CARBON DIOXIDE

Safety Data Sheet

according to OSHA HCS (29 CFR 1910.1200) Regulations

Version: 1.2 Revision Date10/23/2018

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY

Product Identifier

Product Form: Mixture

Product Name: Carbon Dioxide

Synonyms: Dry ice, Carbonic acid gas

CAS No. 124-38-9

Intended Use of the Product

Use of the Substance/Mixture: Industrial use

Name, Address, and Telephone of the Responsible Party

Company

Williams, Inc.
One Williams Center
Tulsa, OK 74172, US
(855) 945-5762 (toll free)

ehs@williams.com

Emergency Telephone Number

Emergency number **Chemtrec** - 800-424-9300

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture

Classification (GHS-US)

Simple Asphy

Compressed gas H280

Label Elements

GHS-US Labeling

Hazard Pictograms (GHS-US) :

GHS04

Signal Word (GHS-US) : Warning

Hazard Statements (GHS-US) : H280 - Contains gas under pressure; may explode if heated
May displace oxygen and cause rapid suffocation

Precautionary Statements (GHS-US) : P410+P403 - Protect from sunlight. Store in a well-ventilated place

Other Hazards

Other Hazards Not Contributing to the Classification: Exposure may aggravate those with pre existing eye, skin, or respiratory conditions. Asphyxiant gas. High concentrations of gas can cause unconciousness and death due to lack of oxygen. Being under the influence of alcohol may enhance the effects of this product.

Unknown Acute Toxicity (GHS-US) Not available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

NAME	PRODUCT IDENTIFIER	% (W/W)	CLASSIFICATION (GHS-US)
Carbon dioxide	(CAS No) 124-38-9	97.04 - 97.23	Simple Asphy Compressed gas, H280
Nitrogen	(CAS No) 7727-37-9	1.33 - 1.53	Simple Asphy Compressed gas, H280
Oxygen	(CAS No) 7782-44-7	0.66 - 0.68	Ox. Gas 1, H270 Compressed gas, H280
Methane	(CAS No) 74-82-8	0.57 - 0.58	Simple Asphy Flam. Gas 1, H220 Compressed gas, H280
Hexane, branched and linear	(CAS No) 92112-69-1	0.11 - 0.12	Flam. Liq. 2, H225 Skin Irrit. 2, H315 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 2, H411

Full text of H-phrases: see section 16

SECTION 4: FIRST AID MEASURES

Description of First Aid Measures

After Inhalation: When symptoms occur: go into open air and ventilate suspected area.Remove to fresh air and keep at rest in a position comfortable for breathing. If experiencing respiratory symptoms: call a Poison center/doctor/.

Skin Contact: In cases of frostbite from liquefied gas, rinse with plenty of water. Thaw frosted parts with lukewarm water. Do not rub affected area.

Eye Contact: Rinse cautiously with water for several minutes.Remove contact lenses, if present and easy to do. Continue rinsing.Obtain medical attention if irritation persists

Ingestion: Unlikely route of exposure. Rinse mouth.Do NOT induce vomiting.Get immediate medical attention.

Most Important Symptoms and Effects Both Acute and Delayed

Dizziness

Coughing

Frostbite from liquified gas

Disorientation

Eye Contact: This gas is non-irritating; but direct contact with liquefied/pressurized gas or frost particles may produce severe and possibly permanent eye damage from freeze burns

SECTION 5: FIREFIGHTING MEASURES

NFPA 704 Hazard Class

Health: 1 Flammability: 0 Instability: 0

0 (Minimal)
1 (Slight)
2 (Moderate)
3 (Serious)
4 (Severe)

Extinguishing Media

Suitable Extinguishing Media: Use extinguishing media appropriate for surrounding fire

Unsuitable Extinguishing Media: Do not use a heavy water stream. Use of heavy stream of water may spread fire.

Special Hazards Arising From the Substance or Mixture

Fire Hazard: Not flammable

Explosion Hazard: Product is not explosive

Reactivity: Hazardous reactions will not occur under normal conditions.

Advice for Firefighters

Precautionary Measures Fire: Exercise caution when fighting any chemical fire

Firefighting Instructions: Use water spray or fog for cooling exposed containers. In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

Hazardous Combustion Products: Carbon monoxide, Oxygen.

Other information: Do not allow run-off from fire fighting to enter drains or water courses

Reference to Other Sections

Refer to section 9 for flammability properties.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Avoid breathing (gas, vapor, mist, spray).

For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel.

For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Ventilate area.

Environmental Precautions

No special measures required.

Methods and Material for Containment and Cleaning Up

For Containment: Notify authorities if liquid enters sewers or public waters.

