



# Safety Data Sheet

Carbon Dioxide 1-10% /10%-60% Nitrogen  
/Helium Laser Mixes

## Section 1: Product and Company Identification

**Oxygen Service Company**  
1111 Pierce Butler Rte.  
Saint Paul, MN 55104  
(651) 644-7273  
<https://www.oxygenservicecompany.com>  
CHEMTREC (800) 424-9300

Product Code: Carbon Dioxide 1-10% /10%-60% Nitrogen /Helium Laser Mixes

**Synonyms:**  
**Recommended Use:**  
**Usage Restrictions:**

## Section 2: Hazards Identification



**Warning**

**Hazard Classification:**

Gases Under Pressure

**Hazard Statements:**

Contains gas under pressure; may explode if heated

**Precautionary Statements**

**Storage:**

Protect from sunlight.  
Store in well-ventilated place.

## Section 3: Composition/Information on Ingredients

|                | CAS #     | Concentration |
|----------------|-----------|---------------|
| Carbon Dioxide | 124-38-9  | 1-10%         |
| Nitrogen       | 7727-37-9 | 10-60%        |

|        |           |         |
|--------|-----------|---------|
| Helium | 7440-59-7 | BALANCE |
|--------|-----------|---------|

|                       | Chemical Substance       | Chemical Family | Trade Names   |
|-----------------------|--------------------------|-----------------|---|
| <b>Carbon Dioxide</b> | CARBON DIOXIDE, GAS      | Inorganic gases | CARBONIC ACID GAS; CARBONIC ANHYDRIDE; CARBON DIOXIDE; CARBON OXIDE; UN 1013; CO2 |
| <b>Nitrogen</b>       | NITROGEN, COMPRESSED GAS | Inorganic gases | DIATOMIC NITROGEN; DINITROGEN; NITROGEN; NITROGEN-14; NITROGEN GAS; UN 1066; N2   |
| <b>Helium</b>         | HELIUM                   | Inorganic gases | HELIUM GAS; HELIUM COMPRESSED; HELIUM-4; ATOMIC HELIUM; UN 1046; He               |

## Section 4: First Aid Measures

|                       | Skin Contact   | Eye Contact   | Ingestion  | Inhalation   | Note to Physicians               |
|-----------------------|--|---|--|--|----------------------------------|
| <b>Carbon Dioxide</b> | If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention. | Contact with liquid: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention. | Do not induce vomiting.                                | If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention. | For inhalation, consider oxygen. |
| <b>Nitrogen</b>       | Wash exposed skin with soap and water.   | Flush eyes with plenty of water.  | If a large amount is swallowed, get medical attention. | If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention. | For inhalation, consider oxygen. |
| <b>Helium</b>         | Wash exposed skin with soap and water.   | Flush eyes with plenty of water.  | If a large amount is swallowed, get medical attention. | If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention. | For inhalation, consider oxygen. |

## Section 5: Fire Fighting Measures

|                       | Suitable Extinguishing Media   | Products of Combustion | Protection of Firefighters  |
|-----------------------|--|------------------------|---|
| <b>Carbon Dioxide</b> | Non-flammable  | Non-flammable          | <ul style="list-style-type: none"> <li>▪ Any appropriate escape-type, self-contained breathing apparatus.</li> <li>▪ Non-flammable</li> </ul> |
| <b>Nitrogen</b>       | Non-flammable. Use suitable extinguishing media for surrounding fire. Cylinders may rupture or explode if exposed to heat. | Non-flammable          | <ul style="list-style-type: none"> <li>▪ Respiratory protection may be needed for frequent or heavy exposure.</li> </ul>                      |
| <b>Helium</b>         | Non-flammable. Use suitable extinguishing media for surrounding fire.  | Non-flammable          | <ul style="list-style-type: none"> <li>▪ Non-flammable</li> <li>▪ Non-flammable</li> </ul>  |

