Pain Enterprises, Inc. Material Safety Data Sheet

1. Chemical Product and Company Identification

Chemical Name: Carbon dioxide
Chemical Formula: CO_2 **Chemical Family:**
Phone:
Fax:
Emergencies: * 1-800-424-9300 CHEMTREC
Pain Enterprises, Inc...
101 Daniels Way
Bloomington, IN 47404
Telephone: 800-245-8583
Product Name: Carbon dioxide
Liquid Carbon dioxide
Date of preparation: June 6, 1999 / Revised: August 20, 2004
Carbon Dioxide
Liquid Carbon dioxide
Carbon dioxide
Liquid Carbon dioxide
**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 Pain sales representative.
Product Use: Many

2. Composition and Information on Ingredients

1) Carbon dioxide 100 124-38-9 Not
applicable.
Not available. 5000 ppm
TLV-TWA
(ACGIH)
LD_{50}
(Species &
Routes)
INGREDIENTS CAS
NUMBER
% (VOL) LC_{50}
(Rat, 4 hrs.)

Emergency Overview

3. Hazards Identification

High-pressure liquid and gas. Can cause rapid suffocation. Can increase respiration and heart rate. May cause nervous system damage. May cause frostbite. May cause dizziness and drowsiness. Self-contained breathing apparatus may be required by rescue workers.
CAUTION!
THRESHOLD LIMIT VALUE: TLV-TWA Data from 2001 (no change since) Guide to Occupational Exposure Values (ACGIH). TLV-TWAs should be used as a guide in the control of health hazards and not as fine lines between safe and dangerous concentrations.
INHALATION:
EFFECTS OF A SINGLE (ACUTE) OVEREXPOSURE:
SKIN CONTACT:
SWALLOWING:
EYE CONTACT:
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. No harm expected from vapor. Liquid may cause frostbite.
This product is a gas at normal temperature and pressure.
Vapor may cause a stinging sensation; liquid may cause frostbite.
SKIN ABSORPTION:
ROUTES OF EXPOSURE: Inhalation. Skin contact. Eye contact.
No harm expected.

EFFECTS OF REPEATED (CHRONIC) OVEREXPOSURE:
No evidence of adverse effects from available information.
OTHER EFFECTS OF OVEREXPOSURE:
Damage to retial ganglion cells and central nervous system may occur.
Product Name: Carbon dioxide
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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:
CARCINOGENICITY:
Not listed as carcinogen by OSHA, NTP or IARC.
A single study has shown an increase in heart defects in rats exposed to 6% carbon dioxide in air for 24 hours at different time during gestation. There is no evidence that carbon dioxide is tetratogenic in humans. This product is a gas at normal temperature and pressure. For contact with the liquid, immediately flush eyes thoroughly with warm water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. See a physician, preferably an ophthalmologist, immediately. For exposure to liquid, immediately warm frostbite area with warm water not to exceed 41 C. In case of massive exposure, remove contaminated clothing while showering with warm water. Call a physician. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

4. First Aid Measures

EYE CONTACT:
SKIN CONTACT:
INHALATION:
SWALLOWING:
There is no specific antidote. Treatment of over-exposure should be directed at the control of symptoms and the clinical condition.
NOTES TO PHYSICIAN:

5. Fire Fighting Measures

Not applicable.
Not applicable.
AUTOIGNITION
TEMPERATURE
FLAMMABLE LIMITS
IN AIR, % by volume:
FLASH POINT
(test method)
Not applicable.
LOWER: UPPER: Not applicable.
EXTIGUISHING MEDIA:
This material cannot catch fire. Use media appropriate for surrounding fire.
SPECIAL FIRE FIGHTING PROCEDURES:
CAUTION! High-pressure gas. Asphyxiate. Effects are due to lack of oxygen. Evacuate all personnel from danger area. Immediately deluge cylinders with water from maximum distance until cool; then move them away from fire area if without risk.
UNUSUAL FIRE AND EXPLOSION HAZARD:
Gas cannot catch fire. Container may rupture due to heat of fire. No part of a container should be subjected to a temperature higher than 52 C. Most containers are provided with a pressure relief device designed to vent contents when they are exposed to elevated temperature.
HAZARDOUS COMBUSTION PRODUCTS:
Not applicable.
FLAMMABLE: No. **IF YES, UNDER WHAT CONDITIONS?** Not applicable.
SENSITIVITY TO IMPACT:
SENSITIVITY TO STATIC DISCHARGE:
Not applicable.
Avoid impact against container.

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

CAUTION! High-pressure gas. Evacuate all personnel from danger area. Use self-contained breathing apparatus where needed. Shut off flow if you can do so without risk. Ventilate area or move cylinder to a well-ventilated area. Test for sufficient oxygen, especially in confined spaces, before allowing reentry.

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, provincial, and local regulations. If necessary, call your local supplier for assistance.

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 52 C. Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods. 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.

7. Handling and Storage

PRECAUTIONS TO BE TAKEN IN STORAGE:

PRECAUTIONS TO BE TAKEN IN HANDLING:

OTHER HAZARDOUS CONDITIONS OF HANDLING, STORAGE, AND USE:

Extremely cold liquid and gas. Do not get liquid or vapors in eyes, on skin, or clothing. Safety showers and eyewash fountains should be immediately available. Use only in a closed system. Use piping and equipment adequately designed to withstand pressures to be encountered. ***Store and use with adequate ventilation at all times.*** Close valve after each use; keep closed even when empty. ***Prevent reverse flow.*** Reverse flow into cylinder may cause rupture. ***When returning cylinder to supplier,*** be sure valve is closed. ***Never work on a pressurized system.*** If there is a leak, close the cylinder valve. Vent the system down in a safe and environmentally sound 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:

PERSONAL PROTECTION:

LOCAL EXHAUST:

MECHANICAL (general):

SPECIAL:

OTHER:

Preferred. General exhaust ventilation may be acceptable if it can maintain an adequate supply of air.

