

Safety Data Sheet

Part Number 327053

Section 1. Substance Identity and Company Contact Information

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|---------------------|---|-------------------------------|-------------------------|
| Product Name | Carbon Monoxide in Air | Product Part Number(s) | 01-RCOGAS and 01-RCOKIT |
| Trade Name | Carbon Monoxide in Air | Unit Size | 01-RCOKIT |
| Company | OI Analytical, P.O. Box 9010, College Station, TX 77842-9010 Phone: (979) 690-1711, Fax: (979) 690-0440 | | |

Emergency No. 1-800-424-9300 (Chemtrec). Use only in the event of chemical emergencies involving spills, leaks, fire, exposure, or accidents involving chemicals.

Section 2. Hazards Identification

Pictogram(s)



Signal Word

Danger

Hazard Statement(s)

Contains gas under pressure; may explode if heated; may cause genetic defects.

Precautionary Statement(s)

Do not breathe dust/fume/gas/mist/vapors/spray. Wear protective gloves/protective clothing/eye protection/face protection. Do not expose to temperatures exceeding 50 °C/122 °F.

Target Organ(s)

Cardiovascular system, lungs, blood, central nervous system

Potential Health Effects

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| Eye: | Contact with rapidly expanding gas near the point of release may cause frostbite. |
| Skin: | 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: | None known. Ingestion is unlikely as product is a gas at room temperature. |
| Inhalation: | 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 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.

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| Chronic Effects/Carcinogenicity | IARC: | No data available |
| | NTP: | No data available |
| | OSHA: | No data available |
| Teratology (Birth Defects) Information | No data available | |
| Reproductive Information | No data available | |
| NFPA Ratings | Health: | 0 |
| | Flammability: | 0 |
| | Reactivity: | 0 |
| | Special Notice Key: | No data available |
| | HMIS Rating | Health: |
| | Flammability: | 0 |
| | Reactivity: | 3 |
| | Protective Equipment: | Wear appropriate PPE |

Section 3. Chemical Composition and Data on Components

| Ingredient | CAS No. | Percent | Hazard Data | |
|-----------------|-------------------|------------|-------------------|-------------------|
| | | | ACGIH TLV | OSHA PEL |
| Carbon monoxide | 630-08-0 | 0.0001-6.0 | No data available | No data available |
| Air | No data available | Balance | No data available | No data available |

Section 4. First Aid Measures

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| General Advice | No data available |
| If Inhaled | 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. |
| In Case of Skin Contact | None required for gas. For frostbite, immerse skin in lukewarm water. DO NOT USE HOT WATER. Obtain immediate medical attention. |
| In Case of Eye Contact | None required for gas. If frostbite is suspected, flush eyes with cool water for 15 minutes and obtain immediate medical attention. |
| If Swallowed | Not anticipated, product is a gas at normal conditions. |
| Indication of Any Immediate Medical Attention and Special Treatment Needed | Provide general supportive measures and treat symptomatically. |

Section 5. Fire-fighting Measures

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| General Information | Nonflammable This product contains concentrations of carbon monoxide (up to 6.0%) 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. |
| Suitable Extinguishing Media | None Required. Use media appropriate for surrounding materials. |
| Special Hazards Arising from the Substance or mixture | None known |
| Advice for Firefighters | 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. |
| Flash Point | No data available |
| Autoignition Temperature | None known |
| Further Information | No data available |

Section 6. Accidental Release Measures

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| Personal Precautions, Protective Equipment, and Emergency Procedures | Evacuate all personnel from affected area. Use appropriate protective equipment. |
| Environmental Precautions | No data available |
| Methods and Materials for Containment and Cleaning | 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. |
| Reference to Other Sections | For disposal, see Section 13. |

Section 7. Handling and Storage

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| Precautions for Safe Handling | 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. |
| Conditions for Safe Storage, Including any Incompatibilities | 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. |
| Specific End Use(s) | No data available |

