

# SAFETY DATA SHEETS

According to the UN GHS revision 10

## 1: Identification

### 1.1 GHS Product identifier

Product name Carbon-13C dioxide

### 1.2 Other means of identification

Product number 1111-72-4

Other names Carbon-13C dioxide

### 1.3 Recommended use of the chemical and restrictions on use

Identified uses Industrial and scientific research use.

Uses advised against no data available

### 1.4 Supplier's details

Company Zhongshan Greenrock Technology Co., Ltd.

Address No. 138, Jinsan Avenue, Sanjiao Town, Zhongshan City, Guangdong Province, China

Telephone +86-2087066781

### 1.5 Emergency phone number

Emergency phone number +86-2087066781

Service hours Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

## 2: Hazard identification

### 2.1 Emergency Overview

Substances in pressurized containers may cause high-speed ejection or explosion if the container ruptures. Cryogenic liquefied gases may cause severe frostbite. Handle and store with care.

### 2.2 GHS Classification

Gases under pressure : Compressed gas, Liquefied gas, Dissolved gas

### 2.3 GHS label elements, including precautionary statements

Pictogram(s)



<b>Signal word</b>	Warning
<b>Hazard statement(s)</b>	H280 Contains gas under pressure; may explode if heated
<b>Precautionary statement(s)</b>	
<b>Prevention</b>	no data available
<b>Response</b>	no data available
<b>Storage</b>	P410+P403 Protect from sunlight. Store in a well-ventilated place.
<b>Disposal</b>	no data available

## 2.4 Physical and chemical

High-pressure containers can rupture due to heat or impact, ejecting their contents at high speed. Liquefied gases absorb significant heat when evaporating, causing low-temperature burns. Some gases are flammable or toxic.

## 2.5 Health hazards

High-pressure jets can cause mechanical damage and frostbite. Leakage of asphyxiating gases can lead to hypoxia. Exposure to low temperatures can cause tissue freezing and necrosis. Some gases are inherently toxic and can cause poisoning.

## 2.6 Environmental hazards

Most inert pressurized gases have minimal impact on the environment. However, leaks of toxic or corrosive gases can harm surrounding ecosystems. Cryogenic liquids can damage local vegetation.

## 2.7 Other hazards which do not result in classification

no data available

# 3: Composition/information on ingredients

## 3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
Carbon-13C dioxide	Carbon-13C dioxide	1111-72-4	-	99%

# 4: First-aid measures

## 4.1 General advice

Immediately move away from the leaking tank. If it is refrigerated gas, avoid contact with cold surfaces; close the valve (if safe), ventilate and dilute the gas; bring the material SDS document and seek medical attention if necessary

## 4.2 If inhaled

Move to fresh air. If inhalation of inert gas may cause suffocation, immediately inhale oxygen; if breathing difficulties occur, seek medical attention for blood oxygen monitoring.

### **4.3 In case of skin contact**

If frostbite occurs due to contact with refrigerated gas, immediately rewarm the area with warm water (37-40?) for 15-20 minutes (avoid rubbing); bandage the frostbitten area with sterile gauze and do not apply ointment.

### **4.4 In case of eye contact**

If exposed to refrigerated gas, immediately rinse with saline for 10 minutes and wear a windproof eye mask after rinsing; if blurred vision occurs, go to an ophthalmologist for medical attention.

### **4.5 If swallowed**

This rarely happens (pressurized gases are mostly in gaseous form). If pressurized chemicals (such as aerosol liquids) are accidentally ingested, seek medical attention immediately and do not induce vomiting.

### **4.6 Most important symptoms and effects, both acute and delayed**

Acute symptoms include frostbite (pallor and numbness of the skin), suffocation, and dizziness. Long-term effects include severe frostbite that may lead to tissue necrosis.

### **4.7 Protection of first-aiders**

Rescuers need to wear cold-proof clothing, low-temperature gloves, and goggles; use special tools when handling pressurized tanks to prevent the tanks from tipping over.