## Section 6: Accidental Release Measures

|  | Personal Precautions | Environmental Precautions | Methods for Containment |
|--|----------------------|---------------------------|-------------------------|
|  |                      |                           |                         |

|                       | Personal Precautions  | Environmental Precautions  | Methods for Containment                      |
|-----------------------|---|--|--|
| <b>Carbon Dioxide</b> | Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering. Do not touch spilled material. | Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). Keep out of water supplies and sewers. | Stop leak if possible without personal risk. |
| <b>Nitrogen</b>       | Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.                                  | No significant effects from contamination expected.  | Stop leak if possible without personal risk. |
| <b>Helium</b>         | Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.                                  | Avoid soil, waterways, drains and sewers   | Stop leak if possible without personal risk. |

|                       | Methods for Cleanup                                    | Other Information |
|-----------------------|--|-------------------|
| <b>Carbon Dioxide</b> | Stop leak, evacuate, remove source of ignition.        | None              |
| <b>Nitrogen</b>       | N/A  | N/A               |
| <b>Helium</b>         | Stop leak, evacuate area. Contact emergency personnel. | None              |

## Section 7: Handling and Storage

|                       | Handling  | Storage   |
|-----------------------|---|---|
| <b>Carbon Dioxide</b> | Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Keep separated from incompatible substances.                               | Store and handle in accordance with all current regulations and standards |
| <b>Nitrogen</b>       | Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. | Keep separated from incompatible substances.                              |
| <b>Helium</b>         | Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. | Keep separated from incompatible substances.                              |

## Section 8: Exposure Controls/Personal Protection

|                       | Exposure Guidelines   |
|-----------------------|---|
| <b>Carbon Dioxide</b> | CARBON DIOXIDE, GAS: CARBON DIOXIDE: 5000 ppm (9000 mg/m <sup>3</sup> ) OSHA TWA 10000 ppm (18000 mg/m <sup>3</sup> ) OSHA TWA (vacated by 58 FR 35338, June 30, 1993) 30000 ppm (54000 mg/m <sup>3</sup> ) OSHA STEL (vacated by 58 FR 35338, June 30, 1993) 5000 ppm ACGIH TWA 30000 ppm ACGIH STEL 5000 ppm (9000 mg/m <sup>3</sup> ) NIOSH recommended TWA 10 hour(s) 30000 ppm (54000 mg/m <sup>3</sup> ) NIOSH recommended STEL |
| <b>Nitrogen</b>       | NITROGEN, COMPRESSED GAS: NITROGEN: ACGIH (simple asphyxiant)   |
| <b>Helium</b>         | HELIUM: ACGIH (simple asphyxiant)   |

### Engineering Controls

Handle only in fully enclosed systems.

|                       | Eye Protection   | Skin Protection  | Respiratory Protection   |
|-----------------------|--|--|--|
| <b>Carbon Dioxide</b> | For the gas: Eye protection not required, but recommended. For the liquid: Wear splash resistant safety goggles. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area. | For the gas: Protective clothing is not required. For the liquid: Wear appropriate protective, cold insulating clothing. | Any appropriate escape-type, self-contained breathing apparatus.     |
| <b>Nitrogen</b>       | Eye protection not required, but recommended.  | Protective clothing is not required.   | Respiratory protection may be needed for frequent or heavy exposure. |
| <b>Helium</b>         | Eye protection not required, but recommended.  | Protective clothing is not required.   | Non-flammable  |

### General Hygiene considerations

- Avoid breathing vapor or mist
- Avoid contact with eyes and skin
- Wash thoroughly after handling and before eating or drinking

