



**MATHESON**

ask...The Gas Professionals™

## Safety Data Sheet

Material Name: CARBON MONOXIDE

SDS ID: MAT04290

### \*\*\*Section 1 - PRODUCT AND COMPANY IDENTIFICATION\*\*\*

**Product Identifier:** CARBON MONOXIDE

#### Manufacturer Information

MATHESON TRI-GAS, INC.  
150 Allen Road, Suite 302  
Basking Ridge, NJ 07920

General Information: 1-800-416-2505  
Emergency #: 1-800-424-9300 (CHEMTREC)  
Outside the US: 703-527-3887 (Call collect)

#### Chemical Family

inorganic, gas

#### Synonyms

MTG MSDS 18; CARBON OXIDE; CARBONIC OXIDE; CARBON OXIDE (CO); FLUE GAS; UN 1016; CO;  
RTECS: FG3500000

#### Product Use

industrial

#### Usage Restrictions

None known.

### \*\*\*Section 2 - HAZARDS IDENTIFICATION\*\*\*

#### EMERGENCY OVERVIEW

**Color:** colorless

**Physical Form:** gas

**Odor:** odorless

**Health Hazards:** harmful if inhaled, blood damage, difficulty breathing

**Physical Hazards:** Flammable gas. May cause flash fire.

#### POTENTIAL HEALTH EFFECTS

##### Inhalation

**Short Term:** changes in body temperature, changes in blood pressure, nausea, vomiting, chest pain, difficulty breathing, irregular heartbeat, headache, drowsiness, fatigue, dizziness, disorientation, hallucinations, pain in extremities, tremors, loss of coordination, hearing loss, visual disturbances, eye damage, bluish skin color, suffocation, blood disorders, convulsions, coma

**Long Term:** nausea, vomiting, loss of appetite, headache, dizziness, visual disturbances, blood disorders, heart disorders, heart damage, nerve damage, reproductive effects, birth defects, brain damage

##### Skin

**Short Term:** blisters, frostbite

**Long Term:** no information is available

##### Eye

**Short Term:** frostbite, blurred vision

**Long Term:** no information is available

##### Ingestion

**Short Term:** ingestion of a gas is unlikely

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Long Term: ingestion of a gas is unlikely

## \*\*\*Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS\*\*\*

CAS	Component	Percent
630-08-0	CARBON MONOXIDE	100

## \*\*\*Section 4 - FIRST AID MEASURES\*\*\*

### 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.

### Skin

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 blankets. Get immediate medical attention.

### Eyes

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

### Ingestion

If a large amount is swallowed, get medical attention.

### Note to Physicians

For inhalation, consider oxygen.

## \*\*\*Section 5 - FIRE FIGHTING MEASURES\*\*\*

See Section 9 for Flammability Properties

NFPA Ratings: Health: 3 Fire: 4 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

### Flammable Properties

Severe fire hazard. Vapor/air mixtures are explosive. Containers may rupture or explode if exposed to heat.

### Extinguishing Media

carbon dioxide, regular dry chemical

Large fires: Use regular foam or flood with fine water spray.

### Unsuitable Extinguishing Media

None known.

### Protective Equipment and Precautions for Firefighters

Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

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## Fire Fighting Measures

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: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. 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: 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.

## \* \* \*Section 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.

## \* \* \*Section 7 - HANDLING AND STORAGE\* \* \*

### Handling Procedures

Wash thoroughly after handling.

### Storage Procedures

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, flames, sparks and other sources of ignition. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Keep separated from incompatible substances.

## \* \* \*Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION\* \* \*

### Component Analysis

#### CARBON MONOXIDE (630-08-0)

ACGIH:	25 ppm TWA
OSHA (final):	50 ppm TWA; 55 mg/m <sup>3</sup> TWA
OSHA (vacated):	35 ppm TWA; 40 mg/m <sup>3</sup> TWA 200 ppm Ceiling; 229 mg/m <sup>3</sup> Ceiling
NIOSH:	35 ppm TWA; 40 mg/m <sup>3</sup> TWA 200 ppm Ceiling; 229 mg/m <sup>3</sup> Ceiling

### Component Biological Limit Values

#### CARBON MONOXIDE (630-08-0)

ACGIH:	3.5 % of hemoglobin Medium: blood Time: end of shift Parameter: Carboxyhemoglobin (background, nonspecific); 20 ppm Medium: end-exhaled air Time: end of shift Parameter: Carbon monoxide (background, nonspecific)
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### IDLH

1200 ppm

### Ventilation

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

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## PERSONAL PROTECTIVE EQUIPMENT

### Eyes/Face

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.