### **4.8 Notes to physician**

Inform the doctor of the gas type and exposure time; frostbite patients need to be treated according to the frostbite grade (grade III and above require surgical treatment), and patients with asphyxiation need to be checked for cerebral hypoxia.

## **5: Fire-fighting measures**

### **5.1 Unsuitable extinguishing media**

Refrigerated liquefied gas: Do not use water (to prevent frostbite) or dry powder (the tank may not be cooled). Flammable pressurized chemicals: Avoid using carbon dioxide (which may cause a sudden increase in pressure).

### **5.2 Specific hazards during fire fighting**

Pressurized gas tanks can rupture and explode when heated, releasing high-speed airflow (such as oxygen tank explosions); leakage of refrigerated gases (such as liquid nitrogen) can easily cause frostbite and liquefy the air, causing suffocation; and combustion of flammable pressurized chemicals is accompanied by high-pressure jet flames.

### **5.3 Hazardous combustion products**

Carbon monoxide (a flammable pressurized chemical), inert gases (such as argon, which causes asphyxiation), cryogenic mist (refrigeration gas).

### **5.4 Specific extinguishing methods**

Pressurized gas: If the tank is not burning, cool it down (use water mist to avoid direct exposure) and close the valve (when safe); if it is burning, use dry powder to extinguish the fire and cool the tank at the same time (to prevent explosion); Refrigerated gas: No need to extinguish the fire in case of leakage, evacuate personnel, and ventilate and dilute (to prevent suffocation).

## **5.5 Special protective equipment for fire-fighters**

Wear pressure protection clothing, impact helmet, and cold-proof gloves (for refrigerated gas); carry a pressure gauge (to monitor tank pressure); avoid standing in front of the tank during operation and keep a distance of more than 10 meters from the tank.

# **6: Accidental release measures**

## **6.1 Protective measures for workers**

Wear pressure protection clothing, impact-proof helmet, and high-pressure resistant gloves; wear cold-proof clothing for refrigerated gases (to prevent frostbite); carry a pressure gauge + leak detector, and stay away from the front of the container when working.

## **6.2 Environmental protection measure**

Refrigerated gases must be stored to prevent freezing of equipment/personnel, and to prevent large accumulations that may cause hypoxia; pressurized chemicals must not be discharged into water bodies/soil, and concentrations in contaminated areas must be monitored.

## **6.3 Containment methods for leaked chemicals**

Compressed gas: Close the valve (when safe) and release a small amount of pressure to an open area; Refrigerated gas: Wrap the leak point with insulation material and collect the condensate in a low-temperature resistant container; Pressurized chemicals: Store in a pressure-resistant container.

## **6.4 Cleanup methods for chemical spills**

Gas: Professional recovery when the leakage source cannot be closed; Refrigerated gas: Transfer to an open area until the leakage is reduced; Pressurized chemicals: Transfer to a dedicated storage tank with a pressure-resistant pump.

## **6.5 Measures to prevent the spread of leaks**

A 15-meter isolation zone is designated, and personnel/vehicles are prohibited from approaching; monitoring points are set up for toxic gases; isolation belts are used for blocking, and low-lying areas are monitored (heavy gas accumulation).

## **6.6 Container leakage treatment**

Minor leakage: seal with high-pressure sealant and monitor pressure; serious leakage: evacuate, close upstream valves, handle professionally, and prohibit unauthorized disassembly of valves.

## **6.7 Special considerations**

Do not impact/heat/exposure containers to sunlight; prevent direct skin contact with refrigerated gas (frostbite); perform pressure and seal testing on containers before reuse.

