SECTION 1: IDENTIFICATION

1.1. Product Identifier

Product Form: Substance

Product Name: Carbon dioxide

CAS-No.: 124-38-9

Formula: CO2

1.2. Intended Use of the Product

Use of the Substance/Mixture: Industrial use, Use as directed

1.3. Name, Address, and Telephone of the Responsible Party

Company

High Precision Gas LLC

10770 Painter Avenue

Santa Fe Springs, CA 90670

1-866-868-6525

www.highprecisiongas.com

1.4. Emergency Telephone Number

Emergency Number : Professional Emergency Resource Services (PERS)
(800) 633-8253 24 / 7 / 365

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the Substance or Mixture

Liquefied gas H280

Full text of hazard classes and H-statements : see section 16

2.2. 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
OSHA-H01 - MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION
CGA-HG01 - MAY CAUSE FROSTBITE
CGA-HG03 - MAY INCREASE RESPIRATION AND HEART RATE

Precautionary Statements (GHS-US) : P202 - Do not handle until all safety precautions have been read and understood
P261 - Avoid breathing gas
P262 - Do not get in eyes, on skin, or on clothing
P271+P403 - Use and store only outdoors or in a well-ventilated place
CGA-PG05 - Use a back flow preventive device in the piping
CGA-PG10 - Use only with equipment rated for cylinder pressure
CGA-PG06 - Close valve after each use and when empty
CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F)

2.3. Other Hazards

Asphyxiant in high concentrations. Contact with liquid may cause cold burns/frostbite.

WARNING: Concentration levels of carbon dioxide above about 1 percent are dangerous. High Precision Gas recommends continuous monitoring with alarms to indicate unsafe conditions before and during potential personnel exposure. Use appropriate monitoring devices to ensure a safe oxygen level (minimum of 19.5 percent) and a safe carbon dioxide level.

2.4. Unknown Acute Toxicity (GHS-US)

No data available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substance

Name	Product Identifier	%
Carbon dioxide	(CAS-No.) 124-38-9	99.5 - 100

Full text of H-phrases: see section 16

3.2. Mixture

Not applicable

SECTION 4: FIRST AID MEASURES

4.1. Description of First-aid Measures

First-aid Measures After Inhalation: Remove to fresh air and keep at rest in a position comfortable for breathing. . If not breathing, give artificial respiration, with supplemental oxygen given by qualified personnel. If breathing is difficult, qualified personnel should give oxygen. Call a physician.

First-aid Measures After Skin Contact: MAY CAUSE FROSTBITE. For exposure to liquid, cold vapor, or solid carbon dioxide (dry ice), immediately warm frostbite area with warm water not to exceed 41°C (105°F). Water temperature should be tolerable to normal skin. Maintain skin warming for at least 15 minutes or until normal coloring and sensation have returned to the affected area. In case of massive exposure, remove clothing while showering with warm water. Seek medical evaluation and treatment as soon as possible.

First-aid Measures After Eye Contact: Immediately flush eyes thoroughly with water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. Contact an ophthalmologist immediately.. Get immediate medical attention.

First-aid Measures After Ingestion: Ingestion is not considered a potential route of exposure.

4.2. Most Important Symptoms and Effects Both Acute and Delayed

No additional information available

4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

None.

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing Media

Use extinguishing media appropriate for surrounding fire.

5.2. Special Hazards Arising From the Substance or Mixture

Reactivity: No reactivity hazard other than the effects described in sub-sections below.

Explosion Hazard: Heat of fire can build pressure in container and cause it to rupture. Containers are equipped with a pressure relief device. (Exceptions may exist where authorized by DOT.) No part of the container should be subjected to a temperature higher than 125°F (52°C).

5.3. Advice for Firefighters

Firefighting Instructions: WARNING! Liquid and gas under pressure.

Evacuate all personnel from the danger area. Use self-contained breathing apparatus (SCBA) and protective clothing. Immediately cool containers with water from maximum distance. Stop flow of gas if safe to do so, while continuing cooling water spray. Remove ignition sources if safe to do so. Remove containers from area of fire if safe to do so. On-site fire brigades must comply with OSHA 29 CFR 1910.156 and applicable standards under 29 CFR 1910 Subpart L—Fire Protection.

Other information: Containers are equipped with a pressure relief device. (Exceptions may exist where authorized by DOT [U.S.] or TC [Canada].).

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: WARNING! Liquid and gas under pressure.. Rapid release of gaseous carbon dioxide through a pressure relief device (PRD) or valve can result in the formation of dry ice, which is very cold and can cause frostbite.

6.1.1. For Non-Emergency Personnel

No additional information available

6.1.2. For Emergency Personnel

No additional information available

6.2. Environmental Precautions

Try to stop release.

6.3. Methods and Materials for Containment and Cleaning Up

For Containment: Prevent waste from contaminating the surrounding environment. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, provincial, and local regulations. If necessary, call your local supplier for assistance.

