

1. PRODUCT AND COMPANY IDENTIFICATION

Product name	Carbon-13C dioxide, $^{13}\text{CO}_2$
Chemical Formula	$^{13}\text{CO}_2$
Molecular Weight	45.00 g/mol
CAS No.	1111-72-4
Supplier Address*	ISO FLEX USA PO Box 29475 San Francisco CA 94129 United States
Telephone	+1 415-440-4433
Fax	+1 415-563-4433
Emergency Phone Number (both supplier and manufacturer)	Infotrac/ +1 800-535-5053 *May include subsidiaries or affiliate companies/divisions
Email	iusa@isoflex.com
Website	www.isoflex.com
Preparation Information	ISO FLEX USA Product Safety +1 415-440-4433

2. HAZARDS IDENTIFICATION

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS): Gases under pressure (liquefied gas), **H280**

For the full text of the H-Statement mentioned in this section, see Section 16.

<i>Hazard statement(s)</i>	H280 Contains gas under pressure; may explode if heated.
<i>Precautionary statement(s)</i>	P410 + P403 Protect from sunlight. Store in a well-ventilated place.
<i>Hazards not otherwise classified (HNOC) or not covered by GHS</i>	None

NFPA Ratings: (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health Hazard = 0 Flammability = 0 Reactivity = 0



HMIS Ratings: (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health Hazard = 0

Flammability = 0

Physical Hazard = 0

HEALTH HAZARD	0
FLAMMABILITY	0
PHYSICAL HAZARD	0
PERSONAL PROTECTION	N/A

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name: Carbon-13C Dioxide
CAS No.: 1111-72-4
Chemical Formula: $^{13}\text{CO}_2$
Molecular Weight: 45.00 g/mol
Hazardous Components: Carbon-13C dioxide / Press. Gas (**H280**)
For the full text of the H-Statement mentioned in this section, see Section 16.

4. FIRST AID MEASURES

General Advice Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.
Inhalation If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
Skin Contact Wash off with soap and plenty of water. Consult a physician.
Eye Contact Flush eyes with water as a precaution.
Ingestion Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIREFIGHTING MEASURES

Extinguishing Media Water spray, alcohol-resistant foam, dry chemical or carbon dioxide
Special Hazards Carbon oxides
Advice for Firefighters Wear self-contained breathing apparatus for firefighting if necessary.
Further Information Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.
Environmental Precautions Do not let product enter drains.
Containment/Cleanup Clean up promptly by sweeping or vacuum. For disposal see section 13.

7. HANDLING AND STORAGE

Handling Contains gas under pressure; may explode if heated.
Storage Keep container tightly closed in a dry and well-ventilated place. Contents under pressure.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Components with workplace control parameters

Component	CAS No.	Value	Control Parameters	Basis
Carbon-13C dioxide	1111-72-4	TWA	5000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Remarks: Asphyxia		
		STEL	30,000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Remarks: Asphyxia		
		TWA	5,000 ppm 9,000 mg/m ³	USA. NIOSH-Recommended Exposure Limits
		Remarks: Normal constituent of air (about 300 ppm)		
		ST	30,000 ppm 54,000 mg/m ³	USA. NIOSH-Recommended Exposure Limits
		Remarks: Normal constituent of air (about 300 ppm)		
		TWA	5000 ppm 9,000 mg/m ³	USA. Occupational Exposure Limits (OSHA) – Table Z-1 Limits for Air Contaminants
		Remarks: The value in mg/m ³ is approximate.		
		TWA	10,000 ppm 18,000 mg/m ³	USA. OSHA – Table Z-1 Limits for Air Contaminants 1910.1000
		Remarks: Exposures under 10,000 ppm to be cited as de minimus.		
		STEL	30,000 ppm 54,000 mg/m ³	USA. OSHA – Table Z-1 Limits for Air Contaminants 1910.1000

Exposure Controls

Engineering Controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal Protective Equipment

Eye/Face

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full Contact

Material: Fluorinated rubber
Minimum layer thickness: 0.7 mm
Breakthrough time: 480 min

Splash Contact

Material: Fluorinated rubber
Minimum layer thickness: 0.7 mm
Breakthrough time: 480 min

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE-approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection

Impervious clothing

The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory Protection

Where risk assessment shows air-purifying respirators are appropriate, use a full-face respirator with multipurpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Environmental Exposure

Do not let product enter drains.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance/Form:	Liquefied gas	Odor:	No data available
Odor Threshold:	No data available	pH:	No data available
Melting Point/Freezing Point:	No data available	Boiling Point/Range:	No data available
Flash Point:	Not applicable	Evaporation Rate:	No data available
Flammability (Solid, Gas):	No data available	Explosive Limits:	No data available
Vapor Density:	1.55 - (Air = 1.0)	Relative Density:	No data available
Water Solubility:	No data available	Partition Coefficient:	No data available
Auto-Ignition Temperature:	No data available	Decomposition Temp:	No data available
Viscosity:	No data available	Explosive Properties:	No data available
Oxidizing Properties:	No data available	Vapor Pressure:	43,878.6 mmHg) at 20 °C (68 °F)

10. STABILITY AND REACTIVITY

<i>Reactivity</i>	No data available
<i>Chemical Stability</i>	Stable under recommended storage conditions
<i>Possibility of Hazardous Reactions</i>	No data available
<i>Conditions to Avoid</i>	No data available
<i>Incompatible Materials</i>	No data available
<i>Hazardous Decomposition Products / Other Decomposition Products</i>	No data available

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Inhalation No data available

Dermal No data available

Skin Corrosion/Irritation No data available

Serious Eye Damage/Irritation No data available

Respiratory/Skin Sensitization No data available

Germ Cell Mutagenicity No data available

Carcinogenicity

IARC No component of this product present at levels greater than or equal to 0.1% is identified as a probable, possible or confirmed human carcinogen by IARC.