## 7: Handling and storage

### 7.1 Safe storage conditions

Pressurized gases are stored in dedicated gas cylinder warehouses (with concrete floors and guardrails to prevent tipping), equipped with gas cylinder holders (each cylinder is independently fixed); pressurized chemicals are stored in pressure-resistant containers (such as stainless steel pressure tanks, with a design pressure  $\geq 1.2$  times the working pressure); and pressure monitors (accuracy  $\pm 0.01$ MPa) are installed in warehouses.

### 7.2 Storage precautions

Keep gas cylinders away from fire and heat sources (distance  $\geq 5$  meters) and avoid direct sunlight; check the gas cylinder valves regularly (once a month) to ensure there are no leaks; pressurized chemicals are prohibited from being stored at overpressure (working pressure  $\geq 0.8$  times the design pressure); use a dedicated gas cylinder cart when transporting and do not roll.

### 7.3 VCI Storage Grade

Level 3 (medium): The metal gas cylinder valve is coated with VCI grease (high-pressure resistant type) and replaced every six months; the inner wall of the pressure tank is coated with VCI electroplating layer (such as zinc-nickel alloy, thickness  $\geq 20\mu\text{m}$ ) to prevent internal corrosion and abnormal pressure.

### 7.4 Recommended storage temperature

10-30 $^{\circ}\text{C}$ . Refrigerated liquefied gases (such as liquid nitrogen) must be maintained at  $-196^{\circ}\text{C}$  (equipped with vacuum insulated storage tanks). High-pressure gases should avoid sudden temperature changes (such as moving from a high-temperature environment to a low-temperature environment). The temperature fluctuation should be  $\leq \pm 5^{\circ}\text{C}$  (if the label has a recommended storage temperature, the label shall prevail).

### 7.5 Handling

For precautions see Safety Data Sheet section 2

Advice on safe handling : Work under hood. Do not inhale substance/mixture.

## 8: Exposure controls/personal protection

### 8.1 Respiratory protection

When exposed to refrigerated pressurized gases, routine respiratory protection is not required, but the work area must be well ventilated (to prevent asphyxiation from inert gases). If the gas is toxic, wear a Type E cartridge respirator.

### 8.2 Recommended Filter type

Toxic pressurized gases should be filtered according to the gas type (e.g. Type K for ammonia, Type E for chlorine). Inert gases (e.g. argon) are not suitable for filters and require ventilation.

### 8.3 Eye/face protection

Wear anti-low-temperature goggles with lenses made of polycarbonate (to prevent low-temperature brittle cracking). Wear a mask when coming into contact with refrigerated gas to prevent splashing of low-

temperature liquids.

## 8.4 Skin and body protection

Wear cold-proof clothing made of a polyurethane foam layer and a nylon outer layer. When in contact with refrigerated gas, wear an anti-low-temperature apron to prevent frostbite on the skin.

## 8.5 Hand protection

Wear cold-proof gloves with a wool inner layer for warmth and a neoprene outer layer for chemical protection. The gloves should be 30cm long and cover the forearm.

## 8.6 Hygiene measures

If your skin feels numb after contact with refrigerated gas, immediately rewarm it with warm water (37-40°C) and do not use fire to burn it. After the operation, check whether there is any residual low-temperature liquid on the clothes, and store them after confirming that they are safe.

# 9: Physical and chemical properties and safety characteristics

<b>Physical state</b>	no data available
<b>Colour</b>	no data available
<b>Odour</b>	no data available
<b>Melting point/freezing point</b>	-78°C (subl.)(lit.)
<b>Boiling point or initial boiling point and boiling range</b>	no data available
<b>Flammability</b>	no data available
<b>Lower and upper explosion limit/flammability limit</b>	no data available
<b>Flash point</b>	no data available
<b>Auto-ignition temperature</b>	no data available
<b>Decomposition temperature</b>	no data available
<b>pH</b>	no data available
<b>Kinematic viscosity</b>	no data available
<b>Solubility</b>	no data available
<b>Partition coefficient n-octanol/water</b>	no data available
<b>Vapour pressure</b>	no data available

<b>Density and/or relative density</b>	1.52 (vs air)
<b>Relative vapour density</b>	1.52 (vs air)
<b>Particle characteristics</b>	no data available

## 10: Stability and reactivity

### 10.1 Reactivity

no data available.

