SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form: Mixture
Product name: Carbon dioxide (0.005 - 50%) in Nitrogen balance
Replaces ISC MSDS No.: 1810-2913, 1810-3218, 1810-4208, 1810-6146, 1810-6153, 1810-8118, 1810-9223

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture: Test gas/Calibration gas.

1.3. Details of the supplier of the safety data sheet

U.S. Supplier: Industrial Scientific Corporation
1 Life Way
Pittsburgh, PA 15205-7500
Phone (412) 788-4353
TOLL-FREE 800-DETECTS
Fax (412) 788-8353

MANUFACTURER: CALGAZ
821 Chesapeake Drive
Cambridge, MD 21613

1.4. Emergency telephone number

Emergency number: CHEMTREC: 1-800-424-9300
Internationally: 1-703-527-3887

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (GHS-US)
Compressed gas H280
Full text of H-phrases: 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
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
P271 - Use only outdoors or in a well-ventilated area
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P313 - Get medical advice/attention
P403 - Store in a well-ventilated place
CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F)
CGA-PG05 - Use a back flow preventive device in the piping
CGA-PG06 - Close valve after each use and when empty
CGA-PG10 - Use only with equipment rated for cylinder pressure
CGA-PG14 - Approach suspected leak area with caution
CGA-PG21 - Open valve slowly

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable
SECTION 3: Composition/information on ingredients

3.1. Substance
Not applicable

3.2. Mixture

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>Classification (GHS-US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen</td>
<td>(CAS No) 7727-37-9</td>
<td>50 - 99.995</td>
<td>Compressed gas, H280</td>
</tr>
<tr>
<td>Carbon dioxide</td>
<td>(CAS No) 124-38-9</td>
<td>0.005 - 50</td>
<td>Liquefied gas, H280</td>
</tr>
</tbody>
</table>

Full text of H-phrases: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general: Get medical advice/attention if you feel unwell.

First-aid measures after inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If you feel unwell, seek medical advice.

First-aid measures after skin contact: Adverse effects not expected from this product.

First-aid measures after eye contact: Adverse effects not expected from this product.

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

Symptoms/injuries: Not expected to present a significant hazard under anticipated conditions of normal use. See sub-sections below for additional guidance. Symptoms similar to those listed under inhalation.

Symptoms/injuries after inhalation: May displace oxygen and cause rapid suffocation.

Symptoms/injuries after skin contact: Adverse effects not expected from this product.

Symptoms/injuries after eye contact: Adverse effects not expected from this product.

Symptoms/injuries after ingestion: Ingestion is not considered a potential route of exposure.

Chronic symptoms: Adverse effects not expected from this product.

4.3. Indication of any immediate medical attention and special treatment needed

If you feel unwell, seek medical advice. If breathing is difficult, give oxygen.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media: Use extinguishing media appropriate for surrounding fire.

Unsuitable extinguishing media: Do not use water jet.

5.2. Special hazards arising from the substance or mixture

Fire hazard: The product is not flammable.

Explosion hazard: Product is not explosive. Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries.

Reactivity: None known.

5.3. Advice for firefighters

Firefighting instructions: In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire.

Protection during firefighting: Standard protective clothing and equipment (e.g., Self Contained Breathing Apparatus) for fire fighters. Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures: Ensure adequate ventilation.

6.1.1. For non-emergency personnel

Protective equipment: Wear protective equipment consistent with the site emergency plan.

### 6.1.2. For emergency responders

**Protective equipment**: Standard protective clothing and equipment (e.g., Self Contained Breathing Apparatus) for fire fighters. Equip cleanup crew with proper protection.

**Emergency procedures**: Evacuate and limit access. Ventilate area.

### 6.2. Environmental precautions

Try to stop release if safe to do so.

### 6.3. Methods and material for containment and cleaning up

**For containment**: Try to stop release if safe to do so.

**Methods for cleaning up**: Dispose of this material and its container in accordance with local regulations.

### 6.4. Reference to other sections

See also Sections 8 and 13.

### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

**Additional hazards when processed**: Pressurized container: Do not pierce or burn, even after use. Use equipment rated for cylinder pressure.

**Precautions for safe handling**: Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area.

**Safe handling of the gas receptacle**: Protect cylinders from physical damage; do not drag, roll, slide or drop. Do not remove or deface labels provided by the supplier for the identification of the cylinder contents.