6.4. Reference to Other Sections

See also sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for Safe Handling

Precautions for Safe Handling: Avoid breathing gas. Do not get in eyes, on skin, or on clothing. This gas is heavier than air and in an enclosed space tends to accumulate near the floor, displacing air and pushing it upward. This creates an oxygen-deficient atmosphere near the floor. Ventilate space before entry. Verify sufficient oxygen concentration.

WARNING: Concentration levels of carbon dioxide above about 1 percent are dangerous. High Precision Gas recommends continuous monitoring with alarms to indicate unsafe conditions before and during potential personnel exposure. Use appropriate monitoring devices to ensure a safe oxygen level (minimum of 19.5 percent) and a safe carbon dioxide level.

Wear leather safety gloves and safety shoes when handling cylinders. Protect cylinders from physical damage; do not drag, roll, slide or drop. While moving cylinder, always keep in place removable valve cover. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Never insert an object (e.g, wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Slowly open the valve. If the valve is hard to open, discontinue use and contact your supplier. Close the container valve after each use; keep closed even when empty. Never apply flame or localized heat directly to any part of the container. High temperatures may damage the container and could cause the pressure relief device to fail prematurely, venting the container contents. For other precautions in using this product, see section 16.

7.2. Conditions for Safe Storage, Including Any Incompatibilities

Storage Conditions: Store in a cool, well-ventilated place. Store and use with adequate ventilation. Store only where temperature will not exceed 125°F (52°C). Firmly secure containers upright to keep them from falling or being knocked over. Install valve protection cap, if provided, firmly in place by hand. Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods.

This gas is heavier than air and in an enclosed space tends to accumulate near the floor, displacing air and pushing it upward. This creates an oxygen-deficient atmosphere near the floor. Ventilate space before entry. Verify sufficient oxygen concentration.

7.3. Specific End Use(s)

None.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control Parameters

Carbon dioxide (124-38-9)		
ACGIH	ACGIH TLV-TWA (ppm)	5000 ppm
ACGIH	ACGIH TLV-STEL (ppm)	30000 ppm
USA OSHA	OSHA PEL (TWA) (mg/m³)	9000 mg/m³
USA OSHA	OSHA PEL (TWA) (ppm)	5000 ppm
USA IDLH	US IDLH (ppm)	40000 ppm

8.2. Exposure Controls

Appropriate Engineering Controls : Use a local exhaust system with sufficient flow velocity to maintain an adequate supply of air in the worker's breathing zone. Mechanical (general): General exhaust ventilation may be acceptable if it can maintain an adequate supply of air.
WARNING: Concentration levels of carbon dioxide above about 1 percent are dangerous. High Precision Gas recommends continuous monitoring with alarms to indicate unsafe conditions before and during potential personnel exposure. Use appropriate monitoring devices to ensure a safe oxygen level (minimum of 19.5 percent) and a safe carbon dioxide level.

Materials for protective clothing	:	Wear work gloves and metatarsal shoes for cylinder handling. Protective equipment where needed. Select in accordance with OSHA 29 CFR 1910.132, 1910.136, and 1910.138.
Eye Protection	:	Wear safety glasses when handling cylinders; vapor-proof goggles and a face shield during cylinder changeout or whenever contact with product is possible. Select eye protection in accordance with OSHA 29 CFR 1910.133.
Skin and body protection	:	As needed for welding, wear hand, head, and body protection to help prevent injury from radiation and sparks. (See ANSI Z49.1.) At a minimum, this includes welder's gloves and protective goggles, and may include arm protectors, aprons, hats, and shoulder protection as well as substantial clothing.
Respiratory Protection	:	When workplace conditions warrant respirator use, follow a respiratory protection program that meets OSHA 29 CFR 1910.134, ANSI Z88.2, or MSHA 30 CFR 72.710 (where applicable). Use an air-supplied or air-purifying cartridge if the action level is exceeded. Ensure that the respirator has the appropriate protection factor for the exposure level. If cartridge type respirators are used, the cartridge must be appropriate for the chemical exposure. For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus (SCBA).
Thermal Hazard Protection	:	Wear cold insulating gloves when transfilling or breaking transfer connections.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on Basic Physical and Chemical Properties

Molecular Weight	:	44 g/mol
Physical State	:	Gas
Appearance	:	Colorless gas
Odor	:	No odor warning properties.
Odor Threshold	:	No data available
pH	:	3.7 (carbonic acid)
Evaporation Rate	:	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
Critical Temperature	:	31 °C (87.7°F)
Auto-ignition Temperature	:	No data available
Decomposition Temperature	:	No data available
Flammability (solid, gas)	:	No data available
Vapor Pressure	:	57.3 bar (831 psig)
Critical Pressure	:	73.7 bar (1069 psig)
Relative Vapor Density at 20°C	:	762
Relative Gas Density	:	1.52
Relative Density	:	1.22
Solubility	:	Water: 2000 mg/l Completely soluble.
Partition Coefficient: N-Octanol/Water	:	0.83
Viscosity	:	No data available
Oxidizing properties	:	None.

9.2. Other Information No additional information available

Gas group	:	Liquefied gas
Additional information	:	Gas/vapor heavier than air. May accumulate in confined spaces, particularly at or below ground level

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity: No reactivity hazard other than the effects described in sub-sections below.

