

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form	: Substance
Substance name	: Carbon Dioxide
CAS No.	: 124-38-9
Formula	: CO ₂
Synonyms	: Anhydride carbonique / Carbonic acid anhydride / Carbon dioxide / Carbonic acid gas / Carbonic anhydride / Carbon oxide / Dry ice / Khladon 744 / Kohlendioxyd / Kohlensaure / R-744

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/preparation	: Refrigerant, Propellant gas, Carbonation, Fire extinguishing agent, Industrial use
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1.3. Details of the supplier of the safety data sheet

East Dubuque Nitrogen Fertilizers, LLC
16675 Highway 20 West
East Dubuque, IL 61025

T 815-747-3101

1.4. Emergency telephone number

Emergency number	: 800-424-9300 CHEMTREC
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SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification

Simple Asphy.	H380
Compressed gas	H280
Refrigerated liquefied gas	H281

2.2. Label elements

GHS-US labelling

Hazard pictograms (GHS-US)



GHS04

Signal word (GHS-US)	: Warning
Hazard statements (GHS-US)	: H280 - Contains gas under pressure; may explode if heated H281 - Contains refrigerated gas; may cause cryogenic burns or injury H380 - May displace oxygen and cause rapid suffocation

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Precautionary statements (GHS-US) : P282 - Wear cold insulating gloves, eye protection, protective clothing
P315 - Get immediate medical advice and attention
P336 - Thaw frosted parts with lukewarm water. Do not rub affected area
P403 - Store in a well-ventilated place
P410+P403 - Protect from sunlight. Store in a well-ventilated place

2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

Name : Carbon Dioxide
CAS No. : 124-38-9
EC no : 204-696-9

Name	Product identifier	%	GHS-US classification
Carbon dioxide	(CAS No.) 124-38-9	100	Simple Asphy., H380 Compressed gas, H280 Refrigerated liquefied gas, H281

Full text of H-phrases: see section 16

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : If you feel unwell, seek medical advice (show the label where possible).
First-aid measures after inhalation : If inhaled, remove to fresh air and keep at rest in a position comfortable for breathing. If necessary administer pulmonary resuscitation or oxygen, and keep warm. Seek immediate medical advice.
First-aid measures after skin contact : If frostbite or freezing occurs, immediately flush with plenty of lukewarm water to GENTLY warm the affected area. Do not use hot water. Do not rub affected area. Get immediate medical attention.
First-aid measures after eye contact : Immediately rinse with water for a prolonged period (at least 15 minutes) while holding the eyelids wide open. Do not rub. Seek medical attention immediately.
First-aid measures after ingestion : Ingestion is an unlikely route of exposure for a gas. If frostbite or freezing occurs, immediately flush with plenty of lukewarm water to GENTLY warm the affected area. Do not use hot water. Do not rub affected area. Get immediate medical attention.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries : Refrigerated liquefied gas. Contact with product may cause cold burns or frostbite. Gas can be toxic as a simple asphyxiant by displacing oxygen from the air.

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Symptoms/injuries after inhalation	: Risk of suffocation due to oxygen deficiency in confined areas. May displace oxygen and cause rapid suffocation. In a confined space, displacement of air may cause the exposure limits to be exceeded before the oxygen level drops below 18%. Inhalation may affect the nervous system causing headache, possibly dizziness, nausea, weakness, loss of coordination and unconsciousness.
Symptoms/injuries after skin contact	: Refrigerated liquefied gas. Contact with product may cause cold burns or frostbite.
Symptoms/injuries after eye contact	: Refrigerated liquefied gas. Contact with product may cause cold burns or frostbite.
Symptoms/injuries after ingestion	: Ingestion is an unlikely route of exposure for a gas. Refrigerated liquefied gas. Contact with product may cause cold burns or frostbite.
Chronic symptoms	: Repeated or prolonged exposure may affect the blood and central nervous system. Prolonged inhalation at low levels may cause irregular heartbeat.

4.3. Indication of any immediate medical attention and special treatment needed

Symptoms may be delayed. Carefully monitor patients with severe or prolonged exposure for signs of neurological sequelae. If breathing is difficult, give oxygen.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Not flammable. Use extinguishing media appropriate for surrounding fire.
Unsuitable extinguishing media	: None known.

