

Praxair Material Safety Data Sheet

1. Chemical Product and Company Identification

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| Product Name: Carbon Dioxide/Ethylene Mixture, Non-flammable | Trade Name: Carbon Dioxide/Ethylene Mixture, Non-flammable |
| Product Use: Not available. | |
| Chemical Name: Carbon Dioxide/Ethylene Mixture, Non-flammable | Synonym: Not applicable. |
| Chemical Formula: Not applicable. | Chemical Family: Acid anhydrides (Acid.) |
| Telephone: Emergencies: * 1-800-363-0042 | Supplier /Manufacture: Praxair Canada Inc. 1 City Centre Drive Suite 1200 Mississauga, ON L5B 1M2 Phone: 905-803-1600 Fax: 905-803-1682 |

**Call emergency numbers 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product. For routine information, contact your supplier or Praxair sales representative.*

2. Composition and Information on Ingredients

| INGREDIENTS | % (VOL) | CAS NUMBER | LD ₅₀ (Species & Routes) | LC ₅₀ (Rat, 4 hrs.) | TLV-TWA (ACGIH) |
|----------------|-----------|------------|--|-----------------------------------|----------------------|
| Ethylene | 1 - 9.9 | 74-85-1 | Not available. | Not available. | 0.001] { |
| Carbon dioxide | 90.1 - 99 | 124-38-9 | Not available. | Not available. | 5000 ppm |

3. Hazards Identification

Emergency Overview

CAUTION! High-pressure gas. Can cause rapid suffocation. Can increase heart rate. Can increase respiration. May cause dizziness and drowsiness. Self-contained breathing apparatus may be required by rescue workers.

ROUTES OF EXPOSURE: Inhalation.

EFFECTS OF A SINGLE (ACUTE) OVEREXPOSURE:

INHALATION: Asphyxiant. Effects are due to lack of oxygen. Moderate concentrations may cause headaches, drowsiness, dizziness, excitation, excess salivation, vomiting, and unconsciousness. Lack of oxygen can kill.

SKIN CONTACT: No evidence of adverse effects from available information.

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SKIN

ABSORPTION: No evidence of adverse effects from available information

SWALLOWING: Unlikely route of exposure. This product is a gas at normal temperature and pressure.

EYE CONTACT: Vapour may cause a stinging sensation.

EFFECTS OF REPEATED (CHRONIC) OVEREXPOSURE:

No evidence of adverse effects from available information.

OTHER EFFECTS OF OVEREXPOSURE:

Damage to retinal ganglion cells and central nervous system may occur.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

Repeated or prolonged exposure is not known to aggravate medical condition.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION:

One published study has reported an increased incidence of cardiac malformations in offspring of female rats exposed for a single 24 hour interval to 6% Carbon Dioxide. Although the study suffers from design and reporting flaws, the results must still be considered significant. There is no information available to confirm or refute the effects reported. The relevance of this information to humans is unknown.

CARCINOGENICITY:

Classified A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC [Ethylene].

4. First Aid Measures

INHALATION:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

SKIN CONTACT:

In case of contact, immediately flush skin with plenty of water.

SWALLOWING:

This product is a gas at normal temperature and pressure.

EYE CONTACT:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes.

NOTES TO PHYSICIAN:

There is no specific antidote. Treatment of over-exposure should be directed at the control of symptoms and the clinical condition.

5. Fire Fighting Measures

FLAMMABLE : No. **IF YES, UNDER WHAT CONDITIONS?** Not applicable.

FLASH POINT (test method) Not applicable.

AUTOIGNITION TEMPERATURE Not applicable.

FLAMMABLE LIMITS IN AIR, % by volume:

LOWER: Not available.

UPPER: Not available.

EXTINGUISHING MEDIA:

This mixture cannot catch fire. Use media appropriate for surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES:

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CAUTION! Evacuate all personnel to a safe distance. Immediately deluge containers with water spray from maximum distance until cool, then move containers away from fire area if without risk.

UNUSUAL FIRE AND EXPLOSION HAZARD:

Heat of fire can build pressure in cylinder and cause it to rupture. No part of cylinder should be subjected to a temperature higher than 52 C. Cylinders containing this mixture are equipped with a pressure relief device. (Exceptions may exist where authorized by TDG Regulations.)

HAZARDOUS COMBUSTION PRODUCTS:

These products are carbon oxides (CO, CO₂).

SENSITIVITY TO IMPACT:

Avoid impact against container.

SENSITIVITY TO STATIC DISCHARGE:

Not applicable.

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

CAUTION! Evacuate all personnel to a safe distance. Use self-contained breathing apparatus where needed. Shut off leak if without risk. Ventilate area of leak or move leaking container to well-ventilated area if without risk. Test area, especially confined areas, for sufficient oxygen content prior to permitting re-entry of personnel.