Not applicable.

Not applicable.

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 gloves.

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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. Cuff less 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

100% (v/v).
Not applicable.
Not applicable.
5775.2 kPa (@ 20°C)
Slight.
44.01 g/mole
Odorless gas. It is felt by some to have a slight, pungent odor and biting taste.
Colorless.
BOILING POINT
FREEZING POINT:
>1 compared to (Butyl Acetate = 1)
APPEARANCE & ODOUR:
MOLECULAR WEIGHT:
SPECIFIC GRAVITY:
VAPOUR PRESSURE
EVAPORATION RATE
SOLUBILITY IN WATER,
Sublimation: -78.5 C
LIQUID (Water = 1)
(Butyl Acetate=1):
PHYSICAL STATE: Compressed Liquefied Gas.
VAPOUR
(air = 1)
SPECIFIC GRAVITY: 1.522
VAPOUR DENSITY: 0.00198 g/ml @ 0 C **% VOLATILES BY VOLUME:**
ODOUR THRESHOLD: Odorless.
COEFFICIENT OF WATER/OIL DISTRIBUTION:
pH: Not applicable.
Not applicable.
The product is stable.
Will not occur.

10. Stability and Reactivity

STABILITY:
INCOMPATIBILITY (materials to avoid):
HAZARDOUS DECOMPOSITION PRODUCTS:
HAZARDOUS POLYMERIZATION:
CONDITIONS OF CHEMICAL INSTABILITY: Not applicable.
CONDITIONS OF REACTIVITY:
In the presence of an electrical discharge, carbon dioxide is decomposed to form carbon monoxide and oxygen. Alkali metals, alkaline earth metals, metal acetylides, chromium, titanium above 550 C, uranium above 750 C. None known.

11. Toxicological Information

See section 3.
EFFECTS:
Breathing rate increases slightly.
Breathing rate increases to 50% above normal level. Prolonged exposure can cause headache, tiredness. Breathing increases to twice normal rate and become labored. Weak narcotic effect. Impaired hearing, headache, increased blood pressure and pulse rate. Breathing increases to approximately four times normal rate, symptoms of intoxication become evident, and slight choking may be felt. 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.
CO_2 CONCENTRATION:
1%
2%
3%
4 - 5%
5 - 10%
Carbon dioxide is an asphyxiate. It initially stimulates respiration and then causes respiratory depression. High concentrations result in narcosis. Symptoms in humans are as follows:

Unconsciousness occurs more rapidly above 10% level. Prolonged exposure to high concentrations may eventually result in death from asphyxiation.
50 - 100%

12. Ecological Information

No adverse ecological effects expected. This product is not classified as a Class I or Class II ozone-depleting chemical. This material is not listed a marine pollutant by TDG regulations.

WASTE DISPOSAL METHOD:

13. Disposal Considerations

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

14. Transport Information

HAZARD CLASS: C L A S S 2 . 2 :
Non-flammable,
n o n - c o r r o s i v e a n d
non-poisonous gas.
IDENTIFICATION #:
TDG/IMO SHIPPING NAME: (Gas): Carbon Dioxide; (Liquid): Carbon dioxide, Refrigerated Liquid
UN1013 (Gas)
UN2187 (Liquid)
PRODUCT RQ:
SHIPPING LABEL(s): Non-flammable, non-poisonous gas
PLACARD (when required): Non-flammable, non-poisonous gas
Cylinders should be transported in a secure position, in a well-ventilated vehicle. Cylinders transported in an enclosed, non-ventilated compartment of vehicle can present serious safety hazards.
SPECIAL SHIPPING INFORMATION:
100 L

15. Regulatory Information

CLASS A: Compressed gas.
EINECS Not available.
This product is not classified according to the EU regulations. **DSCL (EEC)**
International Lists No products were found.
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.

16. Other Information

STANDARD VALVE CONNECTIONS FOR U.S. AND CANADA:
THREADED:
PIN-INDEXED YOKE:
CGA-320
CGA-940
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:
REACTIVITY **0**
0
0 HEALTH
FLAMMABILITY
HMIS RATINGS:
Product Name: Carbon dioxide
Liquid Carbon dioxide
ULTRA-HIGH-INTEGRITY CONNECTION: CGA-716
PREPARATION INFORMATION:
DATE:

DEPARTMENT:
TELEPHONE:
Safety and Environmental Services
905-803-1600
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 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), now (GAWDA)
4221 Walney Road, 5th Floor, Chantilly, VA 20151-2923, Telephone (703) 788-2700, Fax (703) 934-1830, website:
www.cganet.com.
AV-1 Safe Handling and Storage of Compressed Gas
G-6 Carbon Dioxide
G-6.1 Standard for Low Pressure Carbon Dioxide Systems at Customer Sites
G-6.2 Commodity Specification for Carbon Dioxide
P-1 Safe Handling of Compressed Gases in Containers
P-14 Accident Prevention in Oxygen-Rich, Oxygen-Deficient Atmospheres
SB-2 Oxygen-Deficient Atmospheres
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, Fourth Edition Other trademarks used herein are trademarks or registered trademarks of their respective owners. The opinions expressed herein are those of qualified experts within Pain Enterprises, 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 Pain Enterprises, Inc., it is the user's obligation to determine the conditions of safe use of the product. Pain Enterprises, 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.
Pain Enterprises, Inc.
101 Daniels Way
Bloomington, IN 47404
800-245-8583