Methods for Cleaning Up: Allow to evaoprate/sublime

Reference to Other Sections

See heading 8, Exposure Controls and Personal Protection.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Additional Hazards When Processed: Do not pressurize, cut, or weld containers. Do not puncture or incinerate container. Liquid gas can cause frost-type burns

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work. Do no eat, drink or smoke when using this product

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Forms carbonic acid in water.

Storage Conditions: Store in a dry, cool and well-ventilated place. Keep container closed when not in use. Store in a well-ventilated place. Keep container tightly closed.

Incompatible Materials: Strong oxidizers. Dusts of various metals are ignitable and explosive when suspended in carbon dioxide.

Specific End Use(s): Industrial use

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Chemical Name	ACGIH	OSHA	NIOSH
Carbon dioxide (124-38-9)	TWA: 5000 ppm STEL: 30000 ppm	PEL (TWA): 5000 ppm PEL (TWA): 9000 mg/m^3	REL (TWA): 5000 ppm REL (TWA): 9000 mg/m^3 REL (STEL): 30000 ppm REL (STEL): 54000 mg/m^3 IDLH: 40000 mg/m^3
Methane (74-82-8)	TWA: Minimal oxygen content required	--	REL (TWA): 800 ppm REL (TWA):1900 mg/m^3

Note: State province, local or other agencies or advisory groups may have established more stringent limits.
Consult an industrial hygienist or similar professional, or your local agencies, for further information.

Exposure Controls

General Protective and hygienic measures:

Wash hands before breaks and at the end of work.

Engineering controls: Provide adequate ventilation

Breathing Equipment: Not required under normal consitions of use.

Hand Protection: Wear insulated gloves for protection against thermal hazards.

Eye Protection: Chemical goggles or safety glasses.

Respiratory Protection: Self-contained respiratory protective device should be used in case of large spills or leaks.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State	:	Gas
Appearance	:	Clear,Colorless gas. Liquefied compressed gas
Odor	:	Odorless

Odor Threshold	:	Not available
pH	:	Not available
Relative Evaporation Rate (butyl acetate=1)	:	High
Melting Point	:	-78.5°C (109.3°F)
Freezing Point	:	Not available
Boiling Point	:	-78.5°C (174.2°F)
Flash Point	:	Not available
Auto-ignition Temperature	:	Not available
Decomposition Temperature	:	Not available
Flammability (solid, gas)	:	Not available
Lower Flammable Limit	:	Not available
Upper Flammable Limit	:	Not available
Vapor Pressure	:	838 psig (5773/ kPa) @ 20°C (68°F)
Relative Vapor Density	:	1.52 (air = 1) @ 21°C (70°F)
Relative Density	:	0.50-0.51 15.6°C (60°F)
Density	:	762 kg/m^3 Saturated liquid 21.1°C (70°F)
Specific Gravity	:	1.50 @15.56°C (60°F), air=1
Solubility	:	Soluble in water
Log Pow	:	Not available
Log Kow	:	Not available
Viscosity, Kinematic	:	Not available
Viscosity, Dynamic	:	Not available
Explosion Data – Sensitivity to Mechanical Impact	:	Not expected to present an explosion hazard due to mechanical impact.
Explosion Data – Sensitivity to Static Discharge	:	Not expected to present an explosion hazard due to static discharge

SECTION 10: STABILITY AND REACTIVITY

Reactivity: Hazardous reactions will not occur under normal conditions.

Chemical Stability: Stable at standard temperature and pressure.

Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

Conditions to Avoid: Extremely high or low temperatures. Incompatible materials like suspended metal dusts.

Incompatible Materials: Strong oxidizers

Hazardous Decomposition Products: Carbon monoxide, Oxygen.

SECTION 11: TOXICOLOGICAL INFORMATION

Information on Toxicological Effects - Product

Acute Toxicity: Not classified

LD50 and LC50 Data: Not available

Skin Corrosion/Irritation: Not classified

Serious Eye Damage/Irritation: Not classified

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: Not classified

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries after Inhalation: Gas can be toxic as a simple asphyxiant by displacing oxygen from the air. Asphyxia by lack of oxygen: risk of death. May cause drowsiness or dizziness.

Symptoms/Injuries after Skin Contact: Contact with the liquid may cause cold burns/frostbite.

Symptoms/Injuries after Eye Contact: This gas is non-irritating; but direct contact with liquefied/pressurized gas or frost particles may produce severe and possibly permanent eye damage from freeze burns.

Symptoms/Injuries after Ingestion: Ingestion is not considered a potential route of exposure. Non-irritating; but solid and liquid forms of this material and pressurized gas may cause freeze burns.

