

Chemical Safety Data Sheet

1. IDENTIFICATION

Product Name: carbon monoxide

Other Name: carbon oxide

Chemical formula: CO

Recommended use of the chemical and restrictions on use: General Industrial

Supplier's details:

LINGGAS(TIANJIN),LIMITED

Hexiwu Town, Wuqing District, Tianjin 301714, P.R. China

Tel: 022-29437740; Fax: 022-29437745; Email: info@linggas.com

Emergency phone number: 0532-3889090; 0532-3889191; 022-29437747

2. HAZARDS IDENTIFICATION

Emergency Overview:

Toxic by inhalation.

High pressure gas.

Extremely flammable, May form explosive mixtures in air.

GHS Label elements, including precautionary statements:



Potential Health Effects

Inhalation: May be fatal if inhaled.

Ingestion: ingestion is not considered a potential route of exposure.

Exposure Guidelines

Primary routes of entry: Inhalation

Target organs: Respiratory system, cardiovascular system, central nervous system and blood.

Aggravated Medical Condition

Pre-existing respiratory conditions may be aggravated by over-exposure to Carbon Monoxide. Carbon Monoxide can aggravate some diseases of the cardiovascular system such as coronary disease and angina pectoris. Asthma.

Environmental Effects

Dangerous for the environment.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components Concentration(Volume)	CAS No.
CO	75-73-0 99.99%

4. FIRST AID MEASURES

General advice:

Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

Eye contact:

In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Skin contact:

Wash with water and soap as a precaution.

Ingestion:

Ingestion is not considered a potential route of exposure.

Inhalation:

In case of shortness of breath, give oxygen. Move to fresh air. Consult a doctor. If breathing has stopped or is labored, give assisted respirations. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately.

Notes to physician treatment:

Hyperbaric oxygen is the most efficient treatment of carbon monoxide and dramatically reduces the biological half-life of carboxyhemoglobin. Although less effective, 100% oxygen by mask is useful if hyperbaric facilities are not available. Stimulant drugs are not indicated.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media:

All known extinguishing media can be used.

Specific hazards:

If flames are accidentally extinguished, explosive re-ignition may occur; therefore, appropriate measures should be taken (e.g. total evacuation to protect persons from cylinder fragments and toxic fumes should a rupture occur). Upon exposure to intense heat or flame, cylinder will vent rapidly and or rupture violently. Combustion by-products may be toxic. Move away from container and cool with water from a protected position. Keep adjacent cylinders cool by spraying with large amounts of water until the fire burns itself out. If possible, shut off the source of gas and allow the fire to burn itself out. Do not extinguish a leaking gas flame unless

absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire. Do not allow run-off from fire fighting to enter drains or water courses. Extinguish fire only if gas flow can be stopped.

Special protective equipment for fire-fighters:

Use self-contained breathing apparatus and chemically protective clothing.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:

Evacuate personnel to safe areas. Remove all sources of ignition. Approach suspected leak areas with caution. Never enter a confined space or other area where the flammable gas concentration is greater than 10% of its lower flammable limit. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Ventilate the area.

Environmental precautions:

Should not be released into the environment. Prevent further leakage or spillage if safe to do so. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

Methods for cleaning up:

Ventilate the area. Approach suspected leak areas with caution.

Additional advice:

If possible, stop flow of product. Increase ventilation to the release area and monitor concentrations. If leak is from cylinder or cylinder valve, call the Linggas emergency telephone number. If the leak is in the user's system, close the cylinder valve, safely vent the pressure, and purge with an inert gas before attempting repairs.

7. HANDLING AND STORAGE

Handling:

Protect cylinders from physical damage; do not drag, roll, slide or drop. Do not allow storage area temperature to exceed 50°C (122°F). Only experienced and properly instructed persons should handle compressed gases. Before using the product, determine its identity by reading the label. Know and understand the properties and hazards of the product before use. When doubt exists as to the correct handling procedure for a particular gas, contact the supplier. Do not remove or deface labels provided by the supplier for the identification of the cylinder contents. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use. Use an adjustable strap wrench to remove over-tight or rusted caps. Before connecting the container, check the complete gas system for suitability, particularly for pressure rating and materials.

