



A UTC Fire & Security Company

## MATERIAL SAFETY DATA SHEET

### Commercial ABC Dry Chemical (Fire Extinguishing Agent)

#### 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATIONS AND OF THE COMPANY UNDERTAKING

**Product Name** Commercial ABC Dry Chemical (Fire Extinguishing Agent)  
**Other Trade Names** Multi-Purpose, Ammonium Phosphate, Monoammonium Phosphate  
**Product Description** Fire Extinguishing Agent  
**Manufacturer/Supplier** Badger Fire Protection  
**Address** 944 Glenwood Station Lane, Suite 303  
Charlottesville, VA 22901  
USA  
**Phone Number** (434)-964-3200  
**Chemtrec Number** (800) 424-9300  
**(for emergencies only)** (703) 527-3887 (International)  
**Revision Date:** March 4, 2010  
**MSDS Date:** February 9, 2009

*Safety Data Sheet according to EC directive 2001/59/EC and OSHA's Hazcom Standard (29 CFR 1910.1200)*

#### 2. HAZARDS IDENTIFICATION

**EU Main Hazards**  
Non Hazardous Powder

**Routes of Entry**

- Eye contact - Inhalation - Skin contact

**Carcinogenic Status**

See Section 11 - Toxicity

**Target Organs**

- Respiratory System - Skin - Eye

**Health Effects - Eyes**

Contact for short periods of time may cause irritation.

**Health Effects - Skin**

Contact may cause mild irritation.

**Health Effects - Ingestion**

Ingestion is not an expected route of exposure.

**Health Effects - Inhalation**

May irritate the respiratory tract. May cause transient cough and shortness of breath.

#### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	CAS#/Codes	Concentration	R Phrases	EU Classification
Monoammonium Phosphate	7722-76-1 EC#2317645	55 - 65%	None	None
Ammonium Sulfate	7783-20-2 EC#2319841	30 - 40%	None	None
Mica	12001-26-2	1 - 4%	None	None



A UTC Fire & Security Company

## MATERIAL SAFETY DATA SHEET

### Commercial ABC Dry Chemical (Fire Extinguishing Agent)

#### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	CAS#/Codes	Concentration	R Phrases	EU Classification
Clay	8031-18-3	<2%	None	None
Amorphous Silica	7631-86-9 EC#2315454	<2%	None	None
Dye	NA	<0.1%	None	None

#### 4. FIRST AID MEASURES

##### Eyes

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

##### Skin

Wash affected area with soap and water. Obtain medical attention if irritation persists.

##### Ingestion

Dilute by drinking large quantities of water and obtain medical attention.

##### Inhalation

Move victim to fresh air. Obtain medical attention immediately for any breathing difficulty.

##### Advice to Physicians

Treat symptomatically.

#### 5. FIRE - FIGHTING MEASURES

##### Extinguishing Media

This preparation 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 pressurized extinguishers and surroundings cool with water spray as they may rupture or burst in the heat of a fire.

##### Unusual Fire and Explosion Hazards

Pressurized 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

Sweep up or vacuum. Prevent skin and eye contact. Wear appropriate protective equipment.

#### 7. HANDLING AND STORAGE

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



A UTC Fire & Security Company

## MATERIAL SAFETY DATA SHEET

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#### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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##### Occupational Exposure Standards

Occupational exposure limits are listed below, if they exist.

##### Mica

ACGIH TLV: 3 mg/m<sup>3</sup> TWA, measured as respirable fraction of the aerosol.

OSHA PEL: 20 mppcf, <1% crystalline silica

##### Nuisance Dust Limit

OSHA PEL: 50 mppcf or 15 mg/m<sup>3</sup> TWA, total dust  
15 mppcf or 5 mg/m<sup>3</sup> TWA, respirable fraction

##### 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, use local exhaust ventilation.

##### Respiratory Protection

Not normally required. Use dust mask where dustiness is prevalent, or TLV is exceeded.

##### Hand Protection

Not normally needed when used as a portable fire extinguisher. Use gloves if irritation occurs.

##### Eye Protection

Chemical goggles or safety glasses with side shields.

##### Body Protection

Normal work wear.

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#### 9. PHYSICAL AND CHEMICAL PROPERTIES

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Physical State	Powder
Color	Pale Yellow
Odor	Odorless
Specific Gravity	Not available
Boiling Range/Point (°C/F)	Not applicable
Flash Point (PMCC) (°C/F)	Not Flammable
Solubility in Water	Not applicable
Vapor Density (Air = 1)	Heavier than air.
Vapor Pressure	Not applicable
Evaporation Rate	Not applicable

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#### 10. STABILITY AND REACTIVITY

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##### Stability

Stable under normal conditions.

##### Conditions to Avoid

- Heat - High temperatures - Exposure to direct sunlight

##### Materials to Avoid

- Strong oxidizing agents - strong acids - sodium hypochlorite

##### Hazardous Polymerization

Will not occur.



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## MATERIAL SAFETY DATA SHEET

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#### 10. STABILITY AND REACTIVITY

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##### Hazardous Decomposition Products

- oxides of carbon - ammonia - oxides of phosphorus - nitrogen oxides

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#### 11. TOXICOLOGICAL INFORMATION

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##### Acute Toxicity

Low order of acute toxicity.

##### Chronic Toxicity/Carcinogenicity

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

Mica and clay may contain small quantities of quartz (crystalline silica) as an impurity. Prolonged exposure to respirable crystalline silica dust at concentrations exceeding the occupational exposure limits may increase the risk of developing a disabling lung disease known as silicosis. IARC found limited evidence for pulmonary carcinogenicity of crystalline silica in humans.

##### Genotoxicity

This product is not expected to cause any mutagenic effects.

##### Reproductive/Developmental Toxicity

This product is not expected to cause adverse reproductive effects.

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#### 12. ECOLOGICAL INFORMATION

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##### Mobility

No relevant studies identified.

##### Persistence/Degradability

No relevant studies identified.

##### Bio-accumulation

No relevant studies identified.

##### Ecotoxicity

No relevant studies identified.

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#### 13. DISPOSAL CONSIDERATIONS

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Dispose of container in accordance with all applicable local and national regulations. Do not cut, puncture or weld on or near to the container. No harm to the environment is expected from this preparation.

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#### 14. TRANSPORT INFORMATION

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DOT CFR 172.101 Data	Not regulated
UN Proper Shipping Name	Not regulated
UN Class	None
UN Number	None
UN Packaging Group	None





A UTC Fire & Security Company

## MATERIAL SAFETY DATA SHEET

### Commercial ABC Dry Chemical (Fire Extinguishing Agent)

#### 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 (2001/60/EC and 2006/8/EC)

##### EU Hazard Symbol and Indication of Danger.

This preparation is not classified as dangerous.

##### R phrases

None

##### S phrases

None.

##### 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 have not been verified for listing on the European Inventory of Existing Commercial Chemical Substances (EINECS) or the European List of New Chemical Substances (ELINCS).

##### 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

D2B

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: - Mica (12001-26-2) 1-4% - Amorphous Silica (7631-86-9) <2% - Ammonium Sulfate (7783-20-2) 30 - 40%

##### PA Right To Know Law

This product contains the following chemicals found on the Pennsylvania Hazardous Substance List: - Mica (12001-26-2) 1-4% - Amorphous Silica (7631-86-9) <2% - Ammonium Sulfate (7783-20-2) 30 - 40%

##### NJ Right To Know Law

This product contains the following chemicals found on the NJ Right To Know Hazardous Substance List: - Mica (12001-26-2) 1-4% - Amorphous Silica (7631-86-9) <2%

##### 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.



A UTC Fire & Security Company

## MATERIAL SAFETY DATA SHEET

### Commercial ABC Dry Chemical (Fire Extinguishing Agent)

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#### 15. REGULATORY INFORMATION

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##### **SARA Title III Sect. 311/312 Categorization**

- Immediate (Acute) Health Hazard

##### **SARA Title III Sect. 313**

This product does not contain any chemicals that are listed in Section 313 at or above de minimis concentrations.

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#### 16. OTHER INFORMATION

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##### **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.

# MATERIAL SAFETY DATA SHEET

## Section 1. Chemical product and company identification

Product Name: **ABC Dry Chemical** Fire Extinguishant  
Synonym: **Multi-purpose Dry Chemical** (CH550,CH555)  
Manufacturer: AMEREX CORPORATION  
Internet Address: [www.amerex-fire.com](http://www.amerex-fire.com)  
Address: 7595 Gadsden Highway  
P.O. Box 81  
Trussville, AL 35173-0081  
Telephone: (205) 655-3271  
Emergency Contacts: Chemtrec 1(800) 424-9300 or  
(703) 527-3887  
Revised: September, 2008

## Section 2. Hazard identification and emergency overview

Emergency overview: Light yellow, fine solid powder, odorless.

Adverse health effects and symptoms: Irritating to the respiratory system, eyes and skin. Symptoms may include coughing, shortness of breath, and irritation of the lungs, eyes, and skin. Ingestion, although unlikely, may cause cramps, nausea and diarrhea.