5.2. Special hazards arising from the substance or mixture

Fire hazard	: Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries.
Explosion hazard	: Cylinders involved in a fire may explode even if the fire has been extinguished. Do not attempt to move the cylinders until they have been cold for one hour.
Reactivity	: Hazardous reactions will not occur under normal conditions.

5.3. Advice for firefighters

Firefighting instructions	: On heating, there is a risk of bursting due to internal pressure build-up. Cool down the containers exposed to heat with a water spray.
Protection during firefighting	: Wear full fire-fighting turn-out gear (full Bunker gear) and respiratory protection (SCBA). Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures	: Stop leak if safe to do so. Gas/vapor heavier than air. May accumulate in confined spaces, particularly at or below ground level.
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6.1.1. For non-emergency personnel

Protective equipment	: Use recommended respiratory protection.
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Emergency procedures : Evacuate unnecessary personnel. Ventilate area. Keep upwind.

6.1.2. For emergency responders

Protective equipment : If possible, stop flow of product. Use recommended respiratory protection.

Emergency procedures : Evacuate unnecessary personnel. Ventilate area. Keep upwind.

6.2. Environmental precautions

No additional information available

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Gas/vapor heavier than air. May accumulate in confined spaces, particularly at or below ground level. Ventilate area.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Employ good maintenance practices to prevent leaks. Use good process control measures to prevent releases. Handle in accordance with good industrial hygiene and safety procedures.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Always leak check cylinders when first collected, delivered or used using an approved leak detection fluid. If inspection shows cylinders in poor condition, contact immediately the supplier.

Storage conditions : Securely chain cylinders when in use and protect against physical damage.

Storage area : Store in dry, cool area. Store in a well-ventilated place. Protect from high temperatures.

7.3. Specific end use(s)

Refrigerant. Propellant gas. Carbonation. Fire extinguishing agent.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Carbon Dioxide (124-38-9)		
USA ACGIH	ACGIH TWA (ppm)	5000 ppm
USA ACGIH	ACGIH STEL (ppm)	30000 ppm
USA OSHA	OSHA PEL (TWA) (mg/m ³)	9000 mg/m ³
USA OSHA	OSHA PEL (TWA) (ppm)	5000 ppm

8.2. Exposure controls

Appropriate engineering controls : Ensure adequate ventilation, especially in confined areas.

Personal protective equipment :



Hand protection : Insulated gloves.

Eye protection : Chemical goggles or safety glasses.

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Skin and body protection	: Wear suitable protective clothing.
Respiratory protection	: Self contained breathing apparatus (SCBA) or positive pressure airline with mask are to be used in oxygen-deficient atmospheres.
Thermal hazard protection	: Wear cold insulating gloves.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Gas
Appearance	: Colorless gas at room temperature and pressure.
Molecular mass	: 44.01 g/mol
Color	: Colorless
Odor	: Odorless to slightly acidic.
Odor threshold	: No data available
pH	: Slightly acidic
Relative evaporation rate (butyl acetate=1)	: No data available
Melting point	: No data available
Freezing point	: No data available
Boiling point	: -78.5 °C (-109.3 °F)
Flash point	: No data available
Self ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: 5728.9 kPa at 20 °C (68 °F)
Relative vapor density at 20 °C (68 °F)	: 1.5 (Air = 1)
Relative density	: No data available
Solubility	: Water: 1.45 g/l at 20 °C (68 °F)
Log Pow	: See Section 12.3
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Explosive limits	: No data available

9.2. Other information

Sublimation point	: -78.5 °C (-109.3 °F)
Gas group	: Refrigerated liquefied gas

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SECTION 10: Stability and reactivity

10.1. Reactivity

Hazardous reactions will not occur under normal conditions.

10.2. Chemical stability

Stable under normal temperature and pressure.

10.3. Possibility of hazardous reactions

Hazardous polymerization will not occur.

10.4. Conditions to avoid

Keep out of direct sunlight. Keep away from heat.

10.5. Incompatible materials

Avoid contact with: Potassium; Sodium; Alkaline earth metals

10.6. Hazardous decomposition products

Carbon monoxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity	: Not classified
Skin corrosion/irritation	: Not classified pH: Slightly acidic
Serious eye damage/irritation	: Not classified pH: Slightly acidic
Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: Not classified
Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: Not classified
Symptoms/injuries after inhalation	: Risk of suffocation due to oxygen deficiency in confined areas. May displace oxygen and cause rapid suffocation. In a confined space, displacement of air may cause the exposure limits to be exceeded before the oxygen level drops below 18 %. Inhalation may affect the nervous system causing headache, possibly dizziness, nausea, weakness, loss of coordination, and unconsciousness.
Symptoms/injuries after skin contact	: Refrigerated liquefied gas. Contact with product may cause cold burns or frostbite.