**Safe use of the product**: The substance must be handled in accordance with good industrial hygiene and safety procedures. Only experienced and properly instructed persons should handle gases under pressure. Consider pressure relief device(s) in gas installations. Ensure the complete gas system was (or is regularly) checked for leaks before use. Do not remove or deface labels provided by the supplier for the identification of the cylinder contents.

**Hygiene measures**: Do not eat, drink or smoke when using this product.

#### 7.2. Conditions for safe storage, including any incompatibilities

**Technical measures**: Comply with applicable regulations.

**Storage conditions**: Do not expose to temperatures exceeding 52°C (125°F). Keep container closed when not in use. Protect cylinder from physical damage. Store in well ventilated area.

**Incompatible products**: None known.

**Incompatible materials**: None known.

**Storage area**: Store away from heat. Store in a well-ventilated place.

#### 7.3. Specific end use(s)

Test gas/Calibration gas.

### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

<table>
<thead>
<tr>
<th>Carbon dioxide (0.005 - 50%) in Nitrogen balance</th>
<th>ACGIH</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Carbon dioxide (124-38-9)</th>
<th>ACGIH</th>
<th>ACGIH TWA (ppm)</th>
<th>5000 ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ACGIH</td>
<td>ACGIH STEL (ppm)</td>
<td>30000 ppm</td>
</tr>
<tr>
<td></td>
<td>OSHA</td>
<td>OSHA PEL (TWA) (mg/m³)</td>
<td>9000 mg/m³</td>
</tr>
<tr>
<td></td>
<td>OSHA</td>
<td>OSHA PEL (TWA) (ppm)</td>
<td>5000 ppm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nitrogen (7727-37-9)</th>
<th>ACGIH</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

04/27/2015  EN (English US)  SDS ID: 50241 / P/N 3600  3/1
8.2. Exposure controls

Appropriate engineering controls: Ensure exposure is below occupational exposure limits. Provide adequate general and local exhaust ventilation. Systems under pressure should be regularly checked for leakages. Oxygen detectors should be used when asphyxiating gases may be released. Consider work permit system e.g. for maintenance activities.


Skin and body protection: Wear suitable protective clothing, e.g. - lab coats, coveralls or flame resistant clothing.

Respiratory protection: None necessary during normal and routine operations. See Sections 5 & 6.

Thermal hazard protection: None necessary during normal and routine operations.

Environmental exposure controls: Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.


SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state: Gas

Appearance: Clear, colorless gas.

Color: Colorless

Odor: Odorless

Odor threshold: No data available

pH: Not applicable for gas-mixtures.

Melting point: No data available

Freezing point: No data available

Boiling point: No data available

Flash point: No data available

Relative evaporation rate (butyl acetate=1): No data available

Relative evaporation rate (ether=1): Not applicable for gas-mixtures.

Flammability (solid, gas): See Sect. 2.1 & 2.2

Explosion limits: Not applicable - not flammable

Explosive properties: Not applicable - not flammable.

Oxidizing properties: None.

Vapor pressure: Not applicable.

Relative density: No data available

Relative vapor density at 20 °C: No data available

Molecular mass: Not applicable for gas-mixtures.

Relative gas density: Heavier than air.

Solubility: Water: Solubility in water of component(s) of the mixture:

- : 2000 mg/l
- : 20 mg/l

Log Pow: Not applicable for gas-mixtures.

Log Kow: Not applicable for gas-mixtures.

Auto-ignition temperature: No data available

Decomposition temperature: No data available

Viscosity: No data available

Viscosity, kinematic: Not applicable.

Viscosity, dynamic: Not applicable.

9.2. Other information

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

SECTION 10: Stability and reactivity

10.1. Reactivity

None known.

10.2. Chemical stability

Stable under normal conditions.
Carbon dioxide (0.005 - 50%) in Nitrogen balance
Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

### 10.3. Possibility of hazardous reactions

None known.

### 10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

### 10.5. Incompatible materials

None known.

### 10.6. Hazardous decomposition products

Under normal conditions of storage and use hazardous decomposition products should not be produced.