Exposure guidelines:

Ingredients	OSHA PEL	ACGIH TLV	DFG MAK *
Mono-ammonium phosphate	PNOC** Total dust, 15 mg/m <sup>3</sup> Respirable fraction, 5 mg/m <sup>3</sup>	PNOC Total dust, 10 mg/m <sup>3</sup> Respirable fraction, 3 mg/m <sup>3</sup>	PNOC Total dust, 4 mg/m <sup>3</sup> Respirable fraction, 1.5 mg/m <sup>3</sup>
Ammonium sulphate	PNOC Total dust, 15 mg/m <sup>3</sup> Respirable fraction, 5 mg/m <sup>3</sup>	PNOC Total dust, 10 mg/m <sup>3</sup> Respirable fraction, 3 mg/m <sup>3</sup>	PNOC Total dust, 4 mg/m <sup>3</sup> Respirable fraction, 1.5 mg/m <sup>3</sup>
Mica	6 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>	NR
Attapulgate clay	PNOC Total dust, 15 mg/m <sup>3</sup> Respirable fraction, 5 mg/m <sup>3</sup>	PNOC Total dust, 10 mg/m <sup>3</sup> Respirable fraction, 3 mg/m <sup>3</sup>	PNOC Total dust, 4 mg/m <sup>3</sup> Respirable fraction, 1.5 mg/m <sup>3</sup>

Silicone oil	NR***	NR	NR
Calcium carbonate	PNOC Total dust, 15 mg/m <sup>3</sup> Respirable fraction, 5 mg/m <sup>3</sup>	PNOC Total dust, 10 mg/m <sup>3</sup> Respirable fraction, 3 mg/m <sup>3</sup>	-----
Amorphous silica	143 mg/m <sup>3</sup> <u>80 mg/m<sup>3</sup></u> or     % SiO <sub>2</sub>	10 mg/m <sup>3</sup>	4 mg/m <sup>3</sup>
Yellow 14 pigment	NR	NR	NR

\*German regulatory limits \*\*PNOC = Particulates not otherwise classified (ACGIH) also known as Particulates not otherwise regulated (OSHA) \*\*\* NR = Not Regulated. All values are 8 hour time weighted average concentrations.

Hazard symbols: WHMIS (Canadian workplace hazardous materials identification system)

D2B Product may irritate eyes, skin, or mucous membranes

### Section 3. Composition/information on ingredients

Name/Compound	Weight %	CAS #
Mono-ammonium phosphate and Ammonium sulphate	>94	7722-76-1 7783-20-2
Attapulgate clay magnesium aluminum silicate-	<3	12174-11-7
Mica potassium aluminum silicate	1-2	12001-26-2
Silicone oil methyl hydrogen polysiloxane	<1	63148-57-2
Calcium carbonate	<1	1317-65-3
Amorphous silica precipitated synthetic zeolite	<1	112926-00-8
Yellow 14 pigment – di-azo dye	<1	5468-75-7

### Section 4. First Aid Measures

Eye Exposure: Irrigate eyes with water and repeat until pain free. Seek medical attention if irritation develops or if vision changes occur.

**Skin Exposure:** In case of contact, wash with plenty of soap and water. Seek medical attention if irritation develops.

**Inhalation:** If respiratory irritation or distress occurs remove victim to fresh air. Seek medical attention if irritation persists.

**Ingestion:** If victim is conscious and alert, give 2-3 glasses of water to drink and do not induce vomiting. Seek immediate medical attention. Do not leave victim unattended. To prevent aspiration of swallowed product, lay victim on side with head lower than waist. If vomiting occurs and the victim is conscious, give water to further dilute the chemical.

**Medical conditions possibly aggravated by exposure:** Inhalation of product may aggravate existing chronic respiratory problems such as asthma, emphysema, or bronchitis. Skin contact may aggravate existing skin disease. Chronic overexposure may cause pneumoconiosis ("dusty lung" disease).

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#### Section 5. Fire fighting measures

**Extinguishing media:** non combustible and non flammable – product is an extinguishing agent.

**Unusual fire/explosion hazards:** in a fire this material may decompose, releasing oxides of sulfur and carbon (see Section 10).

Insensitive to mechanical impact or static discharge.

**HMIS Hazard Ranking:**

health = 1, flammability = 0, reactivity = 0, personal protective equipment: ½ mask APR w/HEPA cartridges (see Section 8).

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#### Section 6. Accidental release measures

Clean up released material using vacuum or wet sweep and shovel to minimize generation of dust. Wear appropriate respiratory protection. Bag and drum for disposal. If product is used and/or contaminated, use PPE and containment appropriate to the nature of the mixture. Prevent material from entering waterways.

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## Section 7. Handling and storage

Avoid skin, eye, or respiratory exposure. Use appropriate PPE when handling or maintaining equipment, and wash thoroughly after handling (see Section 8). Keep product in original container or extinguisher. Contents may be under pressure – inspect for extinguisher rust periodically to insure container integrity. Do not mix with other extinguishing agents.

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## Section 8. Exposure controls/ personal protection

During the application of this product against fires, exhaust gases and the products of incomplete combustion (PICs) are the principal respiratory hazards. In the manufacture of extinguishers, automated systems and point source ventilation controls sufficiently minimize respiratory exposure. Employers and employees must use their collective judgment in determining occupational settings where the use of a dust mask or air purifying respirator is prudent. The need for respiratory protection is not likely for short-term use in well ventilated areas.

Respiratory protection: use N95 dust mask or air-purifying respirator (APR) with high efficiency particulate air (HEPA) filters.

Eye protection: wear chemical goggles.

Skin protection: use nitrile, latex, or similar gloves and coveralls. Good personal hygiene practices essential, such as avoiding food, tobacco products, or other hand-to-mouth contact when handling. Wash thoroughly after handling.

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## Section 9. Physical and chemical properties

Appearance: yellow powder, finely divided odorless solid.

Specific gravity: ~ .88 in aerated condition

Solubility: product is coated-not immediately soluble in water

Non –flammable

Flash point: none

Vapor pressure: < 1 mm Hg

pH: approximately 4-5

Boiling point: not applicable

No explosive or oxidizing properties

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## Section 10. Stability and reactivity

Stability: stable

Incompatibles: strong alkalis (bases), magnesium, strong oxidizers such as calcium hypochlorite (pool chlorine) and isocyanuric acids.

Decomposition products: heat of fire may release carbon monoxide, carbon dioxide, and sulfur dioxide. Oxides of phosphorous and ammonia reported.

Possibility of hazardous reactions: Slight. See incompatibilities above.

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## Section 11. Toxicological information

Acute toxicity: Mono ammonium phosphate LD<sub>50</sub> (rat): > 1000mg/kg body weight  
Ammonium sulfate LD<sub>50</sub> (rat): 2840 mg/kg body weight  
Target organs in man: respiratory system, eyes, skin. This product is an irritant to epithelial tissue, and may aggravate dermatitis. No information was found indicating the product causes sensitization.

Chronic toxicity: Pneumoconiosis, or "dusty lung" disease, may result from chronic exposure to any dust.

Reproductive toxicity: This product's ingredients are not known to have reproductive or teratogenic effects.

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## Section 12. Ecological information

Ecotoxicity: negative effects unknown. Provides nutrient nitrogen and phosphorus to plant life.

Persistence/  
Degradability: degrades rapidly in humid/wet environment.

Bioaccumulation: extent unknown.

Mobility in soil: slow evaporation rate; water soluble, may leach to groundwater.

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### Section 13. Disposal considerations

This product is not a RCRA characteristically hazardous or listed hazardous waste. Dispose of according to state or local laws, which may be more restrictive than federal laws or regulations. Used product may be altered or contaminated, creating different disposal considerations.

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### Section 14. Transportation information

This product is not a hazardous material under U.S. Department of Transportation (DOT) 49 CFR 172, and is not regulated by the DOT or Transport Canada "Transportation of Dangerous Goods" regulations.

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### Section 15. Regulatory information

International Inventory Status:

All ingredients are on the following inventories

Country(ies)	Agency	Status
United States of America	TSCA	Yes
Canada	DSL	Yes
Europe	EINECS/ELINCS	Yes
Australia	AICS	Yes
Japan	MITI	Yes
South Korea	KECL	Yes

European Risk and Safety phrases:

EU Classification: Harmful.  
R Phrases: 22 Harmful if swallowed.  
36/37/38 Irritating to eyes, respiratory system, and skin.  
S Phrases: 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
36 Wear suitable protective clothing.

Components:

Mono ammonium phosphate:

EU Classification:	Harmful.	
R Phrases:	22	Harmful if swallowed.
	36/37/38	Irritating to eyes, respiratory system, and skin.
S Phrases:	26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
	36	Wear suitable protective clothing.

Ammonium sulfate:		
EU Classification:	Irritant	
R Phrases:	22	Harmful if swallowed.
	36/37/38	Irritating to eyes, respiratory system, and skin.
S Phrases:	26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
	36	Wear suitable protective clothing.

U.S. federal regulatory information:

None of the chemicals in this product are under SARA reporting requirements or have SARA threshold planning quantities (TPQs) or CERCLA reportable quantities (RQs), or are regulated under TSCA 8(d).