Section 8. Exposure Controls and Personal Protection

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| Components with Workplace Control Parameters | No data available |
| Appropriate 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 spectacles with unperforated sideshields |
| Skin Protection | Gloves |
| Body Protection | For emergency release, use a positive pressure NIOSH approved air-supplying respirator system (SCBA or airline/escape bottle) using at a minimum Grade D air. |
| Respiratory Protection | In case of insufficient ventilation, wear suitable respiratory equipment. Thermal hazards not available. General hygiene considerations. Avoid contact with eyes. Avoid contact with skin. Wash hands before breaks |
| Control of Environmental Exposure | No data available |

Section 9. Physical and Chemical Properties

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|---|-----------------------------------|
| Appearance | Form: Clear gas; Color: Colorless |
| Odor | Odorless |
| Odor Threshold | No data available |
| pH | No data available |
| Melting Point/Freezing Point | No data available |
| Initial Boiling Point and Boiling Range | No data available |
| Flash Point | No data available |
| Evaporation Rate | No data available |
| Flammability (solid, gas) | No data available |
| Upper/Lower Flammability or Explosive Limits | No data available |
| Vapor Pressure | No data available |
| Vapor Density | No data available |
| Relative Density | No data available |
| Water Solubility | Very slight |
| Partition Coefficient : n-octanol/water | No data available |
| Auto-ignition Temperature | No data available |
| Decomposition Temperature | No data available |
| Viscosity | No data available |
| Explosive Properties | No data available |
| Oxidizing Properties | No data available |
| Other Safety Information | No data available |

Section 10. Stability and Reactivity

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| Reactivity | No data available |
| Chemical Stability | Stable |
| Possibility of Hazardous Reactions | No data available |
| Conditions to Avoid | None known |
| Incompatible Materials | Strong oxidizers, bromine trifluoride, chlorine trifluoride, lithium |

Section 11. Toxicological Information

Routes of Exposure

On the skin: Does not cause skin or eye irritation.

On the eye: Does not cause skin or eye irritation.

Inhalation: The 4 hour LC 50 for carbon monoxide is 1807 ppm (rat)

Ingestion: No data available

Respiratory or Skin Sensitization

Irritating to the skin

Signs and Symptoms of Overexposure

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. Off spring of rats exposed to 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.

Genetic changes were observed in mammalian cell assay systems at exposures of 1500 to 2500 ppm carbon monoxide for 10 minutes and degenerative changes to the brain were noted in rats chronically exposed to 26 ppm (30 mg/m³).

Toxicity Data

Oral Rat No data available

Section 12. Ecological Information

General Notes

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

Section 13. Disposal Considerations

Product

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.

Contaminated Packaging

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.

Section 14. Transport Information

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| DOT Shipping Name | Compressed Gas, N.O.S., (Carbon Monoxide, Air), 2.2 |
| UN Proper Shipping Name | Compressed Gas, N.O.S., (Carbon Monoxide, Air), 2.2 |
| DOT Hazard Class | No data available |
| Packing Group | No information available |
| UN Number | UN1956 |
| Hazardous Ingredients | No data available |
| DOT Label | No data available |
| DOT Placard | No data available |

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|---------------------------|--------------------------|
| IMDG Shipping Name | No information available |
| UN Number | UN1956 |
| Class | No information available |
| Packing Group | No information available |

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|--------------------------------|--------------------------|
| IATA Shipping Name | No information available |
| Technical Shipping Name | No information available |
| IATA Hazard Class | No information available |
| UN Number | UN1956 |
| Hazardous Ingredients | No information available |
| IATA Label | No information available |
| IATA Placard | No data available |

Section 15. Regulatory Information

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| OSHA Status | No data available |
| TSCA Status | All ingredients for this product are listed on the TSCA inventory. |
| CERCLA Reportable Quantity | No data available |
| SARA Title III | SARA Title III chemicals: 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. |
| RCRA Status | No data available |
| California Proposition 65 | This product contains ingredient(s) (carbon monoxide) known to the State of California to cause birth defects or other reproductive harm. |
| Chemical Weapons Convention | No data available |
| TSCA 12 (b) | No data available |
| SARA 311/312 | Acute: Yes Chronic: No Fire: No Pressure: Yes Reactivity: No |
| Australian Hazchem Code | No data available |
| Poison Schedule | No data available |
| WHMIS | This SDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by the CPR. |

Section 16. Other Information

Date Prepared: April 14, 2004

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For R&D use only. Not for drug, household, or other uses.

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