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Symptoms/injuries after eye contact	: Refrigerated liquefied gas. Contact with product may cause cold burns or frostbite.
Symptoms/injuries after ingestion	: Ingestion is an unlikely route of exposure for a gas. Refrigerated liquefied gas. Contact with product may cause cold burns or frostbite.
Chronic symptoms	: Repeated or prolonged exposure may affect the blood and central nervous system. Prolonged inhalation at low levels may cause irregular heartbeat.

SECTION 12: Ecological information

12.1. Toxicity

No additional information available

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

Carbon dioxide (124-38-9)	
BCF fish 1	(no bioaccumulation)
Log Pow	0.83

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations	: Dispose of waste material in accordance with all local, regional, national, and international regulations.
Additional information	: Empty gas cylinders should be returned to the vendor for recycling or refilling.

SECTION 14: Transport information

14.1. UN number

DOT UN No. : UN2187

14.2. UN proper shipping name

DOT Proper Shipping Name	: Carbon dioxide, refrigerated liquid
Department of Transportation (DOT) Hazard Classes	: Class 2.2 - Non-flammable compressed gas
Packing group (DOT)	: None

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14.3. Additional Information

DOT Reportable Quantity (RQ) : None

SECTION 15: Regulatory information

15.1. US Federal regulations

Carbon Dioxide (124-38-9)	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard Sudden release of pressure hazard
Carbon dioxide (124-38-9)	
United States TSCA (Toxic Substances Control Act) inventory	Yes
EPCRA (SARA) § 313	No
EPCRA (SARA) Threshold Planning Quantity (TPQ)	None
EPCRA (SARA) Reportable Quantity (RQ)	None
EPCRA(SARA) Extremely Hazardous Substance	No
CERCLA Reportable Quantity (RQ)	None
CERCLA Hazardous Substance	No

15.2. US State regulations

Carbon dioxide (124-38-9)
U.S. - Hawaii - Occupational Exposure Limits - STELs U.S. - Hawaii - Occupational Exposure Limits - TWAs U.S. - Idaho - Occupational Exposure Limits - TWAs U.S. - Maine - Air Pollutants - Greenhouse Gases (GHG) U.S. - Massachusetts - Oil & Hazardous Material List - Reportable Quantity U.S. - Massachusetts - Right To Know List U.S. - Massachusetts - Volatile Organic Compounds Exempt From Requirements U.S. - Michigan - Occupational Exposure Limits - STELs U.S. - Michigan - Occupational Exposure Limits - TWAs U.S. - Minnesota - Hazardous Substance List U.S. - Minnesota - Permissible Exposure Limits - STELs U.S. - Minnesota - Permissible Exposure Limits - TWAs U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - New York - Occupational Exposure Limits - TWAs U.S. - Oregon - Permissible Exposure Limits - TWAs U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Tennessee - Occupational Exposure Limits - STELs U.S. - Tennessee - Occupational Exposure Limits - TWAs U.S. - Texas - Effects Screening Levels - Long Term U.S. - Texas - Effects Screening Levels - Short Term U.S. - Vermont - Permissible Exposure Limits - STELs U.S. - Vermont - Permissible Exposure Limits - TWAs U.S. - Washington - Permissible Exposure Limits - STELs U.S. - Washington - Permissible Exposure Limits - TWAs

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SECTION 16: Other information

Full text of H-phrases:

Compressed gas	Gases under pressure: Compressed gas
Refrigerated liquefied gas	Gases under pressure: Refrigerated liquefied gas
Simple Asphy.	Simple Asphyxiant
H280	Contains gas under pressure; may explode if heated
H281	Contains refrigerated gas; may cause cryogenic burns or injury
H380	May displace oxygen and cause rapid suffocation

NFPA health hazard

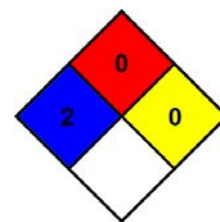
: 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

NFPA fire hazard

: 0 - Materials that will not burn.

NFPA reactivity

: 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



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