



A UTC Fire & Security Company

MATERIAL SAFETY DATA SHEET

Carbon Dioxide (Fire Extinguishing Agent and Expellant)

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name Carbon Dioxide (Fire Extinguishing Agent and Expellant)
Other Trade Names CO2
Manufacturer/Supplier Badger Fire Protection
Address 4251 Seminole Trail
Charlottesville, VA 22911
USA
Phone Number (434)-973-4361
Chemtrec Number (800) 424-9300
(for emergencies only) (703) 527-3887 (International)
Revision Date:
MSDS Date: January 15, 2007
This MSDS has been compiled in accordance with - EC Directive 91/155/EC - OSHA's Hazcom Standard (29 CFR 1910.1200)

2. COMPOSITION/INFORMATION ON THE COMPONENTS

Component Name	CAS#/Codes	Concentration	R Phrases	EU Classification
Carbon Dioxide	124-38-9 EC#204-696-9	>99.8	None	Non Flammable Gas

3. HAZARD IDENTIFICATION

EU Main Hazards
Non Flammable Gas

Routes of Entry

- Eye contact - Inhalation - Skin contact

Carcinogenic Status

Not considered carcinogenic by NTP, IARC, and OSHA.

Target Organs

- Respiratory System - Skin - Eye - Cardiovascular System

Health Effects - Eyes

Direct contact with the cold gas or liquid can cause freezing of exposed tissues, with pain, redness, burns and corneal damage. Moisture in the air can react to form carbonic acid which causes eye irritation.

Health Effects - Skin

Direct contact with the cold gas or liquid can cause freezing of exposed tissues.

Health Effects - Ingestion

Ingestion is not a possible route of exposure.

Health Effects - Inhalation

Exposure to vapor at high concentrations have the following effects: - light headedness - dizziness - difficulty with breathing - drowsiness - nausea - mental confusion - increased blood pressure - increased respiratory rate - loss of consciousness which may prove fatal due to suffocation as it displaces oxygen. Individuals with pre-existing disease will be at increased risk.



A UTC Fire & Security Company

MATERIAL SAFETY DATA SHEET

Carbon Dioxide (Fire Extinguishing Agent and Expellant)

4. FIRST AID MEASURES

Eyes

Immediately flood the eye with plenty of water or warm water for at least 15 minutes, holding the eye open. Obtain medical attention if soreness or redness persists.

Skin

Gently warm affected areas. Obtain medical attention if blistering occurs or redness persists.

Ingestion

Ingestion is not considered a potential route of exposure.

Inhalation

Remove from exposure. If there is difficulty in breathing, give oxygen. Obtain medical attention immediately.

Advice to Physicians

In case of frostbite, place the frostbitten part in warm water. If warm water is not available or impractical to use, wrap the affected parts gently in blankets. DO NOT USE HOT WATER.

5. FIRE FIGHTING MEASURES

Extinguishing Media

Carbon Dioxide is used as an extinguishing agent and therefore is not a problem when trying to control a blaze. Use extinguishing agent appropriate to other materials involved. Keep containers and surroundings cool with water spray as containers may rupture or burst in the heat of a fire.

Unusual Fire and Explosion Hazards

Containers may explode in heat of fire.

Protective Equipment for Fire-Fighting

Wear full protective clothing and self-contained breathing apparatus as appropriate for specific fire conditions.

6. ACCIDENTAL RELEASE MEASURES

Wear full protective clothing and self-contained breathing apparatus. Remove leaking cylinder to a safe place. Ventilate the area. Vapors can accumulate in low areas. Leaks inside confined spaces may cause suffocation as oxygen is displaced and should not be entered without a self-contained breathing apparatus.

7. HANDLING AND STORAGE

Cylinders should be properly stored and secured to prevent falling or being knocked over. Do not drag, slide or roll cylinders. Do not drop cylinders or permit them to strike against each other. Never apply flame or localized heat directly to any part of the cylinder. Store away from sources of heat or ignition. Storage area should be: - cool - dry - well ventilated - under cover - out of direct sunlight



A UTC Fire & Security Company

MATERIAL SAFETY DATA SHEET

Carbon Dioxide (Fire Extinguishing Agent and Expellant)

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Standards

Carbon Dioxide

ACGIH TLV: 5000 ppm (9000 mg/m³) STEL: 30,000 ppm (54,000 mg/m³) **OSHA PEL:** 5000 ppm (9000 mg/m³) STEL: 30,000 ppm (54,000 mg/m³)

Engineering Control Measures

Use with adequate ventilation. There should be local procedures for the selection, training, inspection and maintenance of this equipment. When used in large volumes or odor becomes apparent, use local exhaust ventilation.

Respiratory Protection

Not normally required under conditions of use as a portable fire extinguisher. In oxygen deficient atmospheres, use a self contained breathing apparatus, as an air purifying respirator will not provide protection.

Hand Protection

Wear rubber gloves. Avoid contact with skin.

Eye Protection

Chemical goggles or safety glasses with side shields. Avoid contact with eyes.

Body Protection

Normal work wear.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquefied gas under pressure
Color	Colorless
Odor	Odorless to Slightly Acidic
Specific Gravity	1.522
Boiling Range/Point (°C/F)	-109.3°F
Flash Point (PMCC) (°C/F)	Not Flammable
Solubility in Water	Soluble
Vapor Density (Air = 1)	Heavier than air.
Vapor Pressure	838 psig @70°F and 1 atmosphere
Gas Density	0.1144 lb/ft ³
Evaporation Rate	Not applicable

10. STABILITY AND REACTIVITY

Stability

Stable under normal conditions.