### Protective Clothing

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

### Glove Recommendations

Wear insulated gloves.

### 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-facepiece 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-facepiece 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.

## \*\*\*Section 9 - PHYSICAL AND CHEMICAL PROPERTIES\*\*\*

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<b>Physical State:</b> Gas	<b>Appearance:</b> Not available
<b>Color:</b> colorless	<b>Physical Form:</b> gas
<b>Odor:</b> odorless	<b>Odor Threshold:</b> Not available
<b>Taste:</b> tasteless	<b>pH:</b> Not available
<b>Melting/Freezing Point:</b> -205 °C	<b>Boiling Point:</b> -191.5 °C
<b>Decomposition:</b> Not available	<b>Evaporation Rate:</b> Not available
<b>LEL:</b> >=12.5 % by volume	<b>UEL:</b> 74 % by volume
<b>Vapor Pressure:</b> 760 mmHg @ -191 °C	<b>Vapor Density (air = 1):</b> 0.968
<b>Density:</b> 1.250 g/L @ 0 °C	<b>Water Solubility:</b> 2.3 % @ 20 °C
<b>Log KOW:</b> Not available	<b>Auto Ignition:</b> 700 °C
<b>Viscosity:</b> 0.01657 cP @0 °C	<b>Molecular Weight:</b> 28.01
<b>Molecular Formula:</b> C-O	

## Solvent Solubility

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

## \* \* \*Section 10 - STABILITY AND REACTIVITY\* \* \*

### Chemical Stability

Stable at normal temperatures and pressure.

### 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

oxidizing materials, halogens, metal oxides, metals, combustible materials, lithium

### Decomposition Products

oxides of carbon

### Possibility of Hazardous Reactions

Will not polymerize.

## \* \* \*Section 11 - TOXICOLOGICAL INFORMATION\* \* \*

### Component Analysis - LD50/LC50

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

#### **CARBON MONOXIDE (630-08-0)**

Inhalation LC50 Rat 1807 ppm 4 h

### Acute Toxicity Level

#### **CARBON MONOXIDE (630-08-0)**

**Toxic:** inhalation

### Component Carcinogenicity

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

### Irritation

No animal testing data available for skin or eyes.

### Target Organs

#### **CARBON MONOXIDE (630-08-0)**

blood

### Medical Conditions Aggravated by Exposure

blood system disorders, heart or cardiovascular disorders, hormonal disorders, respiratory disorders

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## Mutagenic

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

## Reproductive Effects

Available data characterizes this substance as a reproductive hazard.

## Additional Data

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

### \*\*\*Section 12 - ECOLOGICAL INFORMATION\*\*\*

## Component Analysis - Aquatic Toxicity

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

### \*\*\*Section 13 - DISPOSAL CONSIDERATIONS\*\*\*

## Disposal Methods

Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.

## Component Waste Numbers

The U.S. EPA has not published waste numbers for this product's components.

### \*\*\*Section 14 - TRANSPORT INFORMATION\*\*\*

## US DOT Information

**Shipping Name:** Carbon monoxide, compressed

**UN/NA #:** UN1016 **Hazard Class:** 2.3

**Required Label(s):** 2.3, 2.1

**Additional Info.:** Toxic-Inhalation Hazard Zone D

## TDG Information

**Shipping Name:** Carbon monoxide, compressed

**UN #:** UN1016 **Hazard Class:** 2.3

**Required Label(s):** 2.3, (2.1)

### \*\*\*Section 15 - REGULATORY INFORMATION\*\*\*

## U.S. Federal Regulations

None of this products components are listed under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.

## SARA 311/312

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

## 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
CARBON MONOXIDE	630-08-0	Yes	Yes	Yes	Yes	Yes

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

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

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## Canada WHMIS

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List

**CARBON MONOXIDE (630-08-0)**

0.1 %

## Component Analysis - Inventory

Component	CAS	US	CA	EU	AU	PH	JP	KR	CN	NZ
CARBON MONOXIDE	630-08-0	Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	Yes

## \* \* \*Section 16 - OTHER INFORMATION\* \* \*

### Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States

### Other Information

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