### SECTION 11: Toxicological information

#### 11.1. Information on toxicological effects

<table>
<thead>
<tr>
<th>Acute toxicity</th>
<th>Not classified</th>
</tr>
</thead>
</table>

**Carbon dioxide (124-38-9)**

| LC50 inhalation rat (ppm) | 820000 ppm/4h |

**Nitrogen (7727-37-9)**

| LC50 inhalation rat (ppm) | 820000 ppm/4h |

Skin corrosion/irritation : Not classified
- pH: Not applicable for gas-mixtures.

Serious eye damage/irritation : Not classified
- pH: Not applicable for gas-mixtures.

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

Symptoms/injuries after inhalation : May displace oxygen and cause rapid suffocation.

Symptoms/injuries after skin contact : Adverse effects not expected from this product.

Symptoms/injuries after eye contact : Adverse effects not expected from this product.

Symptoms/injuries after ingestion : Ingestion is not considered a potential route of exposure.

Symptoms/injuries upon intravenous administration : Not known.

Chronic symptoms : Adverse effects not expected from this product.

### SECTION 12: Ecological information

#### 12.1. Toxicity

Ecology - general : Classification criteria are not met.

#### 12.2. Persistence and degradability

| Carbon dioxide (0.005 - 50%) in Nitrogen balance | No data available. |
| Carbon dioxide (124-38-9) | Persistence and degradability |
| Nitrogen (7727-37-9) | Persistence and degradability | No ecological damage caused by this product. |
## 12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>Carbon dioxide (0.005 - 50%) in Nitrogen balance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Log Pow</strong></td>
</tr>
<tr>
<td><strong>Log Kow</strong></td>
</tr>
<tr>
<td><strong>Bioaccumulative potential</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Carbon dioxide (124-38-9)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BCF fish 1</strong></td>
</tr>
<tr>
<td><strong>Log Pow</strong></td>
</tr>
<tr>
<td><strong>Bioaccumulative potential</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nitrogen (7727-37-9)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Log Pow</strong></td>
</tr>
<tr>
<td><strong>Bioaccumulative potential</strong></td>
</tr>
</tbody>
</table>

## 12.4. Mobility in soil

<table>
<thead>
<tr>
<th>Carbon dioxide (0.005 - 50%) in Nitrogen balance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mobility in soil</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Carbon dioxide (124-38-9)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ecology - soil</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nitrogen (7727-37-9)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ecology - soil</strong></td>
</tr>
</tbody>
</table>

## 12.5. Other adverse effects

<table>
<thead>
<tr>
<th>Effect on ozone layer</th>
<th>None.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect on the global warming</td>
<td>Contains greenhouse gas(es) not covered by 842/2006/EC.</td>
</tr>
</tbody>
</table>

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

<table>
<thead>
<tr>
<th>Waste treatment methods</th>
<th>Contact supplier if guidance is required. Do not discharge into any place where its accumulation could be dangerous. Ensure that the emission levels from local regulations or operating permits are not exceeded.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste disposal recommendations</td>
<td>Refer to the CGA Pamphlet P-63 &quot;Disposal of Gases&quot; available at <a href="http://www.cganet.com">www.cganet.com</a> for more guidance on suitable disposal methods.</td>
</tr>
</tbody>
</table>

## SECTION 14: Transport information

### Department of Transportation (DOT)

In accordance with DOT

- **Transport document description**: UN1956 Compressed gas, n.o.s. (Carbon dioxide, nitrogen), 2.2
- **UN-No. (DOT)**: UN1956
- **Proper Shipping Name (DOT)**: Compressed gas, n.o.s.
  (Carbon dioxide, nitrogen)
- **Department of Transportation (DOT) Hazard Classes**: 2.2 - Class 2.2 - Non-flammable compressed gas 49 CFR 173.115
- **Hazard labels (DOT)**: 2.2 - Non-flammable gas

- **DOT Packaging Non Bulk (49 CFR 173.xxx)**: 302;305
- **DOT Packaging Bulk (49 CFR 173.xxx)**: 314;315
- **DOT Symbols**: G - Identifies PSN requiring a technical name
- **DOT Packaging Exceptions (49 CFR 173.xxx)**: 306;307
- **DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)**: 75 kg

04/27/2015 EN (English US) SDS ID: 50241 / P/N 3600 6/1
Carbon dioxide (0.005 - 50%) in Nitrogen balance

DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 150 kg
DOT Vessel Stowage Location : A - The material may be stowed “on deck” or “under deck” on a cargo vessel and on a passenger vessel.