Storage:

Containers should be stored in a purpose build compound which should be well ventilated, preferably in the open air. Full containers should be stored so that oldest stock is used first. Observe all regulations and local requirements regarding storage of containers. Stored containers should be periodically checked for general condition and leakage. Local codes may have special requirements for toxic gas storage. Protect containers stored in the open against rusting and extremes of weather. Containers should not be stored in conditions likely to encourage corrosion. Containers should be stored in the vertical position and properly secured to prevent toppling. The container valves should be tightly closed and where appropriate valve outlets should be capped or plugged. Container valve guards or caps should be in place.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION
Exposure limit(s):

Time Weighted Average (TWA): ACGIH	25ppm	
Recommended exposure limit (REL): NIOSH	35ppm	40mg/m ³
Ceiling Limit Value and Time Period (if specified): NIOSH	200ppm	229mg/m ³
PEL: OSHA Z1	50ppm	55 mg/m ³

Engineering measures:

Handle product only in closed system or provide appropriate exhaust ventilation at machinery. Provide natural or explosion-proof ventilation adequate to ensure concentrations are kept below exposure limits.

Personal protective equipment:

Respiratory protection: Keep self contained breathing apparatus readily available for emergency use. Use self-contained breathing apparatus or positive pressure air line with mask and escape pack in areas where concentration is unknown or above the exposure limits. Users of breathing apparatus must be trained.

Hand protection: Sturdy work gloves are recommended for handling cylinders. The breakthrough time of the selected glove(s) must be greater than the intended use period.

Eye protection: Safety glasses recommended when handling cylinders.

Skin and body protection: Flame retardant antistatic protective clothing. Safety shoes are recommended when handling cylinders. Wear as appropriate: Flame retardant protective clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form:	Compressed gas.
Color:	Colorless gas

Odor:	No odor warning properties.
Molecular Weight:	28.01 g/mol
Relative vapor density:	0.967 (air = 1)
Relative density:	0.79 (water = 1)
Density:	0.075 lb/ft ³ (0.0012 g/cm ³) at 70 °F (21 °C) Note: (as vapor)
Specific Volume:	13.80 ft ³ /lb (0.8615 m ³ /kg) at 70 °F (21 °C)
Boiling point/range:	-313 °F (-191.5 °C)
Critical temperature:	-220 °F (-140.2 °C)
Melting point/range:	-337 °F (-205.1 °C)
Autoignition temperature:	1,148 °F (620 °C)
Upper flammability limit:	74 %(V)
Lower flammability limit:	12.5 %(V)
Water solubility:	0.030 g/l

10. STABILITY AND REACTIVITY

Stability: Stable under normal conditions. Stable.

Conditions to avoid: Heat, flames and sparks.

Materials to avoid: Iron; Natural rubber; Neoprene; Nickel; Oxygen; Oxidizing agents.

11. TOXICOLOGICAL INFORMATION

Acute Health Hazard:

Ingestion: No data is available on the product itself.

Inhalation: LC50 (1h): 3760ppm. Species: Rat.

Skin: No data is available on the product itself.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Aquatic toxicity: Carbon Monoxide is known to be harmful to aquatic life in very low concentrations.

Toxicity to other organisms: No data available.

Persistence and degradability

Mobility: Carbon Monoxide will not be mobile in the environment.

Bioaccumulation: Does not bioaccumulate.

Further information:

This product has no known eco-toxicological effects.

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products: In accordance with local and national regulations. Contact supplier if guidance is required. Return unused product in original cylinder to supplier. Must not be discharged to atmosphere.

Contaminated packaging: Return cylinder to supplier.

14. TRANSPORT INFORMATION

UN No: 1016

Proper shipping name: Carbon monoxide

Class: 2.1

Risk label: inflammable gas



Packing: gas cylinder

Further Information: Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency.

15. REGULATORY INFORMATION

The following laws, regulations and standards have made the clear legal provisions to the safe use, storage, transportation, loading and unloading, classification and marking of chemicals.

Production safety law of the People's Republic of China;

Occupational Disease Prevention and Treatment of the People's Republic of China;

Environmental Protection Law of the People's Republic of China;

Hazardous Chemicals Control Ordinance;

The list of dangerous chemicals;

The general principles of the classification of dangerous chemicals and the risk of the public (GB 13690-2009)

16. OTHER INFORMATION

Reference:

UN RTDG

Globally Harmonized System of Classification and Labeling of Chemicals

ICSC

Apply date: 2013-2-25

Revision Date: 2015-12-20



Edit department: Safety and Environmental Protection Department

Data audit unit: LINGGAS TIANJIN LIMITED.

Edit Description: Modify when policies change or every 3 years.