

1. PRODUCT AND COMPANY IDENTIFICATION

| | |
|---|---|
| Product name | Carbon-13C dioxide, ¹³CO₂ |
| Chemical Formula | ¹³ CO ₂ |
| Molecular Weight | 45.00 g/mol |
| CAS No. | 1111-72-4 |
| Supplier Address* | ISOFLEX USA PO Box 472615 San Francisco CA 94147 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 | ISOFLEX 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.

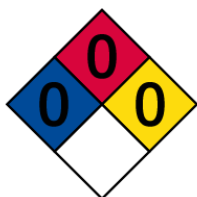
Hazard statement(s) **H280** Contains gas under pressure; may explode if heated.

Precautionary statement(s) **P410 + P403** Protect from sunlight. Store in a well-ventilated place.

*Hazards not otherwise classified
(HNOC) or not covered by GHS* 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) |
| | | <i>Remarks:</i> Asphyxia | | |
| | | STEL | 30,000 ppm | USA. ACGIH Threshold Limit Values (TLV) |
| | | <i>Remarks:</i> Asphyxia | | |
| | | TWA | 5,000 ppm 9,000 mg/m ³ | USA. NIOSH-Recommended Exposure Limits |
| | | <i>Remarks:</i> Normal constituent of air (about 300 ppm) | | |
| | | ST | 30,000 ppm 54,000 mg/m ³ | USA. NIOSH-Recommended Exposure Limits |
| | | <i>Remarks:</i> 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 |
| | | <i>Remarks:</i> 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 | | |
| <i>Remarks:</i> 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

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|------------------------|---|
| <i>Prepared By</i> | ISOFLEX USA PO Box 472615 San Francisco CA 94147 United States |
| <i>Issuing Date</i> | January 21, 2014 |
| <i>Revision Date</i> | April 23, 2024 |
| <i>Revision Number</i> | 3 |
| <i>Revision Note</i> | Update Supplier Address |

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 | Wassergefährdungsklassen (Germany: Water Hazard Classes) |
| WHMIS | Workplace Hazardous Materials Information System |

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

General Disclaimer

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