## Section 9: Physical and Chemical Properties

|                       | Physical State | Appearance | Color     | Change in Appearance | Physical Form | Odor     | Taste      |
|-----------------------|----------------|------------|-----------|----------------------|---------------|----------|------------|
| <b>Carbon Dioxide</b> | Gas            | Colorless  | Colorless | N/A                  | Gas           | Odorless | Acid taste |
| <b>Nitrogen</b>       | Gas            | Clear      | Colorless | N/A                  | Gas           | Odorless | Tasteless  |

|        | Physical State | Appearance | Color     | Change in Appearance | Physical Form | Odor     | Taste     |
|--------|----------------|------------|-----------|----------------------|---------------|----------|-----------|
| Helium | Gas            | Colorless  | Colorless | N/A                  | Gas           | Odorless | Tasteless |

|                | Flash Point   | Flammability  | Partition Coefficient | Autoignition Temperature | Upper Explosive Limits | Lower Explosive Limits |
|----------------|---------------|---------------|-----------------------|--------------------------|------------------------|------------------------|
| Carbon Dioxide | Not flammable | Not available | N/A                   | Nonflammable             | Nonflammable           | Nonflammable           |
| Nitrogen       | Not flammable | Not available | Not available         | Nonflammable             | Nonflammable           | Nonflammable           |
| Helium         | Not flammable | Not available | Not available         | Nonflammable             | Nonflammable           | Nonflammable           |

|                | Boiling Point   | Freezing Point            | Vapor Pressure     | Vapor Density | Specific Gravity | Water Solubility | pH   | Odor Threshold | Evaporation Rate | Viscosity           |
|----------------|-----------------|---------------------------|--------------------|---------------|------------------|------------------|--|----------------|------------------|---------------------|
| Carbon Dioxide | Not available   | -71 F (-57 C) @ 4000 mmHg | 43700 mmHg @ 21 C  | 1.5 (Air=1)   | 1.522 @ 21 C     | Soluble          | 3.7 (saturated aqueous solution) @ 101.3 kPa (carbonic acid) | Not available  | Not applicable   | 0.01657 cP @ 0 C    |
| Nitrogen       | -321 F (-196 C) | -346 F (-210 C)           | 760 mmHg @ -196 C  | 0.967 (Air=1) | Not applicable   | 1.6% @ 20 C      | Not applicable   | Not available  | Not applicable   | 0.01787 cP @ 27 C   |
| Helium         | -452 F (-269 C) | -458 F (-272 C) @ 26 atm  | 1719 mmHg @ -268 C | 0.138 (Air=1) | Not applicable   | 0.94% @ 0 C      | Not applicable   | Not available  | Not applicable   | 0.02012 cP @ 26.8 C |

|                | Molecular Weight | Molecular Formula | Density          | Weight per Gallon | Volatility by Volume | Volatility     | Solvent Solubility  |
|----------------|------------------|-------------------|------------------|-------------------|----------------------|----------------|---|
| Carbon Dioxide | 44.01            | C-O2              | 0.114            | Not available     | Not applicable       | Not applicable | Soluble: Alcohol, acetone, hydrocarbons, organic solvents |
| Nitrogen       | 28.0134          | N2                | 1.2506 g/L       | Not available     | 100%                 | 1              | Soluble: Liquid ammonia                                   |
| Helium         | 4.0026           | He                | 0.1785 g/L @ 0 C | Not available     | 100%                 | Not applicable | Insoluble: Not available                                  |

## Section 10: Stability and Reactivity

|                | Stability                                   | Conditions to Avoid                         | Incompatible Materials   |
|----------------|---|---|--|
| Carbon Dioxide | Stable at normal temperatures and pressure. | Stable at normal temperatures and pressure. | Combustible materials, oxidizing materials, metal salts, reducing agents, metal carbide, metals, bases |
| Nitrogen       | Stable at normal temperatures and pressure. | Stable at normal temperatures and pressure. | Metals, oxidizing materials  |
| Helium         | Stable at normal temperatures and pressure. | Stable at normal temperatures and pressure. | No data available.   |

|                | Hazardous Decomposition Products     | Possibility of Hazardous Reactions |
|----------------|--------------------------------------|------------------------------------|
| Carbon Dioxide | Carbon monoxide                      | Will not polymerize.               |
| Nitrogen       | Oxides of nitrogen                   | Will not polymerize.               |
| Helium         | Miscellaneous decomposition products | Will not polymerize.               |