10.2. Chemical Stability: Stable under normal conditions.

10.3. Possibility of Hazardous Reactions: None.

10.4. Conditions to Avoid: None under recommended storage and handling conditions (see section 7).

10.5. Incompatible Materials: Alkali metals, Alkaline earth metals, Acetylide forming metals, Chromium, Titanium > 1022°F (550°C), Uranium (U) > 1382°F (750°C), Magnesium > 1427°F (775°C).

10.6. Hazardous Decomposition Products: Electrical discharges and high temperatures decompose carbon dioxide into carbon monoxide and oxygen. The welding process may generate hazardous fumes and gases.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on Toxicological Effects

Acute Toxicity: Not classified

Skin corrosion/irritation: Not classified

pH: 3.7 (carbonic acid)

Serious eye damage/irritation: Not classified

pH: 3.7 (carbonic acid)

Respiratory or skin sensitization: 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

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecology - general : No ecological damage caused by this product.

12.2. Persistence and Degradability

Carbon dioxide (124-38-9)	
Persistence and Degradability	No ecological damage caused by this product.

12.3. Bioaccumulative Potential

Carbon dioxide (124-38-9)	
Bioaccumulative Potential	No ecological damage caused by this product.
BCF fish 1	No bioaccumulation
Log Pow	0.83
Log Kow	Not applicable.

12.4. Mobility in Soil: No additional information available

Carbon dioxide (124-38-9)	
Mobility in soil	No data available.
Ecology - soil	No ecological damage caused by this product.

12.5. Other Adverse Effects

Effect on ozone layer : None

Global warming potential [CO2=1] : 1

Effect on the global warming : When discharged in large quantities may contribute to the greenhouse effect

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste Treatment Methods

Water Treatment Methods: May be vented to atmosphere in a well ventilated place. Discharge to atmosphere in large quantities should be avoided. Do not discharge into any place where its accumulation could be dangerous. Contact supplier if guidance is required.

Waste Disposal Recommendations: Do not attempt to dispose of residual or unused quantities. Return container to supplier.

SECTION 14: TRANSPORT INFORMATION

The shipping description(s) stated herein were prepared in accordance with certain assumptions at the time the SDS was authored and can vary based on several variables that may or may not have been known at the time the SDS was issued.

In Accordance with DOT

Transport document description : UN1013 Carbon dioxide, 2.2

UN-No.(DOT) : UN1013

Proper Shipping Name (DOT) : Carbon dioxide

Class (DOT) : 2.2 - Class 2.2 - Non-flammable compressed gas 49 CFR 173.115

Hazard labels (DOT) : 2.2 - Non-flammable gas

Additional information

Emergency Response Guide (ERG) Number : 120 (UN1013)

Other information : No supplementary information available.

Special transport precautions : Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers: - Ensure there is adequate ventilation. - Ensure that containers are firmly secured. - Ensure cylinder valve is closed and not leaking. - Ensure valve outlet cap nut or plug (where provided) is correctly fitted. - Ensure valve protection device (where provided) is correctly fitted.

Transport by sea

UN-No. (IMDG) : 1013

Proper Shipping Name (IMDG) : CARBON DIOXIDE

Class (IMDG) : 2 - Gases

MFAG-No : 120

Transport by air

UN-No. (IATA) : 1013

Proper Shipping Name (IATA) : Carbon dioxide

Class (IATA) : 2

Civil Aeronautics Law : Gases under pressure/Gases nonflammable nontoxic under pressure

SECTION 15: REGULATORY INFORMATION

15.1. US Federal Regulations

Carbon dioxide (124-38-9)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard Sudden release of pressure hazard

15.2. International Regulations

CANADA

Carbon dioxide (124-38-9)
Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

Carbon dioxide (124-38-9)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

15.2.2 National Regulations

Carbon dioxide (124-38-9)
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the Canadian IDL (Ingredient Disclosure List)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on CICR (Turkish Inventory and Control of Chemicals)

15.3. US State Regulations

Carbon dioxide (124-38-9)	
U.S. - California - Proposition 65 - Carcinogens List	No
U.S. - California - Proposition 65 - Developmental Toxicity	No

U.S. - California - Proposition 65 - Reproductive Toxicity - Female	No
U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No
State or local regulations	U.S. - Massachusetts - Right to Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Date of Preparation or Latest Revision : 01/25/2021

Indication of Changes : Revision date.

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

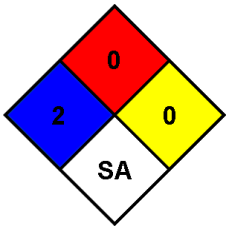
NFPA Rating

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

Fire hazard : 0 - Materials that will not burn.

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

Specific hazard : SA - This denotes gases which are simple asphyxiants.



HMIS III Rating

Health : 1 Slight Hazard - Irritation or minor reversible injury possible

Flammability : 0 Minimal Hazard

Physical : 3 Serious Hazard

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.

SDS US (GHS HazCom)