State regulatory information:

Chemicals in this product are covered under specific State regulations, as denoted below:

**Alaska** - Designated Toxic and Hazardous Substances: None  
**California** - Permissible Exposure Limits for Chemical Contaminants: None  
**Florida** - Substance List: Mica Dust, Ammonium Sulfate  
**Illinois** - Toxic Substance List: None  
**Kansas** - Section 302/303 List: None  
**Massachusetts** - Substance List: Mica Dust, Ammonium Sulfate  
**Minnesota** - List of Hazardous Substances: None  
**Missouri** - Employer Information/Toxic Substance List: None  
**New Jersey** - Right to Know Hazardous Substance List: None  
**North Dakota** - List of Hazardous Chemicals, Reportable Quantities: None  
**Pennsylvania** - Hazardous Substance List: None  
**Rhode Island** - Hazardous Substance List: Mica Dust, Ammonium Sulfate  
**Texas** - Hazardous Substance List: No  
**West Virginia** - Hazardous Substance List: None  
**Wisconsin** - Toxic and Hazardous Substances: None

California Proposition 65: No component is listed on the California Proposition 65 list.

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## Section 16. Shipping Information

When shipped in a stored pressure type fire extinguisher, and pressurized with a non-flammable, non-toxic inert expellant gas, the fire extinguisher is considered a hazardous material by the US Department of Transportation and Transport Canada. The proper shipping name shall be FIRE EXTINGUISHER and the UN designation is UN 1044. The DOT hazard class/division is 2.2 Non-Flammable Gas. Packing Group – N/A

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## Section 17: Other Information

This MSDS conforms to requirements under U.S., U.K., Canadian, Australian, and EU regulations or standards, and conforms to the proposed 2003 ANSI Z400.1 format.

The information herein is given in good faith but no warranty, expressed or implied, is made. Updated by Lindsay R. Hill, CIH

**MATERIALS SAFETY DATA SHEET**  
**U.S. DEPARTMENT OF LABOR**  
**COMPLIES WITH USDL SAFETY AND HEALTH REGULATIONS (29 CFR 1910.200)**

**SECTION 1: MANUFACTURER IDENTIFICATION:** **PRODUCT**

**Amerex Corporation**  
**P.O. Box 81**  
**Trussville, AL 35173-0081**

**ABC Dry Chemical**  
**Multi Purpose Dry Chemical**

**EMERGENCY:** Chemtrec: 1-800-424-9300  
 Amerex: 1-205-655-3271

**SECTION 2: HAZARDOUS INGREDIENTS**

Name	CAS #	% W/W	*ACGIH mg/m3 TLV	*OSHA mg/m3 STEL	PEL	STEL	IDLH	other
Ammonium Sulfate	7722-76-1		NE	NE	NE	NE	NE	NE
	7783-20-2	95*	NE	NE	NE	NE	NE	NE
	12001-26-2	<3	3	NE	3	NE	NE	NE
	8031-18-3	<3	NE	NE	NE	NE	NE	NE
Oil	63148-57-2	<1	NE	NE	NE	NE	NE	NE
Carbonate	471-34-1	<1	NE	NE	NE	NE	NE	NE
precipitated)	112926-00-8	<1	2	NE	6	NE	NE	NE
ment	5468-75-7	<1	NE	NE	NE	NE	NE	NE

\*ACGIH TLV for particulates not otherwise classified = 10; OSHA PEL for particulates not otherwise regulated; Total Dust = 15 Respirable Fraction 5.

\*NE = None Established

**SECTION 3: PHYSICAL DATA**

**BOILING POINT:** Not Applicable  
**VAPOR PRESSURE:** Not Applicable  
**VAPOR DENSITY:** Not Applicable  
**SOLUBILITY IN WATER:** Not Soluble. Water Repellent Coated.  
**SPECIFIC GRAVITY:** Approximately 0.85  
**PERCENT VOLATILE BY VOLUME:** Not Applicable  
**EVAPORATION RATE:** Not Applicable  
**PH:** (10% solution) approximately 4-5  
**APPEARANCE & COLOR:** This material is a finely divided yellow powder.

**SECTION 4: FIRE AND EXPLOSION DATA**

**FLASH POINT:** Not Applicable  
**FLAMMABLE LIMITS:** Not Applicable  
**EXTINGUISHING MEDIA:** None. Product is a fire-extinguishing agent.  
**SPECIAL FIREFIGHTING PROCEDURES:** Incipient fire responders should wear protection. Structural fire fighters must wear self-contained Breathing Apparatus and full protecting equipment.

**SECTION 5: HEALTH HAZARD DATA**

**THRESHOLD LIMIT VALUE: ACGIH-TLV for particulates, Not Otherwise Classified = 10;**

**OSHA PEL: For Particulates Not Otherwise Regulated, Total Dust = 15, Respirable Fraction = 5.**

**EFFECTS OF OVEREXPOSURE:** This product may cause mild skin irritation, moderate eye irritation and possible gastric distress. This product is not known to cause chronic illness.

**EMERGENCY FIRST-AID PROCEDURES:**

**SKIN EXPOSURE:** If spilled on skin, IMMEDIATELY begin contamination with running water. Remove exposed or contaminated clothing, taking care not to contaminate eyes. If reddening or irritations occurs, victim and rescuers must seek immediate medical attention.

**EYE EXPOSURE:** If chemical is splashed in eyes, open victim's eyes while under gentle running water. Use sufficient force to open eyelids. Have victim "roll" eyes. MINIMUM flushing is for 15 minutes.

**INHALATION:** If chemical is inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions.

#### SECTION 6: REACTIVITY DATA

**STABILITY DATE:** *Stable*

**INCOMPATIBILITY:** Strong alkali, magnesium, swimming pool sanitizers (inorganic perchlorates, sodium dichloroisocyanurate dihydrate, trichloroisocyanuric acid, calcium hypochlorite, and other strong oxidizers).

**HAZARDOUS DECOMPOSITION PRODUCTS:** *Sulfur oxides, carbon monoxide and carbon dioxide.*

**HAZARDOUS POLYMERIZATION:** *Will not occur.*

#### SECTION 7: SPILL OR LEAK PROCEDURES

**SMALL SPILLS:** *Sweep or vacuum. Place in a double plastic bag & seal.*

**LARGE SPILLS:** If it is determined that exposure guidelines for nuisance particulates – 10mg/m<sup>3</sup> (total particulates) or 5mg/m<sup>3</sup> (Respirable particulates) is exceeded use Level C: triple gloves, chemically resistant suit and boots, hard hat, and air purifying respirator with HEPA filter. Sweep or vacuum.

**FOLLOW STATE AND LOCAL REGULATIONS FOR DISPOSAL OF LARGE NON-RECLAIMABLE SPILLS.**

#### SECTION 8: SPECIAL PROTECTION INFORMATION

**RESPIRATORY PROTECTION:** Not expected to be needed. Maintain airborne contaminant concentrations below guidelines for nuisance particulates (see section 5).

**VENTILATION:** *Use with adequate ventilation. Use fan or vent to outside.*

**PROTECTIVE GLOVES:** *Wear rubber gloves for routine industrial use.*

**EYE PROTECTION:** *Safety glasses.*

**OTHER PROTECTIVE EQUIPMENT:** *None except for large spills (see section 7).*

HMIS: 1-0-0

NFPA: 1-0-0

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#### SECTION 9: SPECIAL PRECAUTIONS:

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:** Follow reasonable and safe practices. Avoid getting chemicals ON YOUR or IN YOU.

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**OTHER PRECAUTIONS:** None



# MATERIAL SAFETY DATA SHEET

## Section 1. Chemical product and company identification

Product Name:	<b>Regular Dry Chemical</b> Extinguishant
Synonym:	<b>Sodium Bicarbonate</b> , SDC
Manufacturer:	AMEREX CORPORATION
Internet Address:	<a href="http://www.amerex-fire.com">www.amerex-fire.com</a>
Address:	7595 Gadsden Highway P.O. Box 81 Trussville, AL 35173-0081
Telephone:	(205) 655-3271
Emergency Contacts:	Chemtrec 1(800) 424-9300 or (703) 527-3887
Revised:	September, 2008

## Section 2. Hazard identification and emergency overview

Emergency overview: white, fine solid powder, odorless.

Adverse health effects and symptoms: mildly irritating to the respiratory system and eyes. Symptoms may include coughing, shortness of breath, and irritation of the lungs, eyes, and skin. Ingestion, although unlikely, may cause gastrointestinal irritation and edema (fluid retention).

Exposure guidelines:

Ingredients	OSHA PEL	ACGIH TLV	DFG MAK *
Sodium bicarbonate	PNOC** Total dust, 15 mg/m <sup>3</sup> Respirable fraction, 5 mg/m <sup>3</sup>	PNOC Total dust, 10 mg/m <sup>3</sup> Respirable fraction, 3 mg/m <sup>3</sup>	PNOC Total dust, 4 mg/m <sup>3</sup> Respirable fraction, 1.5 mg/m <sup>3</sup>
Fullers Earth	PNOC Total dust, 15 mg/m <sup>3</sup> Respirable fraction, 5 mg/m <sup>3</sup>	PNOC Total dust, 10 mg/m <sup>3</sup> Respirable fraction, 3 mg/m <sup>3</sup>	PNOC Total dust, 4 mg/m <sup>3</sup> Respirable fraction, 1.5 mg/m <sup>3</sup>
Sericite	PNOC Total dust, 15 mg/m <sup>3</sup> Respirable fraction, 5 mg/m <sup>3</sup>	PNOC Total dust, 10 mg/m <sup>3</sup> Respirable fraction, 3 mg/m <sup>3</sup>	PNOC Total dust, 4 mg/m <sup>3</sup> Respirable fraction, 1.5 mg/m <sup>3</sup>
Silicone oil	NR***	NR	NR

\*German regulatory limits \*\*PNOC = Particulates not otherwise classified (ACGIH) also known as Particulates not otherwise regulated (OSHA) \*\*\* NR = Not Regulated. All values are 8 hour time weighted average concentrations.