Additional information
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.

ADR
Transport document description : UN 1956 COMPRESSED GAS, N.O.S., 2.2
Class (ADR) : 2 - Gases
Hazard labels (ADR) : 2.2 - Non-flammable compressed gas

Transport by sea
UN-No. (IMDG) : 1956
Proper Shipping Name (IMDG) : COMPRESSED GAS, N.O.S.
Class (IMDG) : 2.2 - Non-flammable, non-toxic gases

Air transport
UN-No.(IATA) : 1956
Proper Shipping Name (IATA) : COMPRESSED GAS, N.O.S.
Class (IATA) : 2

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
Nitrogen (7727-37-9)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations
CANADA
Carbon dioxide (124-38-9)
Listed on the Canadian DSL (Domestic Substances List)
WHMIS Classification : Class A - Compressed Gas
Nitrogen (7727-37-9)
Listed on the Canadian DSL (Domestic Substances List)
WHMIS Classification : Class A - Compressed Gas

EU-Regulations
Carbon dioxide (124-38-9)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Nitrogen (7727-37-9)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Classification according to Regulation (EC) No. 1272/2008 [CLP]
Not classified
Carbon dioxide (0.005 - 50%) in Nitrogen balance
Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]
No additional information available

National regulations

<table>
<thead>
<tr>
<th>Carbon dioxide (124-38-9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listed on the AICS (Australian Inventory of Chemical Substances)</td>
</tr>
<tr>
<td>Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)</td>
</tr>
<tr>
<td>Listed on the Japanese ENCS (Existing &amp; New Chemical Substances) inventory</td>
</tr>
<tr>
<td>Listed on the Korean ECL (Existing Chemicals List)</td>
</tr>
<tr>
<td>Listed on NZIoC (New Zealand Inventory of Chemicals)</td>
</tr>
<tr>
<td>Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)</td>
</tr>
<tr>
<td>Listed on the Canadian IDL (Ingredient Disclosure List)</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Nitrogen (7727-37-9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listed on the AICS (Australian Inventory of Chemical Substances)</td>
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<tr>
<td>Listed on the Korean ECL (Existing Chemicals List)</td>
</tr>
<tr>
<td>Listed on NZIoC (New Zealand Inventory of Chemicals)</td>
</tr>
<tr>
<td>Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)</td>
</tr>
</tbody>
</table>

15.3. US State regulations

<table>
<thead>
<tr>
<th>Carbon dioxide (124-38-9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. - Massachusetts - Right To Know List</td>
</tr>
<tr>
<td>U.S. - New Jersey - Right to Know Hazardous Substance List</td>
</tr>
<tr>
<td>U.S. - Pennsylvania - RTK (Right to Know) List</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nitrogen (7727-37-9)</th>
</tr>
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<td>U.S. - Massachusetts - Right To Know List</td>
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<tr>
<td>U.S. - Pennsylvania - RTK (Right to Know) List</td>
</tr>
</tbody>
</table>

SECTION 16: Other information

Indication of changes : Revised safety data sheet in accordance with OSHA final rule on GHS implementation promulgated March 26, 2012.

Other information : This Safety Data Sheet is offered pursuant to OSHA’s Hazard Communication Standard, 29 CFR, 1910.1200. Other government regulations must be reviewed for applicability to this product.

Full text of H-phrases:

<table>
<thead>
<tr>
<th>Compressed gas</th>
<th>Gases under pressure Compressed gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquefied gas</td>
<td>Gases under pressure Liquefied gas</td>
</tr>
<tr>
<td>H280</td>
<td>Contains gas under pressure; may explode if heated</td>
</tr>
</tbody>
</table>

SDS US (GHS HazCom 2012)

This Safety Data Sheet is offered pursuant to OSHA’s Hazard Communication Standard, 29 CFR, 1910.1200. Other government regulations must be reviewed for applicability to this gas mixture. To the best of Calgaz’s knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness are not guaranteed and no warranties of any type, either express or implied, are provided. The information contained herein relates only to this specific product. If this gas mixture is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition.