing protection against the compound of concern.
End of service life indicator required (ESLI).
Any appropriate escape-type, self-contained breathing apparatus.

Hand protection : Wear insulated gloves.

Eye protection : For the gas: Eye protection not required, but recommended. For the liquid: Wear splash resistant safety goggles. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Skin and body protection : For the gas: Protective clothing is not required. For the liquid: Wear appropriate protective, cold insulating clothing.

9. Physical and Chemical Properties

Form : Gas.
Color : Colorless.
Odor : Odorless.
Taste : Tasteless.
Molecular weight : 28.01
Vapor pressure : 760 mmHg @ -191°C
Vapor density : 0.968 (air = 1)
Specific gravity : Not applicable.
Boiling point : -314°F (-191.5°C)
Melting point : -337°F (-205°C)
Water solubility : 2.3% @ 20°C

Solvent solubility : Soluble: alcohol, benzene, acetic acid, ethyl acetate, chloroform, cuprous chloride solutions

10. Stability and Reactivity

Stability : Stable at normal temperatures and conditions.
Conditions to avoid : Avoid heat, flames, sparks and other sources of ignition. Minimize contact with material. Avoid inhalation of material or combustion by-products. Keep out of water supplies and sewers.
Materials to avoid : Combustible materials, oxidizing materials, halogens, metal oxides, metals, lithium.
Hazardous decomposition products : Thermal decomposition products: oxides of carbon.

11. Toxicological Information

The components of this material have been reviewed in various sources and the following selected endpoints are published:

CARBON : Inhalation LC50 Rat: 1807 ppm/4H
MONOXIDE (630-08-0)

Acute Toxicity Level

CARBON : Toxic: inhalation
MONOXIDE (630-08-0)

Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, NTP, OSHA or DFG.

Target Organs

CARBON : Blood
MONOXIDE (630-08-0)

Medical Conditions Aggravated by Exposure

Blood system disorders, heart or cardiovascular disorders, hormonal disorders, respiratory disorders.

Mutagenic

Limited mutagenic data available, however carbon monoxide is generally not considered to be mutagenic.

Additional Data

Alcohol may enhance the toxic effects. May cross the placenta. Smoking may enhance the toxic effects.

12. Ecological Information

No LOLI ecotoxicity data are available for this product's components.

13. Disposal Considerations

Waste from residues / unused products : Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.
Contaminated packaging : Return cylinder to supplier.

14. Transport Information

DOT (US only)

Proper shipping name : Carbon Monoxide, Compressed
Class : 2.3
UN/ID No. : UN1016
Labeling : 2,3; 2.1
Additional shipping description : Toxic-Inhalation Hazard Zone D

15. Regulatory Information

U.S. Federal Regulations

None of this product's components are listed under SARA Section 302/304 (40 CFR 355 Appendix A), SARA Section 311/312 (40 CFR 370.21), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

SARA 311/312

Acute: Yes
Chronic: Yes
Fire: Yes
Reactive: No
Pressure: Yes

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
CARBON MONOXIDE	630-08-0	Yes	Yes	Yes	Yes	Yes	Yes

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enhancement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause reproductive/developmental effects.

16. Other Information

Prepared by : Specialty Gases of America, Inc.
For additional information, please visit our website at www.americangasgroup.com.