### 10.2 Chemical stability

no data available.

### 10.3 Possibility of hazardous reactions

no data available.

### 10.4 Conditions to avoid

no data available.

### 10.5 Incompatible materials

no data available.

### 10.6 Hazardous decomposition products

no data available.

## 11: Toxicological information

### 11.1 Acute toxicity

no data available

### 11.2 Skin corrosion/irritation

no data available

### 11.3 Serious eye damage/irritation

no data available

### 11.4 Respiratory or skin sensitization

no data available

## **11.5 Germ cell mutagenicity**

no data available

## **11.6 Carcinogenicity**

no data available

## **11.7 Reproductive toxicity**

no data available

## **11.8 STOT-single exposure**

no data available

## **11.9 STOT-repeated exposure**

no data available

## **11.10 Aspiration hazard**

no data available

# **12: Ecological information**

## **12.1 Toxicity**

no data available

## **12.2 Persistence and degradability**

no data available

## **12.3 Bioaccumulative potential**

no data available

## **12.4 Mobility in soil**

no data available

## **12.5 Other adverse effects**

no data available

# **13: Disposal considerations**

## **13.1 Disposal methods for waste chemicals**

Pressurized gases must be slowly released to a dedicated treatment facility (such as a combustion tower or absorption tower). Liquefied gases must be evaporated and their vapors disposed of. Discarded gas

cylinders must be depressurized to zero and then cut and disposed of by a professional unit (ensuring no residue remains). Pressurized chemicals must be depressurized and disposed of according to their chemical properties.

## 13.2 Precautions

The gas release rate must be strictly controlled to prevent a sudden drop in pressure. Frostbite must be prevented when handling cryogenic liquefied gas. Before handling a gas cylinder, confirm that the internal pressure is zero. Operators must wear protective equipment, including cryogenic protection. The handling area must be well ventilated and away from sources of ignition.

## 14: Transport information

### 14.1 UN Number

ADR/RID: 1013

IMDG: 1013

IATA: 1013

### 14.2 UN Proper Shipping Name

ADR/RID: no data available

IMDG: no data available

IATA: no data available

### 14.3 Transport hazard class(es)

ADR/RID: no data available

IMDG: no data available

IATA: no data available

### 14.4 Packing group, if applicable

ADR/RID: no data available

IMDG: no data available

IATA: no data available

### 14.5 Environmental hazards

ADR/RID: no data available

IMDG: no data available

IATA: no data available

### 14.6 Special precautions for user

no data available

### 14.7 Transport in bulk according to IMO instruments

no data available

## 15: Regulatory information

### 15.1 Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number
Carbon-13C dioxide	Carbon-13C dioxide	1111-72-4	
Australian Inventory of Industrial Chemicals (AIIC)			Not Listed.
Catalogue of Strictly Restricted Toxic Chemicals in China			Not Listed.

China Catalog of Hazardous chemicals 2015	Not Listed.
European INventory of Existing Commercial chemical Substances	Not Listed.
IARC Monographs on the Evaluation of Carcinogenic Risks to Humans	Not Listed.
TSCA Inventory of Chemical Substances	Not Listed.

## 16: Other information

### Information on revision

SDS Creation Date July 1, 2025

SDS Revision Date July 1, 2025

### Abbreviations and acronyms in SDS

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

### SDS References

- IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>
- HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
- IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: [http://www.echemportal.org/echemportal/index?pageID=0&request\\_locale=en](http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en)
- CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>
- ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>
- Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>
- ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

**Any questions regarding this Safety Data Sheet, Please send your inquiry to [sales@MolBest.com](mailto:sales@MolBest.com)**

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