Hazard symbols: WHMIS (Canadian workplace hazardous materials identification system)

None

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### Section 3. Composition/information on ingredients

Name/Compound	Weight %	CAS #
Sodium bicarbonate sodium hydrogen carbonate	>92	144-55-8
Fullers Earth Magnesium aluminum silicate	<5	8031-18-3
Sericite potassium aluminum silicate	<2.5	12001-26-2
Silicone oil Methyl hydrogen polysiloxane	<0.5	63148-57-2

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### Section 4. First Aid Measures

**Eye Exposure:** Irrigate eyes with water and repeat until pain free. Seek medical attention if irritation develops, or if vision changes occur.

**Skin Exposure:** In case of contact, wash with plenty of soap and water. Seek medical attention if irritation develops.

**Inhalation:** If respiratory irritation or distress occurs remove victim to fresh air. Seek medical attention if irritation persists.

**Ingestion:** If victim is conscious and alert, give 2-3 glasses of water to drink and do not induce vomiting. Seek immediate medical attention. Do not leave victim unattended. To prevent aspiration of swallowed product, lay victim on side with head lower than waist. If vomiting occurs and the victim is conscious, give water to further dilute the chemical.

Medical conditions possibly aggravated by exposure: Inhalation of product may aggravate existing chronic respiratory problems such as asthma, emphysema, or bronchitis. Skin contact may aggravate existing skin disease. Chronic overexposure may cause pneumoconiosis ("dusty lung" disease).

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#### Section 5. Fire fighting measures

Extinguishing media: non combustible and non flammable – product is an extinguishing agent.

Unusual fire/explosion hazards: in a fire this material may decompose, releasing carbon monoxide and carbon dioxide (see Section 10).

Insensitive to mechanical impact or static discharge.

HMIS Hazard Ranking:

health = 1, flammability = 0, reactivity = 0, personal protective equipment: eye protection, respiratory protection under extended conditions (see Section 8).

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#### Section 6. Accidental release measures

Clean up released material using vacuum or wet sweep and shovel to minimize generation of dust. Wear appropriate respiratory protection. Bag and drum for disposal. If product is used and/or contaminated, use PPE and containment appropriate to the nature of the mixture. Prevent material from entering waterways.

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#### Section 7. Handling and storage

Avoid skin, eye, or respiratory exposure. Use appropriate PPE when handling or maintaining equipment, and wash thoroughly after handling (see Section 8). Keep product in original container or extinguisher. Contents may be under pressure – inspect for extinguisher rust periodically to insure container integrity. Do not mix with other extinguishing agents.

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## Section 8. Exposure controls/ personal protection

During the application of this product against fires, exhaust gases and the products of incomplete combustion (PICs) are the principal respiratory hazards. In the manufacture of extinguishers, automated systems and point source ventilation controls sufficiently minimize respiratory exposure. Employers and employees must use their collective judgment in determining occupational settings where the use of a dust mask or air purifying respirator is prudent. The need for respiratory protection is not likely for short-term use in well ventilated areas.

Respiratory protection: use N95 dust mask for limited exposure, use air-purifying respirator (APR) with high efficiency particulate air (HEPA) filters for prolonged exposure.

Eye protection: wear chemical goggles or full-face APR.

Skin protection: Coveralls and gloves will minimize skin exposure. Good personal hygiene practices essential, such as avoiding food, tobacco products, or other hand-to-mouth contact when handling. Wash thoroughly after handling.

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## Section 9. Physical and chemical properties

Appearance: white powder, finely divided odorless solid.

Specific gravity: ~ 0.9 in aerated condition

Solubility: product is coated - not immediately soluble in water

Non-flammable

Flash point: none

Vapor pressure: none

pH: approximately 8.3 – 9 for 1% solution

Boiling point: not applicable

No explosive or oxidizing properties

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## Section 10. Stability and reactivity

Stability: stable

Incompatibles: reacts with strong acids to form carbon dioxide, creating a possible asphyxiation hazard, dangerous reaction may occur in contact with mono-ammonium phosphate or sodium potassium alloys.

Decomposition products: heat of fire may release carbon monoxide, carbon dioxide.

Possibility of hazardous reactions: none

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## Section 11. Toxicological information

Acute toxicity: Sodium bicarbonate, oral LD<sub>50</sub> (rat): 4220 mg/kg body weight, oral TDLo (infant): 1260 mg/kg body weight, symptoms including pulmonary and kidney damage.  
Target organs in man: respiratory system, eyes. This product is a respiratory and eye irritant. No information was found indicating the product causes sensitization.

Chronic toxicity: Pneumoconiosis, or "dusty lung" disease, may result from chronic exposure to any dust.

Reproductive toxicity: Intraperitoneal TDLo (mouse) 40 mg/kg body weight, teratogen. The reproductive system was not found to be a target organ in humans.

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## Section 12. Ecological information

Ecotoxicity: No negative effects known.

Persistence/  
Degradability: degrades rapidly in humid/wet environment

Bioaccumulation: little, extent unknown

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### Section 13. Disposal considerations

This product is not a RCRA characteristically hazardous or listed hazardous waste. Dispose of according to state or local laws, which may be more restrictive than federal laws or regulations. Used product may be altered or contaminated, creating different disposal considerations.

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### Section 14. Transportation information

This product is not a hazardous material under U.S. Department of Transportation (DOT) 49 CFR 172, and is not regulated by the DOT. This product is not classified as a hazardous material by Transport Canada's Transportation of Dangerous Goods regulations.

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### Section 15. Regulatory information

International Inventory Status:

Sodium bicarbonate is on the following inventories

Country(ies)	Agency	Status
United States of America	TSCA	Yes
Canada	DSL	Yes
Europe	EINECS/ELINCS	Yes
Australia	AICS	Yes
Japan	MITI	Yes
South Korea	KECL	Yes

European Risk and Safety phrases:

EU Classification: Harmful.  
R Phrases: 22 Harmful if swallowed.  
36/37 Irritating to eyes and respiratory system.  
S Phrases: 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
36 Wear suitable protective clothing.



U.S. federal regulatory information:

None of the chemicals in this product are under SARA reporting requirements or have SARA threshold planning quantities (TPQs) or CERCLA reportable quantities (RQs), or are regulated under TSCA 8(d).

State regulatory information:

Chemicals in this product are covered under specific State regulations, as denoted below:

**Alaska** - Designated Toxic and Hazardous Substances: None  
**California** - Permissible Exposure Limits for Chemical Contaminants: None  
**Florida** - Substance List: Mica Dust  
**Illinois** - Toxic Substance List: None  
**Kansas** - Section 302/303 List: None  
**Massachusetts** - Substance List: Mica Dust  
**Minnesota** - List of Hazardous Substances: None  
**Missouri** - Employer Information/Toxic Substance List: None  
**New Jersey** - Right to Know Hazardous Substance List: None  
**North Dakota** - List of Hazardous Chemicals, Reportable Quantities: None  
**Pennsylvania** - Hazardous Substance List: None  
**Rhode Island** - Hazardous Substance List: Mica Dust  
**Texas** - Hazardous Substance List: None  
**West Virginia** - Hazardous Substance List: None  
**Wisconsin** - Toxic and Hazardous Substances: None

California Proposition 65: No component is listed on the California Proposition 65 list.

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Section 16. Shipping information

When shipped in a stored pressure type fire extinguisher, and pressurized with a non-flammable, non-toxic inert expellant gas, the fire extinguisher is considered a hazardous material by the US Department of Transportation and Transport Canada. The proper shipping name shall be FIRE EXTINGUISHER and the UN designation is UN 1044. The DOT hazard class/division is 2.2 Non-Flammable Gas. Packing Group - N/A

## Section 17. Other information

This MSDS conforms to requirements under U.S., U.K., Canadian, Australian, and EU regulations or standards, and conforms to the proposed 2003 ANSI Z400.1 format.

The information herein is given in good faith but no warranty, expressed or implied, is made.

The information herein is given in good faith but no warranty, expressed or implied, is made. Updated by Lindsay R. Hill, CIH

# BOC GASES

## MATERIAL SAFETY DATA SHEET

PRODUCT NAME: CARBON DIOXIDE, GAS

### 1. Product and Company Identification

BOC Gases,  
Division of,  
The BOC Group, Inc.  
575 Mountain Avenue  
Murray Hill, NJ 07974

BOC Gases  
Division of  
BOC Canada Limited  
5975 Falbourne Street, Unit 2  
Mississauga, Ontario L5R 3W6

TELEPHONE NUMBER: (908) 464-8100  
24-HOUR EMERGENCY TELEPHONE NUMBER:  
CHEMTREC (800) 424-9300

TELEPHONE NUMBER: (905) 501-1700  
24-HOUR EMERGENCY TELEPHONE NUMBER:  
(905) 501-0802  
EMERGENCY RESPONSE PLAN NO: 2-0101

PRODUCT NAME: CARBON DIOXIDE, GAS  
CHEMICAL NAME: Carbon Dioxide  
COMMON NAMES/SYNONYMS: Carbonic Anhydride  
TDG (Canada) CLASSIFICATION: 2.2  
WHMIS CLASSIFICATION: A

PREPARED BY: Loss Control (908)464-8100/(905)501-1700  
PREPARATION DATE: 6/1/95  
REVIEW DATES: 06/18/04

### 2. Composition, Information on Ingredients

#### EXPOSURE LIMITS<sup>1</sup>:

INGREDIENT	% VOLUME	PEL-OSHA <sup>2</sup>	TLV-ACGIH <sup>3</sup>	LD <sub>50</sub> or LC <sub>50</sub> Route/Species
Carbon Dioxide FORMULA: CO <sub>2</sub> CAS: 124-38-9 RTECS #: FF6400000	99.8 TO 99.999	5000 ppm TWA	5000 ppm TWA 30,000 ppm STEL	Not Available

<sup>1</sup> Refer to individual state or provincial regulations, as applicable, for limits which may be more stringent than those listed here.