WASTE DISPOSAL METHOD:

Prevent waste from contaminating the surrounding environment. Keep personnel away. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, state, and local regulations. If necessary, call your local supplier for assistance.

7. Handling and Storage

PRECAUTIONS TO BE TAKEN IN STORAGE:

Store and use with adequate ventilation. Firmly secure cylinders upright to keep them from falling or being knocked over. Screw valve protection cap firmly in place by hand. Store only where temperature will not exceed 125°F (52°C). Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods.

PRECAUTIONS TO BE TAKEN IN HANDLING:

Protect cylinders from damage. Use a suitable hand truck to move cylinders; do not drag, roll, slide, or drop. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. Never insert an object (e.g., wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Open valve slowly. If valve is hard to open, discontinue use and contact your supplier. For other precautions, see section 16.

For additional information on storage and handling, refer to Compressed Gas Association (CGA) pamphlet P-1, *Safe Handling of Compressed Gases in Containers*, available from the CGA. Refer to section 16 for the address and phone number along with a list of other available publications.

OTHER HAZARDOUS CONDITIONS OF HANDLING, STORAGE, AND USE:

High pressure gas. Use piping and equipment adequately designed to withstand pressures to be encountered. **Gas can cause rapid suffocation due to oxygen deficiency.** Store and use with adequate ventilation. Close valve after each use; keep closed even when empty. **Prevent reverse flow.** Reverse flow into cylinder may cause rupture. Use a check valve or other protective device in any line or piping from the cylinder. **Never work on a pressurized system.** If there is a leak, close the cylinder valve. Blow the system down in an environmentally safe manner in compliance with all federal, provincial, and local laws, then repair the leak. **Never place a compressed gas cylinder where it may become part of an electrical circuit.**

8. Exposure Controls/Personal Protection

VENTILATION/ENGINEERING CONTROLS:

LOCAL EXHAUST: Preferred.

MECHANICAL (general): Acceptable.

SPECIAL: Not applicable.

OTHER: Not applicable.

PERSONAL PROTECTION:

RESPIRATORY PROTECTION: Use respirable fume respirator or air supplied respirator when working in confined space or where local exhaust or ventilation does not keep exposure below TLV. Select in accordance with the provincial regulations or guidelines. Selection should also be based on the current CSA standards Z94.4, "Selection, care and use of respirators". Respirators should be approved by NIOSH and MSHA.

SKIN PROTECTION: Insulated Neoprene.

EYE PROTECTION: Wear safety glasses when handling cylinders.

Select in accordance with the current CSA standard Z94.3, "Industrial Eye and Face Protection", and any provincial regulations, local bylaws or guidelines.

OTHER PROTECTIVE EQUIPMENT: Metatarsal shoes for cylinder handling. Protective clothing where needed. Cuffless trousers should be worn outside the shoes. Select in accordance with the current CSA standard Z195, "Protective Foot Wear", and any provincial regulations, local bylaws or guidelines.

9. Physical and Chemical Properties

| | | |
|---|---|---|
| PHYSICAL STATE: Gas. | FREEZING POINT: Not available. | pH: Not available. |
| BOILING POINT: Not available. | VAPOUR PRESSURE: 830 psig | MOLECULAR WEIGHT: Not applicable. |
| SPECIFIC GRAVITY: LIQUID (Water = 1) : Not available. | SOLUBILITY IN WATER: Slight. | |
| SPECIFIC GRAVITY: VAPOUR (air = 1) : 1.49 | EVAPORATION RATE (Butyl Acetate=1): >1 (Carbon dioxide) compared to (Butyl Acetate = 1) | COEFFICIENT OF WATER/OIL DISTRIBUTION: Not applicable. |
| VAPOUR DENSITY: Not available. | % VOLATILES BY VOLUME: 1 0 0 % (v / v) . (Carbon dioxide.) Weighted average: 68% (v/v) | ODOUR THRESHOLD: Not available. |

APPEARANCE & ODOUR: Colourless. Sweet odour at normal temperature and pressure.

10. Stability and Reactivity

| | |
|--|--|
| STABILITY: | The product is stable. |
| CONDITIONS OF CHEMICAL INSTABILITY: | None. |
| INCOMPATIBILITY (materials to avoid): | None currently known. |
| HAZARDOUS DECOMPOSITION PRODUCTS: | Thermal decomposition or burning may produce carbon monoxide/carbon dioxide. |
| HAZARDOUS POLYMERIZATION: | Will not occur. |
| CONDITIONS OF REACTIVITY: | None currently known. |

11. Toxicological Information

See section 3.