Information on Toxicological Effects - Ingredient(s)

LD50 and LC50 Data

CARBON DIOXIDE (124-38-9)	
LC50 Inhalation Rat (ppm)	470000 ppm (Exposure time: 30 min)

SECTION 12: ECOLOGICAL INFORMATION

GHS Classification:

No classified hazards

Toxicity:

No additional information available.

Persistence and Degradability

CARBON DIOXIDE	
Persistence and Degradability	Product is biodegradable.

Bioaccumulative Potential

CARBON DIOXIDE	
Bioaccumulative Potential	Not expected to bioaccumulate.

BUTANE (106-97-8)	
Log Pow	2.89

CARBON DIOXIDE (124-38-9)	
BCF fish 1	(no bioaccumulation)
Log Pow	0.83

Mobility in Soil Not available

Other Adverse Effects

Other adverse effects: Can cause frost damage to vegetation.
Other Information: Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Recommendations: Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations.

Additional Information: Empty gas cylinders should be returned to the vendor for recycling or refilling.

SECTION 14: TRANSPORT INFORMATION

UN Number

UN-No.(DOT): 1013

DOT NA no.: UN1013

UN Proper Shipping Name

DOT Proper Shipping Name : UN1013 Carbon dioxide, 2.2

Hazard Labels (DOT) : 2.2 - Non-flammable compressed gas

DOT Packaging Exceptions (49 CFR 173.xxx) : 306

DOT Packaging Non Bulk (49 CFR 173.xxx) : 302; 304

DOT Packaging Bulk (49 CFR 173.xxx) : 302; 314; 315

Additional Information

Emergency Response Guide (ERG) Number : 120

Transport by sea

DOT Vessel Stowage Location : A - The material may be stowed ‘‘on deck’’ or ‘‘under deck’’ on a cargo vessel and on a passenger vessel.

Air transport

DOT Quantity Limitations Passenger Aircraft/Rail (49 CFR 173.27) : 75 kg

DOT Quantity Limitations Cargo Aircraft Only (49 CFR 175.75) : 150 kg

SECTION 15: REGULATORY INFORMATION

US Federal Regulations

Butane	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard Sudden release of pressure hazard

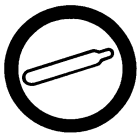
Carbon dioxide (124-38-9)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

Nitrogen (7727-37-9)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

Oxygen (7782-44-7)
Listed on the United States TSCA (Toxic Substances Control Act) inventory
Methane (74-82-8)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

Canadian Regulations

CARBON DIOXIDE	
WHMIS Classification	Class A - Compressed Gas



CARBON DIOXIDE (124-38-9)	
Listed on the Canadian DSL (Domestic Substances List) inventory.	
WHMIS Classification	Class A - Compressed Gas

NITROGEN (7727-37-9)	
Listed on the Canadian DSL (Domestic Substances List) inventory. Listed on the Canadian Ingredient Disclosure List	
WHMIS Classification	Class A - Compressed Gas

OXYGEN (7782-44-7)	
Listed on the Canadian DSL (Domestic Substances List) inventory. Listed on the Canadian Ingredient Disclosure List	
WHMIS Classification	Class A - Compressed Gas Class C - Oxidizing Material

METHANE (74-82-8)	
Listed on the Canadian DSL (Domestic Substances List) inventory. Listed on the Canadian Ingredient Disclosure List	
WHMIS Classification	Class A - Compressed Gas Class B Division 1 - Flammable Gas

HEXANE, BRANCHED AND LINEAR (92112-69-1)	
Listed on the Canadian DSL (Domestic Substances List) inventory. Listed on the Canadian Ingredient Disclosure List	
IDL Concentration 1 %	
WHMIS Classification	Class B Division 2 - Flammable Liquid Class D Division 2 Subdivision B - Toxic material causing other toxic effects

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

SECTION 16: OTHER INFORMATION

Revision date : 05/21/2015

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200

GHS Full Text Phrases:

Compressed gas	Gases under pressure Compressed gas
Simple Asphy	Simple Asphyxiant
H280	Contains gas under pressure; may explode if heated

Guide to Abbreviations:

ACGIH = American Conference of Governmental Industrial Hygienists; CASRN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit (15 minutes); CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act; EPA = Environmental Protection Agency; GHS = Globally Harmonized System; IARC = International Agency for Research on Cancer; INSHT = National Institute for Health and Safety at Work; IOPC = International Oil Pollution Compensation; LEL = Lower Explosive Limit; NE = Not Established; NFPA = National Fire Protection Association; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit (OSHA); SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value (ACGIH); TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; WHMIS = Worker Hazardous Materials Information System (Canada)

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