

Material Safety Data Sheet

Carbon Dioxide

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product name:	Carbon Dioxide	
Other/generic names:	CO2-refrigerated gas	
Product use:	Various insulating, drying tasks.	
Manufacturer:	Chengdu Taiyu Industrial Gases Co.,Ltd No.2375,Chengluo Avenue, Longquan District, Chengdu City, China TEL: (86)28 88455212	In case of emergency, contact 3E Company, 800-360-3220 24 hrs, 7 days/week

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: A clear, colorless, odorless gas. Contact with discharging gas can cause frostbite and/or freeze burns. Toxic in extremely high concentrations, it can also displace oxygen and act as an asphyxiant.

POTENTIAL HEALTH HAZARDS

Skin:	Contact with liquefied material or discharging gas can produce frostbite and/or freeze burns.
Eyes:	Contact with liquefied material or discharging gas can produce frostbite and/or freeze burns.
Inhalation:	As carbon dioxide controls breathing rate, exposures can lead to headache, dizziness, shortness of breath. High concentration can affect the breathing centers of the nervous system and can lead to death. Product can displace air and act as an asphyxiant, removing oxygen for breathing and causing death.
Ingestion:	Not a foreseeable route of entry
Delayed effects:	None

Ingredients found on one of the OSHA designated carcinogen lists are listed below.

Ingredient Name	NTP Status	IARC Status	OSHA List
No ingredients listed in this section.			

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient Name	CAS Number	Weight %
Carbon dioxide	124-38-9	100

Trace impurities and additional material names not listed above may also appear in Section 15 toward the end of the MSDS. These materials may be listed for local "Right-To-Know" compliance and for other reasons.

4. FIRST AID MEASURES

Skin:	Flush skin with lukewarm water. (Do not use hot water.) Get immediate medical attention.
Eyes:	Flush eyes with running water (continuing for up to 15 minutes) and get immediate medical attention.
Inhalation:	Remove to fresh air. Apply artificial respiration or give oxygen if a qualified operator is present. Get immediate medical attention.
Ingestion:	Not a foreseeable route of entry.
Advice to physician:	Treat symptomatically.

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5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

Flash Point & Method	None
Autoignition Temperature:	None
Explosive Limits	None
Flame Propagation Rate (solids):	Not applicable
OSHA Flammability Class:	Not applicable
Extinguishing Media:	Not flammable. Carbon dioxide is an extinguishing agent. Use any standard agent suitable for structural fire..0.
Unusual Fire And Explosion Hazards:	If exposed to fire, pressurized cylinders can explode. Cool fire-exposed containers with water spray.
Special Fire Fighting Precautions/Instructions:	Wear self contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILL OR OTHER RELEASE: Wear proper protective clothing and self contained breathing apparatus in the presence of leaking gas. Evacuate area. Shut off leak if it can be accomplished without risk. Ventilate area and/or move cylinder outside to isolated area and allow to vent until empty.

7. HANDLING AND STORAGE

Normal Handling:	Avoid contact with pressurized gas. Use with adequate ventilation. See CGA (Compressed Gas Association) Pamphlet G-6.1 for detailed instructions on developing a handling system for carbon dioxide.
Storage Recommendations:	Store cylinders in a dry area out of direct sunlight. Protect from physical damage. Cylinders should be secured in the vertical position. Use suitable hand truck to move cylinders. Never roll cylinders on ground. Protect the valve assembly at all times.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide general ventilation and local exhaust to maintain concentrations of vapors below allowable exposure values.

PERSONAL PROTECTIVE EQUIPMENT

Skin Protection:	Wear insulated neoprene gloves. Steel-toed shoes recommended for handling cylinders.
Eye Protection:	Wear chemical safety goggle or safety glasses with side shields.
Respiratory Protection:	Not required for properly ventilated work areas. In case of spill or leak, wear self contained breathing apparatus and/or an air-supplied respirator.
Additional Recommendations:	Source of runni

EXPOSURE GUIDELINES

Ingredient Name	ACGIH TLV	OSHA PEL	Other *
Carbon dioxide	5000 ppm TWA 30,000 ppm STEL	5000 ppm TWA	5000 ppm TWA 30,000 ppm STEL