## Section 11: Toxicology Information

### Acute Effects

|                | Oral LD50       | Dermal LD50     | Inhalation  |
|----------------|-----------------|-----------------|---|
| Carbon Dioxide | Not established | Not established | Ringling in the ears, nausea, irregular heartbeat, headache, drowsiness, dizziness, tingling sensation, visual disturbances, suffocation, convulsions, coma |
| Nitrogen       | Not available   | Not available   | Nausea, vomiting, difficulty breathing, headache, drowsiness, dizziness, tingling sensation, loss of coordination, convulsions, coma                        |

|        | Oral LD50     | Dermal LD50   | Inhalation   |
|--------|---------------|---------------|--|
| Helium | Not available | Not available | Nausea, vomiting, difficulty breathing, irregular heartbeat, headache, fatigue, dizziness, disorientation, emotional disturbances, tingling sensation, loss of coordination, suffocation, convulsions, unconsciousness, coma |

|                | Eye Irritation  | Skin Irritation                               | Sensitization        |
|----------------|---|---|----------------------|
| Carbon Dioxide | Irritation, frostbite, blurred vision                           | Liquid: blisters, frostbite                   | Difficulty breathing |
| Nitrogen       | Contact with rapidly expanding gas may cause burns or frostbite | No information on significant adverse effects | Difficulty breathing |
| Helium         | Liquid: frostbite, blurred vision                               | Liquid: frostbite                             | Difficulty breathing |

### Chronic Effects

|                | Carcinogenicity | Mutagenicity    | Reproductive Effects | Developmental Effects |
|----------------|-----------------|-----------------|----------------------|-----------------------|
| Carbon Dioxide | Not available   | Not established | Available.           | No data               |
| Nitrogen       | Not hazardous   | Not available   | Not available        | No data               |
| Helium         | Not available   | Not available   | Not available        | No data               |

## Section 12: Ecological Information

### Fate and Transport

|                | Eco toxicity  | Persistence / Degradability   | Bioaccumulation / Accumulation                             | Mobility in Environment  |
|----------------|---|---|--|--------------------------|
| Carbon Dioxide | Fish toxicity: 150000 ug/L 48 day(s) (Mortality) Brown trout ( <i>Salmo trutta</i> )<br>Invertebrate toxicity: Not available<br>Algal toxicity: Not available<br>Phyto toxicity: Not available<br>Other toxicity: Not available | Relatively non-persistent in the environment. Moderately volatile from water. | Accumulates very little in the bodies of living organisms. | Leaches through the soil |
| Nitrogen       | Fish toxicity: Not available<br>Invertebrate toxicity: Not available<br>Algal toxicity: Not available<br>Phyto toxicity: Not available<br>Other toxicity: Not available   | Not available   | Not available  | Not available            |
| Helium         | Fish toxicity: Not available<br>Invertebrate toxicity: Not available<br>Algal toxicity: Not available<br>Phyto toxicity: Not available<br>Other toxicity: Not available   | Not available   | Not available  | Not available            |

## Section 13: Disposal Considerations

|                |  |
|----------------|--|
| Carbon Dioxide | Dispose in accordance with all applicable regulations. |
| Nitrogen       | Dispose in accordance with all applicable regulations. |
| Helium         | Dispose in accordance with all applicable regulations. |

## Section 14: Transportation Information

### U.S. DOT 49 CFR 172.101

#### DOT Information For This Mixture

|                    |   |
|--------------------|---|
| Shipping Name      | Compressed gas, n.o.s. (Helium, Nitrogen) |
| UN Number          | UN1956                                    |
| Hazard Class       | 2.2                                       |
| Hazard Information | Non-Flammable Gas                         |