<sup>2</sup> As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)

<sup>3</sup> As stated in the ACGIH 2004 Threshold Limit Values for Chemical Substances and Physical Agents.

OSHA Regulatory Status: This material is classified as hazardous under OSHA regulations.

### 3. Hazards Identification

#### EMERGENCY OVERVIEW

Odorless, colorless, nonflammable gas. Simple Asphyxiant – This product does not contain oxygen and may cause asphyxia if released in a confined area. Maintain oxygen levels above 19.5%. Carbon dioxide acts as a weak narcotic at high concentrations (30,000 ppm). Inhalation of high concentrations of carbon dioxide can cause reduced hearing acuity, changes in respiration and increased blood pressure and pulse. Contents under pressure. Use and store below 125 °F.

**PRODUCT NAME: CARBON DIOXIDE, GAS**

**ROUTE OF ENTRY:**

Skin Contact No	Skin Absorption No	Eye Contact No	Inhalation Yes	Ingestion No
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**HEALTH EFFECTS:**

Exposure Limits Yes	Irritant No	Sensitization No
Teratogen No	Reproductive Hazard No	Mutagen No
Synergistic Effects None reported		

Carcinogenicity: -- NTP: No IARC: No OSHA: No

**EYE EFFECTS:** Liquid and cold vapor may cause tissue freezing.

**SKIN EFFECTS:** May cause frostbite.

**INGESTION EFFECTS:** No adverse effects anticipated.

**INHALATION EFFECTS:** Depending on concentration and duration of exposure carbon dioxide may cause increased respiration, headache, mild narcotic effects, increased blood pressure and pulse, and asphyxiation. Symptoms of overexposure to carbon dioxide become more apparent when atmospheric oxygen is decreased to 15-17%. Chronic harmful effects are not known from repeated inhalation of concentrations below the PEL/TLV.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** None known.

**POTENTIAL ENVIRONMENTAL EFFECTS:** Not expected to be toxic to fish and wildlife.

#### 4. First Aid Measures

**EYES:** None required for gas. If frostbite is suspected, flush eyes with cool water for 15 minutes and obtain immediate medical attention.

**SKIN:** None required for gas. For frostbite, immerse skin in lukewarm water. DO NOT USE HOT WATER. Obtain medical attention.

**INGESTION:** Not anticipated.

**INHALATION:** PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO CARBON DIOXIDE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS. Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given mouth-to-mouth resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive.

PRODUCT NAME: CARBON DIOXIDE, GAS

## 5. Fire Fighting Measures

Conditions of Flammability: Nonflammable		
Flash point: None	Method: Not Applicable	Autoignition Temperature: None
LEL(%): None	UEL(%): None	
Hazardous combustion products: None		
Sensitivity to mechanical shock: None		
Sensitivity to static discharge: None		

**FIRE AND EXPLOSION HAZARDS:** Nonflammable. Cylinder may vent rapidly or rupture violently from pressure when involved in a fire situation.

**EXTINGUISHING MEDIA:** None required. Use media appropriate for surrounding fire.

**FIRE FIGHTING INSTRUCTIONS:** Firefighters should wear respiratory protection (SCBA) and full turnout or Bunker gear. Continue to cool fire-exposed containers until well after flames are extinguished.

## 6. Accidental Release Measures

Evacuate all personnel from affected area. Use appropriate protective equipment (See Section 8). Stop the flow of gas or remove cylinder to outdoor location if this can be done without risk. Ventilate enclosed areas. 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 container valve, contact the appropriate emergency telephone number listed in Section 1 or call your closest BOC location.

## 7. Handling and Storage

**Electrical Classification:** Non-Hazardous

Dry carbon dioxide can be handled in most common structural materials. Moist carbon dioxide is generally corrosive by its formation of carbonic acid. For applications with moist Carbon Dioxide, 316, 309 and 310 stainless steels may be used as well as Hastelloy ® A, B, & C, and Monel ®. Ferrous Nickel alloys are slightly susceptible to corrosion. At normal temperatures carbon dioxide is compatible with most plastics and elastomers.

Use only in well-ventilated areas. Carbon dioxide vapor is heavier than air and will accumulate in low areas. Valve protection caps must remain in place unless container 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 reducing regulator when connecting cylinder to lower pressure 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 system. Do not insert any object (i.e.: screwdriver) into valve cap openings as this can damage the valve causing leakage.

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked 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 being stored for excessive periods of time.

For additional storage recommendations, consult Compressed Gas Association's Pamphlet P-1, AV-7, G-6, G-6.1, G-6.2, G-6.3, G-6.5, G-6.7, G-6.9, PS-5 and TB-10.

MSDS: G-8

Revised: 06/18/04

**PRODUCT NAME: CARBON DIOXIDE, GAS**

Never carry a compressed gas cylinder or a container of a gas in cryogenic liquid form in an enclosed space such as a car trunk, van or station wagon. A leak can result in a fire, explosion, asphyxiation or a toxic exposure.

## 8. Exposure Controls, Personal Protection

**ENGINEERING CONTROLS:** Use local exhaust in combination with general ventilation as necessary to control air contaminants to at or below acceptable exposure guidelines.

**EYE/FACE PROTECTION:** Safety goggles or glasses.

**SKIN PROTECTION:** Protective gloves appropriate for the job.

**RESPIRATORY PROTECTION:** For emergency release use a positive pressure NIOSH approved air-supplying respirator systems (SCBA or airline/escape bottle) using at a minimum Grade D air.

**OTHER/GENERAL PROTECTION:** Safety shoes, emergency eyewash station

## 9. Physical and Chemical Properties

PARAMETER	VALUE	UNITS
Physical state (gas, liquid, solid)	: Gas	
Vapor pressure at 70 °F	: 856	psia
Vapor density at 70 °F, 1 atm (Air = 1)	: 1.53	
Evaporation point	: Not Available	
Boiling point (CO2 Sublimes)	: -109.3	°F
	: -78.5	°C
Freezing point	: -69.8	°F
	: -56.6	°C
pH	: Not Available	
Specific gravity	: Not Available	
Oil/water partition coefficient	: Not Available	
Solubility (H <sub>2</sub> O)	: High, 0.145	g/ml, @25 °C
Odor threshold	: Not Applicable	
Odor and appearance	: A colorless, odorless gas.	

## 10. Stability and Reactivity

### STABILITY:

Stable

### INCOMPATIBLE MATERIALS/CONDITIONS:

Certain reactive metals, hydrides, moist cesium monoxide, or lithium acetylene carbide diammino may ignite. Passing carbon dioxide over a mixture of sodium peroxide and aluminum or magnesium may explode.

### HAZARDOUS DECOMPOSITION PRODUCTS:

Carbon monoxide and oxygen when heated above 3092 °F (1700°C). Carbonic acid is formed in the presence of moisture.

### HAZARDOUS POLYMERIZATION:

Will not occur.

MSDS: G-8

Revised: 06/18/04



**PRODUCT NAME: CARBON DIOXIDE, GAS**

## 11. Toxicological Information

**SKIN AND EYE:** Adverse effects are not expected.

**INHALATION:** Acidosis, adrenal cortical exhaustion, and other metabolic stresses have resulted from prolonged continuous exposure to 1-2% carbon dioxide (10,000 ppm – 20,000 ppm). The ACGIH TLV of 5,000 ppm is expected to provide a good margin of safety from asphyxiation and undue metabolic stress provided sufficient oxygen levels are maintained in the air. Increased physical activity, duration of exposure, and decreased oxygen content can affect systemic and respiratory effects resulting from exposure to carbon dioxide.

**OTHER:** Oxygen deficiency during pregnancy has produced developmental abnormalities in humans and experimental animals.

Exposure of female rats to 60,000 ppm carbon dioxide for 24 hours has produced toxic effects to the embryo and fetus in pregnant rats. Toxic effects to the reproductive system have been observed in other mammalian species at similar concentrations.

Chronic, harmful effects are not known from repeated inhalation of low (3 to 5 molar %) concentrations.

## 12. Ecological Information

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

## 13. Disposal Considerations

Do not attempt to dispose of residual waste or unused quantities. Return in the shipping container PROPERLY LABELED, WITH ANY VALVE OUTLET PLUGS OR CAPS SECURED AND VALVE PROTECTION CAP IN PLACE to BOC Gases or authorized distributor for proper disposal.

## 14. Transport Information

PARAMETER	United States DOT	Canada TDG
PROPER SHIPPING NAME:	Carbon Dioxide	Carbon Dioxide
HAZARD CLASS:	2.2	2.2
IDENTIFICATION NUMBER:	UN 1013	UN 1013
SHIPPING LABEL:	NONFLAMMABLE GAS	NONFLAMMABLE GAS

## 15. Regulatory Information

### SARA TITLE III NOTIFICATIONS AND INFORMATION

#### SARA TITLE III HAZARD CLASSES:

Acute Health Hazard.

Sudden Release of Pressure Hazard

#### SARA TITLE III - SECTION 313 SUPPLIER NOTIFICATION:

This product does not contain toxic chemicals subject to reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372.

MSDS: G-8

Revised: 06/18/04

**PRODUCT NAME: CARBON DIOXIDE, GAS**

**U.S. TSCA/Canadian DSL:** All ingredients are listed on the U.S. Toxic Substances Control Act (TSCA) inventory or exempt from listing and on the Canadian Domestic Substance List (DSL).

**California Proposition 65:** This product does not contain ingredient(s) known to the State of California to cause cancer or reproductive toxicity.

**Canadian Controlled Products Regulations (CPR):** This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

**16. Other Information**

<b>NFPA HAZARD CODES</b>	<b>HMIS HAZARD CODES</b>	<b>RATINGS SYSTEM</b>
Health: 1	Health: 1	0 = No Hazard
Flammability: 0	Flammability: 0	1 = Slight Hazard
Instability: 0	Physical Hazard: 3	2 = Moderate Hazard
		3 = Serious Hazard
		4 = Severe Hazard

Note: Ratings were assigned in accordance with Compressed Gas Association (CGA) guidelines as published in CGA Pamphlet P-19-2004, *CGA Recommended Hazard Ratings for Compressed Gases, 2<sup>nd</sup> Edition*.

ACGIH	American Conference of Governmental Industrial Hygienists
DOT	Department of Transportation
IARC	International Agency for Research on Cancer
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
SARA	Superfund Amendments and Reauthorization Act
STEL	Short Term Exposure Limit
TDG	Transportation of Dangerous Goods
TLV	Threshold Limit Value
WHMIS	Workplace Hazardous Materials Information System

Compressed gas cylinders shall not be refilled without the express written permission of the owner. Shipment of a compressed gas cylinder which has not been filled by the owner or with his/her (written) consent is a violation of transportation regulations.

**DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES:**

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).

**AMEREX CORPORATION**  
 7595 Gadsden Highway  
 P. O. Box 81  
 Trussville, Alabama 35173-0081  
**MATERIAL SAFETY DATA SHEET**

*Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards<sup>1</sup>*

**PART I** *What is the material and what do I need to know in an emergency?*

**1. PRODUCT IDENTIFICATION**

**TRADE NAME (AS LABELED):** **CARBON DIOXIDE**  
**SYNONYMS:** **Carbonic Anhydride, Carbonic Acid**  
**MANUFACTURER'S NAME:** **AMEREX CORPORATION**  
**ADDRESS:** P.O. BOX 81  
 Trussville, AL 35173-0081  
**EMERGENCY PHONE:** 1-800-424-9300 (CHEMTREC)  
**BUSINESS PHONE:** (205) 655-3271  
**DATE OF PREPARATION:** February 1, 1996

**2. COMPOSITION and INFORMATION ON INGREDIENTS**

CHEMICAL NAME	CAS #	% v/v	EXPOSURE LIMITS IN AIR					OTHER
			ACGIH		OSHA			
			TLV ppm	STEL ppm	PEL ppm	STEL ppm	IDLH ppm	
CARBON DIOXIDE	124-38-9	100	5000	30,000	5000	NE	50,000	NIOSH REL: 5000 ppm; 30,000 ppm STEL. DFG MAK: 500 ppm

NE = Not Established C = Ceiling Level See Section 16 for Definitions of Terms Used

<sup>1</sup> NOTE: all WHMIS required information is included. It is located in appropriate sections based on the ANSI Z400.1-1993 format.

**CARBON DIOXIDE MSDS**  
**PAGE 1 OF 8**

**3. HAZARD IDENTIFICATION**

**EMERGENCY OVERVIEW:** This product is an odorless, colorless gas which can cause asphyxiation. Though the mixture is not flammable, if the product's cylinders are exposed to high temperatures, they may rupture violently and cause a high-pressure release of gas.

**SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE:** The most significant route of exposure for this product is inhalation.

**INHALATION:** Although unlikely to occur during use of one fire extinguishing unit, exposure to high concentrations of this gas may cause an oxygen deficient environment. Individuals breathing such


an atmosphere may experience dizziness, drowsiness, unconsciousness, and death, under some circumstances. Inhalation of carbon dioxide can affect the central nervous system and blood vessels, as well as change the rate of respiration.

**CONTACT WITH SKIN or EYES:** Contact with liquid or rapidly expanding gases may cause burns or frostbite.

**HEALTH EFFECTS OR RISKS FROM EXPOSURE:** An Explanation in **Lay Terms**. This product poses low, acute health risks.

**ACUTE:** This extinguishing material presents a slight risk of causing acute health effects. Exposure symptoms would occur upon breathing high concentrations of this gas in a poorly ventilated environment.

**CHRONIC:** This product is not known to cause any industrial illnesses or diseases.

HAZARDOUS MATERIAL INFORMATION SYSTEM		
<b>HEALTH</b>	(BLUE)	1
<b>FLAMMABILITY</b>	(RED)	0
<b>REACTIVITY</b>	(YELLOW)	0
PROTECTIVE EQUIPMENT		
<b>EYES</b>	<b>RESPIRATORY</b>	<b>HANDS</b>   <b>BODY</b>
	See Section 8	
For routine industrial applications		

**PART II** *What should I do if a hazardous situation occurs?*

**4. FIRST-AID MEASURES**

This product is a gas; therefore, exposure via ingestion, ingestion, skin contact, or eye contact would be unlikely. Should exposure via inhalation occur, remove victims to fresh air, as quickly as possible. Trained personnel should administer supplemental oxygen and/or cardio-pulmonary resuscitation, if necessary. Only trained personnel should administer supplemental oxygen.

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.

If exposure causes obvious distress, victim(s) and rescuers must be taken for medical attention. Take copy of label and MSDS to physician or health professional with victim.

**CARBON DIOXIDE MSDS  
PAGE 2 OF 8**

**5. FIRE-FIGHTING MEASURES**

**FLASH POINT, Degree C (method):** Not applicable.

**NFPA RANKING - HEALTH=1, FLAMMABILITY=0, REACTIVITY=0, OTHER=0**

**AUTOIGNITION TEMPERATURE, Degree C:** Not applicable.

**FLAMMABLE LIMITS (in air by volume, %):** Lower (LEL): Not applicable.  
Upper (UEL): Not applicable.

**FIRE EXTINGUISHING MATERIALS:** None. This product is a fire extinguishing agent.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** When involved in a fire, this cylinder under may rupture violently, causing a high pressure release of gases.

Explosion Sensitivity to Static Discharge: Not sensitive.

**SPECIAL FIRE-FIGHTING PROCEDURES:** Keep unused cylinders cool using a water spray. Structural fire fighters must wear Self-Contained Breathing Apparatus and full protective equipment.

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## 6. ACCIDENTAL RELEASE MEASURES

**SPILL AND LEAK RESPONSE:** Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a release, clear the affected area, protect people, and respond with trained personnel. For uncontrolled releases, respond wearing Self-Contained Breathing Apparatus. Monitor the surrounding area for oxygen content. The atmosphere must have at least 19.5 percent oxygen before personnel can be allowed in the area without Self-Contained Breathing Apparatus. Ventilate the affected area.

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## PART III *How can I prevent hazardous situations from occurring?*

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### 7. HANDLING and STORAGE

**WORK PRACTICES AND HYGIENE PRACTICES:** Avoid getting chemicals ON YOU or IN YOU. Wash hands after handling chemicals. Do not eat or drink while handling chemicals. Be aware of any signs of dizziness or fatigue; exposures to fatal concentrations of this product could occur without any significant warning symptoms.

**STORAGE AND HANDLING PRACTICES:** All employees who handle this material should be trained to handle it safely. Keep cylinders in dry, well-ventilated areas which are away from sources of heat. Keep cylinders secure.

**PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT:** Follow practices indicated in Section 6 (Accidental Release Measures). Make certain application equipment is locked and tagged-out safely. Always use this product in areas where adequate ventilation is provided. Decontaminate equipment using soapy water before maintenance begins. Collect all rinsates and dispose of according to applicable Federal, State, or local procedures.

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## CARBON DIOXIDE MSDS PAGE 3 OF 8

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### 8. EXPOSURE CONTROLS - PERSONAL PROTECTION

**VENTILATION AND ENGINEERING CONTROLS:** Use with adequate ventilation. Use a mechanical fan or vent area to outside.

**RESPIRATORY PROTECTION:** Use supplied air respiratory protection if oxygen levels are below 19.5%.

**EYE PROTECTION:** Safety glasses

**HAND PROTECTION:** None normally required.

**BODY PROTECTION:** Use body protection appropriate for task.

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### 9. PHYSICAL and CHEMICAL PROPERTIES

**VAPOR DENSITY:** 1.52

**SPECIFIC GRAVITY:** Approximately 1.3

**SOLUBILITY IN WATER:** Soluble.

**VAPOR PRESSURE, mm Hq @ 20 Degrees C:** Not applicable.

**APPEARANCE AND COLOR:** This product is an odorless, compressed gas.

**HOW TO DETECT THIS SUBSTANCE (warning properties):** This product does not have any specific warning properties.

**EVAPORATION RATE (n-BuAc=1):** Not available.

**MELTING POINT or RANGE:** Sublimes, -78 degrees C.

**BOILING POINT:** Sublimes.

**pH (10% solution):** Not applicable.



## 10. STABILITY and REACTIVITY

**STABILITY:** Stable.

**DECOMPOSITION PRODUCTS:** Not applicable.

**MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE:** Upon contact with moisture, carbon dioxide can form carbonic acid. Carbon dioxide is also incompatible with chemically active metals, such as sodium, potassium, and titanium.

**HAZARDOUS POLYMERIZATION:** Will not occur.

**CONDITIONS TO AVOID:** Incompatible materials.

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### **PART IV** *Is there any other useful information about this material?*

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## 11. TOXICOLOGICAL INFORMATION

**TOXICITY DATA:** The following data is available for components of this product greater than 1 percent by weight in concentration.

**Carbon Dioxide:** This gas is a simple asphyxiant with physiological effects at high concentration.

TCLo(inhalation, rat) = 6 pph/24 hours; reproductive and teratogenic effects

LCLo(inhalation, human) = 9 pph/5 minutes

LCLo(inhalation, mammal) = 90,000 ppm/5 minutes

**SUSPECTED CANCER AGENT:** This product's ingredients are not found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, IARC.

**IRRITANCY OF PRODUCT:** This product may cause mild skin and moderate eye irritancy.

**SENSITIZATION TO THE PRODUCT:** This product is not known to cause sensitization.

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### **CARBON DIOXIDE MSDS PAGE 4 OF 8**

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## 11. TOXICOLOGICAL INFORMATION (Continued)

**REPRODUCTIVE TOXICITY INFORMATION:** Listed below is information concerning the effects of this product and its components on the human reproductive system.

**Mutagenicity:** This product is not known to cause mutagenic effects.

**Teratogenicity:** This product is not known to cause teratogenic effects.

**Reproductive Toxicity:** This product is not known to cause reproductive toxicity effects.

A **mutagen** is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. A **teratogen** is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A **reproductive toxin** is any substance which interferes in any way with the reproductive process.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** Contact with this product may aggravate pre-existing respiratory conditions.

**RECOMMENDATIONS TO PHYSICIANS:** Treat patient symptoms. Administer oxygen, as necessary.

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## 12. ECOLOGICAL INFORMATION

**ENVIRONMENTAL STABILITY:** No adverse environmental consequences are expected. All gases in this mixture occur naturally in the environment. The gas will dissipate rapidly in well ventilated areas.  
**EFFECT OF MATERIAL ON PLANTS or ANIMALS:** None currently known.  
**EFFECT OF CHEMICAL ON AQUATIC LIFE:** Not expected to harm aquatic life.

---

## 13. DISPOSAL CONSIDERATIONS

**PREPARING WASTES FOR DISPOSAL:** Waste disposal must be in accordance with appropriate Federal, State, and local regulations. This product, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority. Residue from fires extinguished with this material may be hazardous.  
**EPA WASTE NUMBER:** Not applicable.

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## 14. TRANSPORTATION INFORMATION

**THIS MATERIAL IS HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.**

<b>PROPER SHIPPING NAME:</b>	Fire Extinguishers (Carbon Dioxide).
<b>HAZARD CLASS NUMBER and DESCRIPTION:</b>	2.2 (Non-flammable gas)
<b>UN IDENTIFICATION NUMBER:</b>	UN 1044.
<b>PACKING GROUP:</b>	Not applicable.
<b>DOT LABEL(S) REQUIRED:</b>	Not applicable (see note below).
<b>EMERGENCY RESPONSE GUIDE NUMBER:</b>	Not applicable.

Note: Fire extinguishers fall under the exception category for labeling under 49 CFR 173.309. The "Non-Flammable Gas" label would not be added, except if the cylinder is offered for shipment by air.

**MARINE POLLUTANT:** Not applicable.

**THIS MATERIAL IS HAZARDOUS AS DEFINED BY TRANSPORT CANADA "TRANSPORTATION OF DANGEROUS GOODS" REGULATIONS.** See above information.

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## CARBON DIOXIDE MSDS PAGE 5 OF 8

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## 15. REGULATORY INFORMATION

**SARA REPORTING REQUIREMENTS:** Carbon Dioxide is not subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act.

**SARA Threshold Planning Quantity:** Not applicable.

**TSCA INVENTORY STATUS:** Carbon Dioxide is listed on the TSCA Inventory.

**CERCLA REPORTABLE QUANTITY (RQ):** Not applicable.

**OTHER FEDERAL REGULATIONS:** Not applicable.

**STATE REGULATORY INFORMATION:** Chemicals in this product are covered under specific State regulations, as denoted below:

<b>Alaska - Designated Toxic and Hazardous Substances: Carbon Dioxide.</b>	<b>Massachusetts - Substance List: Carbon Dioxide.</b>	<b>Pennsylvania - Hazardous Substance List: Carbon Dioxide.</b>
<b>California - Permissible Exposure Limits for Chemical Contaminants: Carbon Dioxide.</b>	<b>Minnesota - List of Hazardous Substances: Carbon Dioxide.</b>	<b>Rhode Island - Hazardous Substance List: Carbon Dioxide.</b>
<b>Florida - Substance List: Carbon Dioxide.</b>	<b>Missouri - Employer Information/Toxic Substance List: Carbon Dioxide.</b>	<b>Texas - Hazardous Substance List: None.</b>
<b>Illinois - Toxic Substance List: Carbon Dioxide.</b>	<b>New Jersey - Right to Know Hazardous Substance List: Carbon Dioxide.</b>	<b>West Virginia - Hazardous Substance List: Carbon Dioxide.</b>
<b>Kansas - Section 302/313 List: None.</b>	<b>North Dakota - List of Hazardous Chemicals, Reportable Quantities: None.</b>	<b>Wisconsin - Toxic and Hazardous Substances: Carbon Dioxide.</b>

**CALIFORNIA PROPOSITION 65:** Carbon dioxide is not listed on the California Proposition 65 lists.

**LABELING (Precautionary Statements):** WARNING! Liquefied gas under pressure. May cause frostbite burns. Exposure may cause headaches, dizziness, eye irritation. Use only in well-ventilated area. Store in a cool, dry location.

**TARGET ORGANS:** Respiratory system, skin, eyes.

**WHMIS SYMBOLS:**

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## 16. OTHER INFORMATION

**PREPARED BY:** CHEMICAL SAFETY ASSOCIATES, Inc.  
9163 Chesapeake Drive, San Diego, CA 92123-1002  
619/565-0302

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. AMEREX Corporation assumes no responsibility for injury to the vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, AMEREX Corporation assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.

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## CARBON DIOXIDE MSDS PAGE 6 OF 8

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### DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on an MSDS. Some of these which are commonly used include the following:

**CAS #:** This is the Chemical Abstract Service Number which uniquely identifies each constituent. It is used for computer-related searching.

**EXPOSURE LIMITS IN AIR:**

**ACGIH - American Conference of Governmental Industrial Hygienists,** a professional association which establishes exposure limits.

**TLV - Threshold Limit Value** - an airborne concentration of a substance which represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour **Time Weighted Average (TWA)**, the 15-minute **Short Term Exposure Limit**, and the instantaneous Ceiling Level. Skin adsorption effects must also be considered.

**OSHA - U.S. Occupational Safety and Health Administration.**

**PEL - Permissible Exposure Limit** - this exposure value means exactly the same as a TLV, except that it is enforceable by OSHA.

**The IDLH - Immediately Dangerous to Life and Health level** represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury.

**The DFG - MAK** is the Republic of Germany's Maximum Exposure Level, similar to the U.S. PEL. **NIOSH** is the National Institute of

**TOXICOLOGICAL INFORMATION:**

Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: **LD50 - Lethal Dose (solids & liquids)** which kills 50% of the exposed animals; **LC50 - Lethal Concentration (gases)** which kills 50% of the exposed animals; ppm concentration expressed in parts of material per million parts of air or water; **mg/m<sup>3</sup>** concentration expressed in weight of substance per volume of air; **mg/kg** quantity of material, by weight, administered to a test subject, based on their body weight in kg. Data from several sources are used to evaluate the cancer-causing potential of the material. The sources are: **IARC - the International Agency for Research on Cancer; NTP - the National Toxicology Program, RTECS - the Registry of Toxic Effects of Chemical Substances, OSHA and CAL/OSHA.** IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. Other measures of toxicity include **TDLo**, the lowest dose to cause a symptom; **TDo, LDLo, and LDo**, the lowest dose to cause death.

**REGULATORY INFORMATION**

This section explains the impact of various laws and regulations on

Occupational Safety and Health, which is the research arm of the U.S. Occupational Safety and Health Administration (OSHA). NIOSH issues exposure guidelines called Recommended Exposure Levels (RELs). When no exposure guidelines are established, an entry of NE is made for reference.