Conditions to Avoid

- Heat - High temperatures - Exposure to direct sunlight

Materials to Avoid

- alkali or alkaline earth metal (ex. aluminum, zinc, etc.) - Strong oxidizing agents



A UTC Fire & Security Company

MATERIAL SAFETY DATA SHEET

Carbon Dioxide (Fire Extinguishing Agent and Expellant)

10. STABILITY AND REACTIVITY

Hazardous Polymerization

Will not occur.

Hazardous Decomposition Products

- in contact with moisture will generate carbonic acid

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Simple asphyxiant. LCLo (inhalation in humans): 100,000ppm/minute.

Chronic Toxicity/Carcinogenicity

This product is not expected to cause long term adverse health effects.

Genotoxicity

This product is not expected to cause any mutagenic effects.

Reproductive/Developmental Toxicity

This product is not expected to cause adverse reproductive effects.

12. ECOLOGICAL INFORMATION

Mobility

Carbon dioxide occurs naturally in the atmosphere.

Persistence/Degradability

Carbon dioxide occurs naturally in the atmosphere.

Bio-accumulation

Carbon dioxide occurs naturally in the atmosphere.

Ecotoxicity

Aquatic Toxicity: 100-200 mg/l/no time specified/various organisms/fresh water

Waterfowl toxicity: 5-8%, no effect

13. DISPOSAL

Dispose of container in accordance with all applicable local and national regulations. Do not cut, puncture or weld on or near to the container. If spilled, contents will vaporize to the atmosphere.

14. TRANSPORT INFORMATION

DOT CFR 172.101 Data

Carbon Dioxide, 2.2, UN1013

UN Proper Shipping Name

Carbon Dioxide



A UTC Fire & Security Company

MATERIAL SAFETY DATA SHEET

Carbon Dioxide (Fire Extinguishing Agent and Expellant)

14. TRANSPORT INFORMATION

UN Class	(2.2) Non-Flammable Gas
UN Number	UN1013
UN Packaging Group	Not applicable

15. REGULATORY INFORMATION

EU Label Information

Classification and labelling have been performed according to EU directives 67/548/EEC and 99/45/EC including amendments.

EU Hazard Symbol and Indication of Danger.

Non Flammable Gas

R phrases

None

S phrases

S9 Keep container in a well ventilated place.

US REGULATIONS (Federal, State) and INTERNATIONAL CHEMICAL REGISTRATION LAWS

TSCA Listing

This product contains ingredients that are listed on or exempt from listing on the EPA Toxic Substance Control Act Chemical Substance Inventory.

EINECS Listing

All ingredients in this product are listed on the European Inventory of Existing Commercial Chemical Substances (EINECS) or the European List of New Chemical Substances (ELINCS) or are exempt from listing.

DSL/NDSL (Canadian) Listing

All ingredients in this product are listed on the Domestic Substance List (DSL) or the Non-Domestic Substance List (NDSL) or are exempt from listing.

WHMIS Classification

A

This product was classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations and the MSDS contains all the information required by these regulations.

MA Right To Know Law

All components have been checked for inclusion on the Massachusetts Substance List (MSL). Those components present at or above the de minimis concentration include: - carbon dioxide

PA Right To Know Law

This product contains the following chemicals found on the Pennsylvania Hazardous Substance List: - carbon dioxide

NJ Right To Know Law

This product contains the following chemicals found on the NJ Right To Know Hazardous Substance List: - carbon dioxide



A UTC Fire & Security Company

MATERIAL SAFETY DATA SHEET

Carbon Dioxide (Fire Extinguishing Agent and Expellant)

15. REGULATORY INFORMATION

California Proposition 65

This product does not contain materials which the State of California has found to cause cancer, birth defects or other reproductive harm.

SARA Title III Sect. 302 (EHS)

This product does not contain any chemicals subject to SARA Title III Section 302.

SARA Title III Sect. 304

This product does not contain any chemicals subject to SARA Title III Section 304.

SARA Title III Sect. 311/312 Categorization

- Immediate (Acute) Health Hazard - Pressure Hazard

SARA Title III Sect. 313

This product does not contain a chemical which is listed in Section 313 at or above de minimis concentrations.

16. OTHER INFORMATION

NFPA Ratings

NFPA Code for Health - 1

NFPA Code for Flammability - 0

NFPA Code for Reactivity - 0

NFPA Code for Special Hazards - None

HMIS Ratings

HMIS Code for Health - 1

HMIS Code for Flammability - 0

HMIS Code for Reactivity - 0

HMIS Code for Personal Protection - See Section 8

Abbreviations

N/A: Denotes no applicable information found or available

CAS#: Chemical Abstracts Service Number

ACGIH: American Conference of Governmental Industrial Hygienists

OSHA: Occupational Safety and Health Administration

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

STEL: Short Term Exposure Limit

NTP: National Toxicology Program

IARC: International Agency for Research on Cancer

R: Risk

S: Safety

Prepared By: EnviroNet LLC.

The information contained herein is based on data believed to be accurate. However, no representation, warranty, or guarantee is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability and completeness of such information for its own particular use. Badger Fire Protection assumes no responsibility for personal injury or property damage resulting from use, handling or from contact with this product.