* = NIOSH REL

** = Workplace Environmental Exposure Level (AIHA).

*** = Biological Exposure Index (ACGIH).

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9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Colorless gas when discharged
Physical State:	Liquefied gas
Molecular Weight:	44
Chemical Formula:	CO ₂
Odor:	None
Specific Gravity (water = 1.0):	As liquid at 0 °F – 1.02 As gas, 1.53 (air = 1)
Solubility In Water (wt. %):	88 ml CO ₂ per 100 ml H ₂ O at 20 °C
Melting Point:	Sublimes at -109 °F (-78.5 °C)
Flash Point	None

10. STABILITY AND REACTIVITY

Normally Stable? (Conditions To Avoid):	Normally stable.
Incompatibilities:	Reactive metals such as potassium, sodium, magnesium, aluminum, titanium, zirconium and their hydrates can decompose carbon dioxide, producing oxygen and toxic carbon monoxide..
Hazardous Decomposition Products:	High temperatures or electrical discharges can produce toxic carbon monoxide.
Hazardous Polymerization:	Will not occur.

11. TOXICOLOGICAL INFORMATION

IMMEDIATE (ACUTE) EFFECTS:

2% carbon dioxide in inhaled air increases pulmonary ventilation by 50%; 5% carbon dioxide by 100% and 7.2% of carbon dioxide by 200%.
Dizziness, headache, confusion and dyspnea occur at 5% carbon dioxide; 8 to 10% concentrations cause severe headache, sweating, dimness of vision & tremor, and consciousness is lost after 5 to 10 min.

DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:

None anticipated.

OTHER DATA: None listed.

12. ECOLOGICAL INFORMATION

No adverse effects on the environment anticipated.

13. DISPOSAL CONSIDERATIONS

RCRA

Is the unused product a RCRA hazardous waste if discarded?	No
If yes, the RCRA ID number is:	

OTHER DISPOSAL CONSIDERATIONS: Observe all Federal, State, and Local Environmental regulations.

The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

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14. TRANSPORT INFORMATION

US DOT Proper Shipping Name:	Carbon dioxide, refrigerated liquid
US DOT Hazard Class & Packing Group:	2.2 (nonflammable gas) No packing groups for this hazard class.
US DOT ID Number:	UN2187

For additional information on shipping regulations affecting this material, contact the information number found in Section 1.

15. REGULATORY INFORMATION

TOXIC SUBSTANCES CONTROL ACT (TSCA)

TSCA Inventory Status:	All ingredients are listed on the TSCA chemical inventory.
Other TSCA Issues:	None

SARA TITLE III/CERCLA

Reportable Quantities (RQs) and/or Threshold Planning Quantities (TPQs) exist for the following ingredients.

Ingredient Name	SARA/CERCLA RQ (lb)	SARA EHS TPQ (lb)
No ingredients listed in this section.		

Spills or releases resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center [(800) 424-8802] and to your Local Emergency Planning Committee.

SECTION 311 HAZARD CLASS: Immediate, release of pressure.

SARA 313 TOXIC CHEMICALS:

The following ingredients are listed as SARA 313 "Toxic Chemicals" and potential subject to annual SARA 313 reporting. Weight percents are found in Section 3.

Ingredient Name	Comment
No ingredients listed in this section.	

STATE RIGHT-TO-KNOW

In addition to the ingredients found in Section 2, the following are listed for state right-to-know purposes.

Ingredient Name	Weight %	Comment
No ingredients listed in this section.		

OTHER REGULATORY INFORMATION:

WHMIS Classification (Canada):	As shipped: A This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.
Foreign Inventory Status:	Listed on all existing chemical inventories.

16. OTHER INFORMATION

Current Issue Date:	February 20, 2006		
Previous Issue Date:	January, 2005		
Changes To MSDS From Previous Issue Date Are Due To The Following:	New MSDS format. General rewrite of all MSDS sections.		
HMIS (III) Ratings	Health: 0	Flammability: 0	Physical Hazard: 0
NFPA 704 Ratings	Health: 0	Flammability: 0	Instability: 0
MSDS prepared by Gardner Bender technical department.			