ACGIH No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive Toxicity No data available

Specific Target Organ Toxicity / Single Exposure No data available

Specific Target Organ Toxicity / Repeated Exposure No data available

Aspiration Hazard No data available

Additional Information RTECS: Not available

Potential Toxicological Effects Nausea, dizziness, headache. Low-to-medium concentrations of carbon dioxide can affect the regulation of blood circulation and the acidity of body fluids and can cause respiratory difficulties. High concentrations can cause breathing difficulties, increased pulse rate, change in body acidity. Very high concentrations can cause unconsciousness and/or death.

12. ECOLOGICAL INFORMATION

Toxicity No data available

Persistence and Degradability No data available

Bioaccumulative Potential No data available

Mobility in Soil No data available

PBT and vPvB Assessment PBT/vPvB assessment not available, as chemical safety assessment not required/not conducted.

Other Adverse Effects No data available

13. DISPOSAL CONSIDERATIONS

Product

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated Packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION**DOT (US)**

Proper shipping name: Carbon dioxide
UN No.: 1013
Class: 2.2
Reportable Quantity (RQ):
Marine Pollutant: No
Poison Inhalation Hazard: No

IMDG

Proper Shipping Name: CARBON DIOXIDE
UN No.: 1013
Class: 2.2
EMS No: F-C, S-V
Marine Pollutant: No

IATA

Proper shipping name: Carbon dioxide
UN No.: 1013
Class: 2.2

15. REGULATORY INFORMATION**SARA 302 Components**

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

This material does not contain any chemical components with known CAS numbers that exceed the threshold (de minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards

Sudden Release of Pressure Hazard

Massachusetts Right to Know Components

Carbon-13C dioxide/CAS No. 1111-72-4/Revision Date 1993-04-24

Pennsylvania Right to Know Components

Carbon-13C dioxide/CAS No. 1111-72-4/Revision Date 1993-04-24

New Jersey Right to Know Components

Carbon-13C dioxide/CAS No. 1111-72-4/Revision Date 1993-04-24

California Prop. 65 Components

This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3:

H280 Contains gas under pressure; may explode if heated.

Press. Gas Gases under pressure

<i>Prepared By</i>	ISOFLEX USA PO Box 29475 San Francisco CA 94129 United States
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<i>Revision Number</i>	2
<i>Revision Note</i>	Required review and update

ISOFLEX USA's Commonly Used Abbreviations and Acronyms*

ACGIH	American Conference of Governmental Industrial Hygienists
ADR	European Agreement Concerning the International Carriage of Dangerous Goods by Road
ALARA	As Low As Is Reasonably Achievable
AMU	Atomic Mass Unit
ANSI	American National Standards Institute
BLS	Basic Life Support
CAM	Continuous Air Monitor
CAS	Chemical Abstracts Service (division of the American Chemical Society)
CEN	European Committee for Standardization
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CLP	Classification, Labelling and Packaging (European Union)
CPR	Controlled Products Regulations (Canada)
CWA	Clean Water Act (USA)
DAC	Derived Air Concentration (USA)
DOE	United States Department of Energy (USA)
DOT	United States Department of Transportation (USA)
DSL	Domestic Substances List (Canada)
EC50	Half Maximal Effective Concentration
EINECS	European Inventory of Existing Commercial Chemical Substances
EHS	Environmentally Hazardous Substance
ELINCS	European List of Notified Chemical Substances
EMS	Emergency Response Procedures for Ships Carrying Dangerous Goods
EPA	Environmental Protection Agency (USA)
EPCRA	Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986
GHS	Globally Harmonized System
HMIS	Hazardous Materials Identification System (USA)
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	Intermediate Bulk Containers
ICAO	International Civil Aviation Organization
IDLH	Immediately Dangerous to Life or Health
IMDG	International Maritime Code for Dangerous Goods
LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
LDLO	Lethal Dose Low
LOEC	Lowest-Observed-Effective Concentration

MARPOL	International Convention for the Prevention of Pollution from Ships
MSHA	Mine Safety and Health Administration (USA)
NCRP	National Council on Radiation Protection & Measurements (USA)
NDSL	Non-Domestic Substances List (Canada)
NFPA	National Fire Protection Association (USA)
NIOSH	National Institute for Occupational Safety and Health (USA)
NOEC	No Observed Effect Concentration
N.O.S.	Not Otherwise Specified
NRC	Nuclear Regulatory Commission (USA)
NTP	National Toxicology Program (USA)
OSHA	Occupational Safety and Health Administration (USA)
PBT	Persistent Bioaccumulative and Toxic Chemical
PEL	Permissible Exposure Limit
PIH	Poisonous by Inhalation Hazard
RCRA	Resource Conservation and Recovery Act (USA)
RCT	Radiation Control Technician
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals (Europe)
RID	Regulations Concerning the International Transport of Dangerous Goods by Rail
RTECS	Registry of Toxic Effects of Chemical Substances
SARA	Superfund Amendments and Reauthorization Act (USA)
TDG	Transportation of Dangerous Goods (Canada)
TIH	Toxic by Inhalation Hazard
TLV	Threshold Limit Value
TPQ	Threshold Planning Quantity
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average
UN	United Nations (Number)
VOC	Volatile Organic Compound
vPvB	Very Persistent Very Bioaccumulative Chemical
WGK	Wassergefährungsklassen (Germany: Water Hazard Classes)
WHMIS	Workplace Hazardous Materials Information System

*One or more of the above-listed items may not appear in this document.

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