**FLAMMABILITY LIMITS IN AIR:** Much of the information related to fire and explosion is derived from the National Fire Protection Association (NFPA). LEL - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. UEL - the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.

the material. EPA is the U.S. Environmental Protection Agency. WHMIS is the Canadian Workplace Hazard Information System. DOT and CTC are the U.S. Department of Transportation and the Canadian Transportation Commission, respectively. These are: **Superfund Amendments and Reauthorization Act (SARA)**; the **Toxic Substance Control Act (TSCA)**; Marine Pollutant status according to the DOT; California's Safe Drinking Water Act (**Proposition 65**); the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund)**; and various state regulations. This section also includes information on the precautionary warnings which appear on the materials package label.

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## CARBON DIOXIDE MSDS

PAGE 7 OF 8

### FIRE EXTINGUISHER - Cautions and Warnings

Fire extinguishers are designed and produced for the specific purpose of providing a safe and efficient safety tool to be used only in the fighting of fires. Improper or careless use may cause severe bodily injury and/or property damage.

Contents are under pressure which is necessary to deliver the contained extinguishing agent to the fire source. Please take note of the following safety information:

- Contents are under pressure. Do not puncture, incinerate, or discharge into another person's face.
- Do not store at high temperatures above 120 degrees F. or 49 degrees C.
- Keep away from small children.
- Do not use if the extinguisher appears to be damaged or corroded.
- Avoid inhaling the extinguishing agent. Avoid inhaling smoke and fumes - all fires release toxic substances that are harmful. DO NOT remain in a closed area after use; evacuate the area immediately and ventilate thoroughly before re-entering.
- Although extinguishing agents are non-toxic when used properly, contact with them may cause irritation to eyes, nose, throat, and other allergic symptoms.

Refer to specific extinguishing agent material safety data sheet for additional information.

**AVOID INHALING SMOKE AND FUMES; ALL FIRES RELEASE TOXIC SUBSTANCES THAT ARE HARMFUL. DO NOT REMAIN IN CLOSED AREA AFTER USE. VENTILATE CLOSED AREAS BEFORE RETURNING.**

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#### 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATIONS AND OF THE COMPANY UNDERTAKING

**Product Name** FM-200 (Fire Extinguishing Agent)  
**Other Trade Names** Heptafluoropropane, HFC-227ea  
**Product Description** Fire Extinguishing Agent  
**Manufacturer/Supplier** Chemetron Fire Systems  
**Address** 4801 Southwick Drive, 3<sup>rd</sup> Floor  
Matteson, IL 60443  
USA  
**Phone Number** (708) 748-1503  
**Chemtrec Number** (800) 424-9300  
**(for emergencies only)** (703) 527-3887 (International)

**Revision Date:**

**MSDS Date:** February 9, 2009

*Safety Data Sheet according to EC directive 2001/59/EC and OSHA's Hazcom Standard (29 CFR 1910.1200)*

#### 2. HAZARDS 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 - Central Nervous 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.

##### 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 - heart irregularities - loss of consciousness - suffocation if air is displaced by vapors. Individuals with preexisting diseases of the cardiovascular system or nervous system may have increased susceptibility from excessive exposures.

#### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	CAS#/Codes	Concentration	R Phrases	EU Classification
1,1,1,2,3,3,3-Heptafluoropropane	431-89-0 EC#207-079-2	>99.9%	None	Non Flammable Gas



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#### 4. FIRST AID MEASURES

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##### **Eyes**

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

##### **Skin**

Flush with water. Obtain medical attention if frostbite or 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.**

The use of epinephrine or similar compounds can increase susceptibility to heart irregularities caused by excessive exposure to these types of compounds.

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#### 5. FIRE - FIGHTING MEASURES

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##### **Extinguishing Media**

FM-200 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.

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#### 6. ACCIDENTAL RELEASE MEASURES

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Wear full protective clothing and self-contained breathing apparatus. Remove leaking cylinder to a safe place. Ventilate the area. Leaks inside confined spaces may cause suffocation as vapors may displace air, and should not be entered without a self-contained breathing apparatus.

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#### 7. HANDLING AND STORAGE

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

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#### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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##### **Occupational Exposure Standards**

Occupational exposure limits are listed below, if they exist.

##### **1,1,1,2,3,3,3-Heptafluoropropane**

None established.

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#### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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##### 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. For other applications creating 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.

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#### 9. PHYSICAL AND CHEMICAL PROPERTIES

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Physical State	Liquefied gas under pressure
Color	Colorless
Odor	Odorless
Specific Gravity	1.46
Boiling Range/Point (°C/F)	-16.4°C/3°F
Flash Point (PMCC) (°C/F)	Not Flammable
Solubility in Water	260 mg/L
Vapor Density (Air = 1)	6.04
Vapor Pressure	58.8 psia @ 70°F
Gas Density	2.01 lb/ft <sup>3</sup> @ 70°F
Evaporation Rate	Not applicable

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#### 10. STABILITY AND REACTIVITY

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##### Stability

Stable under normal conditions.

##### Conditions to Avoid

- Heat - High temperatures - Exposure to direct sunlight

##### Materials to Avoid

- powdered metals (ex. aluminum, zinc, etc.) - strong oxidizing agents - strong reducing agents - strong alkalis

##### Hazardous Polymerization

Will not occur.

##### Hazardous Decomposition Products

- oxides of carbon - hydrogen fluoride



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### 11. TOXICOLOGICAL INFORMATION

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**Acute Toxicity**

4 hour LC50(rat) >788,698 ppm

**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. Tests have shown that this material does not cause genetic damage in bacterial or mammalian cell cultures.

**Reproductive/Developmental Toxicity**

This product is not expected to cause adverse reproductive effects.

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### 12. ECOLOGICAL INFORMATION

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**Mobility**

No data available.

**Persistence/Degradability**

No data available.

**Bio-accumulation**

No data available.

**Ecotoxicity**

No data available.

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### 13. DISPOSAL CONSIDERATIONS

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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.

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### 14. TRANSPORT INFORMATION

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<b>DOT CFR 172.101 Data</b>	<b>Heptafluoropropane, 2.2, UN3296</b>
<b>UN Proper Shipping Name</b>	Heptafluoropropane
<b>UN Class</b>	(2.2) Non-Flammable Gas
<b>UN Number</b>	UN3296
<b>UN Packaging Group</b>	Not applicable

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### 15. REGULATORY INFORMATION

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**EU Label Information**

Classification and labelling have been performed according to EU directives 67/548/EEC and 99/45/EC including amendments(2001/60/EC and 2006/8/EC)

**EU Hazard Symbol and Indication of Danger.**

Non Flammable Gas

**R phrases**

None

**S phrases**

None

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#### 15. REGULATORY INFORMATION

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##### 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: - none

###### PA Right To Know Law

This product contains the following chemicals found on the Pennsylvania Hazardous Substance List: - none

###### NJ Right To Know Law

This product contains the following chemicals found on the NJ Right To Know Hazardous Substance List: - none

###### 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.

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#### 16. OTHER INFORMATION

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###### NFPA Ratings

NFPA Code for Health - 1

NFPA Code for Flammability - 0

NFPA Code for Reactivity - 0

NFPA Code for Special Hazards - None

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#### 16. OTHER INFORMATION

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##### 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. Chemetron Fire Systems assumes no responsibility for personal injury or property damage resulting from use, handling or from contact with this product.

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# MATERIAL SAFETY DATA SHEET

## PART I *What is the material and what do I need to know in an emergency?*

### 1. PRODUCT IDENTIFICATION

<u>TRADE NAME (AS LABELED):</u>	<b>DEIONIZED WATER</b>
<u>SYNONYMS:</u>	CH 670/ CH 671 De-ionized Water
<u>MANUFACTURER'S NAME:</u>	AMEREX CORPORATION
<u>ADDRESS:</u>	P.O. BOX 81 Trussville, AL 35173-0081
<u>EMERGENCY PHONE:</u>	1-800-424-9300 (CHEMTREC)
<u>BUSINESS PHONE:</u>	(205) 655-3271
<u>DATE OF PREPARATION:</u>	August 7, 2002
<u>DATE OF REVIEW:</u>	February 2009

### 2. COMPOSITION and INFORMATION ON INGREDIENTS

Deionized Water, CAS # 7732-18-5

Under OSHA's Hazard Communication Standard (29 CFR 1910.1200) a chemical mixture is considered hazardous if it contains 1.0% or more of a hazardous compound or 0.1% of more of a carcinogen. Since this product does not contain hazardous material in excess of these amounts, no specific Material Safety Data Sheet (MSDS) is required.

However, in the interest of general laboratory safety, the following precautionary measures are recommended

#### GENERAL PRECAUTIONS/INFORMATION

Respiratory Protection:	None Required
Ventilation:	General
Protective Gloves:	Yes
Lab Coat:	Yes
Eye Protection:	Yes – Provide eyewash station and safety shower

DO NOT PIPETTE BY MOUTH.

Normal laboratory precautions are recommended.

Avoid reagent contact with eyes, skin, and clothing. Wash any area of contact thoroughly with water. Do not ingest reagent.

Waste Disposal: Comply with all Federal, State, and Local regulations.

The information published in this Material Safety Data Sheet has been compiled from experience and data presented in various technical publications. This information should be used as a guide together with other information gathered by the user in the overall evaluation of suitability for use.