Carbon Dioxide Component: Carbon dioxide is an asphyxiant. It initially stimulates respiration and then causes respiratory depression. High concentrations result in narcosis. Symptoms in humans are as follows:

CO₂ CONCENTRATION

EFFECTS:

| | |
|---|----------------|
| Breathing rate increases slightly. | <u>1%</u> |
| Breathing rate increases to 50% above normal level. Prolonged exposure can cause headache, tiredness. | <u>2%</u> |
| Breathing increases to twice normal rate and become labored. Weak narcotic effect. Impaired hearing, headache, increased blood pressure and pulse rate. | <u>3%</u> |
| Breathing increases to approximately four times normal rate, symptoms of intoxication become evident, and slight choking may be felt. | <u>4-5%</u> |
| Characteristic sharp odor noticeable. Very labored breathing, headache, visual impairment, and ringing in the ears. Judgment may be impaired, followed within minutes by loss of consciousness. | <u>5-10%</u> |
| Unconsciousness occurs more rapidly above 10% level. Prolonged exposure to high concentrations may eventually result in death from asphyxiation. | <u>50-100%</u> |

12. Ecological Information

No adverse ecological effects expected. This product does not contain any Class I or Class II ozone-depleting chemicals. The components of this mixture are not listed as marine pollutants by TDG Regulations.

13. Disposal Considerations

WASTE DISPOSAL METHOD:

Do not attempt to dispose of residual or unused quantities. Return cylinder to supplier.

14. Transport Information

TDG/IMO SHIPPING NAME: COMPRESSED GAS, N.O.S. (Carbon Dioxide)

HAZARD CLASS: CLASS 2.2: Non-flammable, non-corrosive and non-toxic gas.

IDENTIFICATION #: 1956

PRODUCT REPORTABLE QUANTITY (PRQ):
Any accidental release in a quantity that could pose a danger to public safety or any sustained release of 10 minutes or more

SHIPPING LABEL(s): Non-flammable non-corrosive and non-toxic gas

PLACARD (when required): Non-flammable non-corrosive and non-toxic gas

SPECIAL SHIPPING INFORMATION:

Cylinders should be transported in a secure position, in a well-ventilated vehicle. Cylinders transported in an enclosed, non-ventilated compartment of a vehicle can present serious safety hazards.

15. Regulatory Information

The following selected regulatory requirements may apply to this product. Not all such requirements are identified. Users of this product are solely responsible for compliance with all applicable federal, provincial, and local regulations.

DSL (Canada) This product is on the DSL list

WHMIS (Canada) Class A: Compressed gas.

International Regulations

EINECS Not available.

DSCL (EEC) This product is not classified according to the EU regulations.

International Lists No products were found.

16. Other Information

MIXTURES:

When two or more gases, or liquefied gases are mixed, their hazardous properties may combine to create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an Industrial Hygienist, or other trained person when you make your safety evaluation of the end product. Remember, gases and liquids have properties which can cause serious injury or death.

HAZARD RATING SYSTEM:

HMIS RATINGS:

HEALTH 0

FLAMMABILITY 0

PHYSICAL HAZARD 2

*An Asterisk used in conjunction with HMIS health hazards ratings designates a carcinogenic or reproductive hazard.

STANDARD VALVE CONNECTIONS FOR U.S. AND CANADA:

THREADED: CGA-350

PIN-INDEXED YOKE: Not applicable.

ULTRA-HIGH-INTEGRITY CONNECTION: Not applicable.

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Use the proper CGA connections. **DO NOT USE ADAPTERS.** Additional limited-standard connections may apply. See CGA pamphlets V-1 and V-7 listed below.

Ask your supplier about free Praxair safety literature as referred to in this MSDS and on the label for this product. Further information about this product can be found in the following pamphlets published by the Compressed Gas Association, Inc. (CGA), 4221 Walney Road, 5th Floor, Chantilly, VA 20151-2923, Telephone (703) 788-2700, Fax (703) 961-1831, website: www.cganet.com.

AV-1 Safe Handling and Storage of Compressed Gas
P-1 Safe Handling of Compressed Gases in Containers
V-1 Compressed Gas Cylinder Valve Inlet and Outlet Connections
V-7 Standard Method of Determining Cylinder Valve Outlet Connections for Industrial Gas Mixtures
- - - Handbook of Compressed Gases, Fifth Edition

For more in-depth information for each component, refer to the pure product MSDS.

The information contained in this MSDS is generated from technical sources using the Chemmate Mixture MSDS system and the pure-product MSDS for each component. These mixtures are not tested as a whole for chemical, physical, or health effects.

PREPARATION INFORMATION:

DATE: October 15, 2013
DEPARTMENT: Safety and Environmental Services
TELEPHONE: 905-803-1600

The opinions expressed herein are those of qualified experts within Praxair Canada Inc. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of use of the product are not within the control of Praxair Canada Inc., it is the user's obligation to determine the conditions of safe use of the product.

Praxair Canada Inc. requests the users of this product to study this Material Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify its employees, agents and contractors of the information on this MSDS and any product hazards and safety information, (2) furnish this same information to each of its customers for the product, and (3) request such customers to notify their employees and customers for the product of the same product hazards and safety information.

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Praxair Canada Inc.
1 City Centre Drive
Suite 1200
Mississauga, ON L5B 1M2