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

**Product Identifier**

- **Product Form:** Mixture
- **Product Name:** Carbon Dioxide
- **Synonyms:** Not available
- **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
  
  T 800-945-5426
  
  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](image)

- **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.


Other Hazards

Other Hazards Not Contributing to the Classification: Exposure may aggravate those with pre-existing eye, skin, or respiratory conditions. Asphyxiating gas, can be fatal. May cause damage to the blood, central nervous system, and cardiovascular system. High concentrations of gas can cause unconsciousness and death. 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

<table>
<thead>
<tr>
<th>NAME</th>
<th>PRODUCT IDENTIFIER</th>
<th>% (W/W)</th>
<th>CLASSIFICATION (GHS-US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon dioxide</td>
<td>(CAS No) 124-38-9</td>
<td>97.04 - 97.23</td>
<td>Simple Asphy</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>(CAS No) 7727-37-9</td>
<td>1.33 - 1.53</td>
<td>Simple Asphy</td>
</tr>
<tr>
<td>Oxygen</td>
<td>(CAS No) 7782-44-7</td>
<td>0.66 - 0.68</td>
<td>Ox. Gas 1, H270</td>
</tr>
<tr>
<td>Methane</td>
<td>(CAS No) 74-82-8</td>
<td>0.57 - 0.58</td>
<td>Simple Asphy</td>
</tr>
<tr>
<td>Hexane, branched and linear</td>
<td>(CAS No) 92112-69-1</td>
<td>0.11 - 0.12</td>
<td>Flam. Liq. 2, H225</td>
</tr>
</tbody>
</table>

Full text of H-phrases: see section 16

SECTION 4: FIRST AID MEASURES

Description of First Aid Measures

General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible). 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.

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. Call a POISON CENTER/doctor/physician if you feel unwell.
**Skin Contact:** Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Obtain medical attention if irritation persists. 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:** Rinse mouth. Do NOT induce vomiting. Get immediate medical attention.

**Most Important Symptoms and Effects Both Acute and Delayed**

**General:** May cause frostbite on contact with the liquid. Carbon Dioxide is an asphyxiant. Lack of oxygen can be fatal.

**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.

**Skin Contact:** Contact with the liquid may cause cold burns/frostbite

**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

**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.

**Chronic Symptoms:** Not available

**Indication of Any Immediate Medical Attention and Special Treatment Needed**

If exposed or concerned, get medical advice and attention.

### 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). Use only outdoors or in a well-ventilated area. Ruptured cylinders may rocket. Do not allow product to spread into the environment.

**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**

Prevent entry to sewers and public waters. Avoid release to the environment.

**Methods and Material for Containment and Cleaning Up**

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

**Methods for Cleaning Up:** Clear up spills immediately and dispose of waste safely. Stop leak if possible to do so without risk. Isolate area until gas has dispersed. Use water spray to disperse vapors. For water based spills contact appropriate authorities and abide by local regulations for hydrocarbon spills into waterways. Contact competent authorities after a spill.

**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: Comply with applicable regulations.

Storage Conditions: Store in a dry, cool and well-ventilated place. Keep container closed when not in use. Keep in fireproof place. Store in a well-ventilated place. Keep container tightly closed. Keep/Store away from extremely high or low temperatures, ignition sources, direct sunlight, incompatible materials. Store in original container.

Incompatible Materials: Strong oxidizers

Specific End Use(s): Industrial use

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>OSHA</th>
<th>NIOSH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon dioxide (124-38-9)</td>
<td>TWA: 5000 ppm</td>
<td>PEL (TWA): 5000 ppm</td>
<td>REL (TWA): 5000 ppm</td>
</tr>
<tr>
<td></td>
<td>STEL: 30000 ppm</td>
<td>PEL (TWA): 9000 mg/m³</td>
<td>REL (TWA): 9000 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>REL (STEL): 30000 ppm</td>
<td>REL (STEL): 54000 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IDLH: 40000 mg/m³</td>
<td>IDLH: 40000 mg/m³</td>
</tr>
<tr>
<td>Methane (74-82-8)</td>
<td>TWA: Minimal oxygen content required</td>
<td>--</td>
<td>REL (TWA): 800 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>REL (TWA):1900 mg/m³</td>
</tr>
</tbody>
</table>

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

Appropriate Engineering Controls: Ensure adequate ventilation, especially in confined areas. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.


Materials for Protective Clothing: Chemically resistant materials and fabrics.

Hand Protection: Wear chemically resistant protective gloves. Insulated gloves

Eye Protection: Chemical goggles or safety glasses.

Skin and Body Protection: Wear appropriate protective clothing.
**Respiratory Protection:** Use a NIOSH-approved self-contained breathing apparatus whenever exposure may exceed established Occupational Exposure Limits.

**Thermal Hazard Protection:** Wear suitable protective clothing.

**Other Information:** When using, do not eat, drink or smoke.

---

### SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

#### Information on Basic Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State</td>
<td>Gas</td>
</tr>
<tr>
<td>Appearance</td>
<td>Clear, Colorless gas. Liquefied compressed gas</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>Not available</td>
</tr>
<tr>
<td>pH</td>
<td>Not available</td>
</tr>
<tr>
<td>Relative Evaporation Rate (butylacetate=1)</td>
<td>High</td>
</tr>
<tr>
<td>Melting Point</td>
<td>-78.5°C (109.3°F)</td>
</tr>
<tr>
<td>Freezing Point</td>
<td>Not available</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>-78.5°C (174.2°F)</td>
</tr>
<tr>
<td>Flash Point</td>
<td>Not available</td>
</tr>
<tr>
<td>Auto-ignition Temperature</td>
<td>Not available</td>
</tr>
<tr>
<td>Decomposition Temperature</td>
<td>Not available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not available</td>
</tr>
<tr>
<td>Lower Flammable Limit</td>
<td>Not available</td>
</tr>
<tr>
<td>Upper Flammable Limit</td>
<td>Not available</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>838 psig (5773/ kPa) @ 20°C (68°F)</td>
</tr>
<tr>
<td>Relative Vapor Density</td>
<td>1.52 (air = 1) @ 21°C (70°F)</td>
</tr>
<tr>
<td>Relative Density</td>
<td>0.50-0.51 15.6°C (60°F)</td>
</tr>
<tr>
<td>Density</td>
<td>762 kg/m³ Saturated liquid 21.1°C (70°F)</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.50 @15.56°C (60°F), air=1</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in water</td>
</tr>
<tr>
<td>Log Pow</td>
<td>Not available</td>
</tr>
<tr>
<td>Log Kow</td>
<td>Not available</td>
</tr>
<tr>
<td>Viscosity, Kinematic</td>
<td>Not available</td>
</tr>
<tr>
<td>Viscosity, Dynamic</td>
<td>Not available</td>
</tr>
<tr>
<td>Explosion Data – Sensitivity to Mechanical Impact</td>
<td>Not expected to present an explosion hazard due to mechanical impact.</td>
</tr>
<tr>
<td>Explosion Data – Sensitivity to Static Discharge</td>
<td>Not expected to present an explosion hazard due to static discharge</td>
</tr>
</tbody>
</table>
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.
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

<table>
<thead>
<tr>
<th>CARBON DIOXIDE (124-38-9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 Inhalation Rat (ppm)</td>
</tr>
</tbody>
</table>
SECTION 12: ECOLOGICAL INFORMATION

GHS Classification:
No classified hazards

Toxicity:
No additional information available.

Persistence and Degradability

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CARBON DIOXIDE</td>
<td>Product is biodegradable.</td>
</tr>
</tbody>
</table>

Bioaccumulative Potential

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CARBON DIOXIDE</td>
<td>Not expected to bioaccumulate.</td>
</tr>
<tr>
<td>BUTANE (106-97-8)</td>
<td>Log Pow 2.89</td>
</tr>
<tr>
<td>CARBON DIOXIDE (124-38-9)</td>
<td>BCF fish 1 (no bioaccumulation)</td>
</tr>
<tr>
<td></td>
<td>Log Pow 0.83</td>
</tr>
</tbody>
</table>

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
CARBON DIOXIDE
Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

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

<table>
<thead>
<tr>
<th>Compound</th>
<th>SARA Section 311/312 Hazard Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon dioxide (124-38-9)</td>
<td>Immediate (acute) health hazard Sudden release of pressure hazard</td>
</tr>
<tr>
<td>Listed on the United States TSCA (Toxic Substances Control Act) inventory</td>
<td></td>
</tr>
<tr>
<td>Nitrogen (7727-37-9)</td>
<td>Listed on the United States TSCA (Toxic Substances Control Act) inventory</td>
</tr>
<tr>
<td>Oxygen (7782-44-7)</td>
<td>Listed on the United States TSCA (Toxic Substances Control Act) inventory</td>
</tr>
<tr>
<td>Methane (74-82-8)</td>
<td>Listed on the United States TSCA (Toxic Substances Control Act) inventory</td>
</tr>
</tbody>
</table>

Canadian Regulations

<table>
<thead>
<tr>
<th>Compound</th>
<th>WHMIS Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>CARBON DIOXIDE</td>
<td>Class A - Compressed Gas</td>
</tr>
</tbody>
</table>
### 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:

<table>
<thead>
<tr>
<th>Compressed gas</th>
<th>Gases under pressure Compressed gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple Asphy</td>
<td>Simple Asphyxiant</td>
</tr>
<tr>
<td>H280</td>
<td>Contains gas under pressure; may explode if heated</td>
</tr>
</tbody>
</table>

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)

Disclaimer of Expressed and implied Warranties:

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Party Responsible for the Preparation of This Document

Williams, Inc.
One Williams Center
Tulsa, OK 74172, US
800-688-7507

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

North America GHS US 2012 & WHMIS