## Individual Component Information

|                       | Proper Shipping Name | ID Number | Hazard Class or Division | Packing Group  | Labeling Requirements | Passenger Aircraft or Railcar Quantity Limitations | Cargo Aircraft Only Quantity Limitations | Additional Shipping Description |
|-----------------------|----------------------|-----------|--------------------------|----------------|-----------------------|--|--|---------------------------------|
| <b>Carbon Dioxide</b> | Carbon dioxide       | UN1013    | 2.2                      | Not applicable | 2.2                   | 75 kg or L   | 150kg                                    | None                            |
| <b>Nitrogen</b>       | Nitrogen, compressed | UN1066    | 2.2                      | Not applicable | 2.2                   | 75 kg or L   | 150 kg                                   | N/A                             |
| <b>Helium</b>         | Helium, compressed   | UN1046    | 2.2                      | Not applicable | 2.2                   | 75 kg or L   | 150 kg                                   | N/A                             |

## Canadian Transportation of Dangerous Goods

|                       | Shipping Name        | UN Number | Class | Packing Group / Risk Group |
|-----------------------|----------------------|-----------|-------|----------------------------|
| <b>Carbon Dioxide</b> | Carbon dioxide       | UN1013    | 2.2   | Not applicable             |
| <b>Nitrogen</b>       | Nitrogen, compressed | UN1066    | 2.2   | Not applicable             |
| <b>Helium</b>         | Helium, compressed   | UN1046    | 2.2   | Not applicable             |

## Section 15: Regulatory Information

### U.S. Regulations

|                       | CERCLA Sections | SARA 355.30    | SARA 355.40    |
|-----------------------|-----------------|----------------|----------------|
| <b>Carbon Dioxide</b> | Not regulated.  | Not regulated. | Not regulated. |
| <b>Nitrogen</b>       | Not regulated.  | Not regulated. | Not regulated. |
| <b>Helium</b>         | Not regulated.  | Not regulated. | Not regulated. |

### SARA 370.21

|                       | Acute | Chronic | Fire | Reactive | Sudden Release |
|-----------------------|-------|---------|------|----------|----------------|
| <b>Carbon Dioxide</b> | Yes   | No      | No   | No       | Yes            |
| <b>Nitrogen</b>       | Yes   | No      | No   | No       | Yes            |
| <b>Helium</b>         | Yes   | No      | No   | No       | Yes            |

### SARA 372.65

|                       |                |
|-----------------------|----------------|
| <b>Carbon Dioxide</b> | Not regulated. |
| <b>Nitrogen</b>       | Not regulated. |
| <b>Helium</b>         | Not regulated. |

### OSHA Process Safety

|                       |                |
|-----------------------|----------------|
| <b>Carbon Dioxide</b> | Not regulated. |
| <b>Nitrogen</b>       | Not regulated. |
| <b>Helium</b>         | Not regulated. |

### State Regulations

|                       | CA Proposition 65 |
|-----------------------|-------------------|
| <b>Carbon Dioxide</b> | Not regulated.    |
| <b>Nitrogen</b>       | Not regulated.    |
| <b>Helium</b>         | Not regulated.    |

### Canadian Regulations

|                       | WHMIS Classification |
|-----------------------|----------------------|
| <b>Carbon Dioxide</b> | A                    |
| <b>Nitrogen</b>       | A                    |
| <b>Helium</b>         | A                    |

### National Inventory Status

|                       | US Inventory (TSCA)  | TSCA 12b Export Notification | Canada Inventory (DSL/NDSL) |
|-----------------------|----------------------|------------------------------|-----------------------------|
| <b>Carbon Dioxide</b> | Listed on inventory. | Not listed.                  | Listed on inventory.        |
| <b>Nitrogen</b>       | Listed on inventory. | Not listed.                  | Listed on inventory.        |
| <b>Helium</b>         | Listed on inventory. | Not listed.                  | Not determined.             |

# Section 16: Other Information

|                       | NFPA Rating                             |
|-----------------------|---|
| <b>Carbon Dioxide</b> | HEALTH=3 FIRE=0 REACTIVITY=0 SPECIAL=SA |
| <b>Nitrogen</b>       | HEALTH=0 FIRE=0 REACTIVITY=0 SPECIAL=SA |
| <b>Helium</b>         | HEALTH=0 FIRE=0 REACTIVITY=0 SPECIAL=SA |

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard