Hexafluoropropene (1.00% - 9.12%) in Nitrogen
Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations
Date of issue: 02/12/2015 Version: 1.0

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

1.1. Product identifier
Product form : Mixture
Product name : Hexafluoropropene (1.00% - 9.12%) in Nitrogen
Product code : SG-2002-03313

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
Air Liquide
2700 Post Oak Boulevard
Houston, TX 77056 - USA
T 1-800-819-1704
www.us.airliquide.com

1.4. Emergency telephone number
Emergency number : CHEMTREC: 1-800-424-9300

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture
Classification (GHS-US)
Compressed gas : H280
STOT SE 2 : H371
STOT SE 3 : H335
STOT RE 2 : H373

Full text of H-phrases: see section 16

2.2. Label elements
GHS-US labeling

Signal word (GHS-US) : Warning
Hazard pictograms (GHS-US):

Hazard statements (GHS-US):
H280 - Contains gas under pressure; may explode if heated
H335 - May cause respiratory irritation
H371 - May cause damage to organs (liver, kidneys)
H373 - May cause damage to organs (kidneys) through prolonged or repeated exposure
OSHA-H01 - May displace oxygen and cause rapid suffocation

Precautionary statements (GHS-US):
P202 - Do not handle until all safety precautions have been read and understood
P260 - Do not breathe gas
P271 - Use only outdoors or in a well-ventilated area
P280 - Wear eye protection, face protection, protective gloves, protective clothing
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P308+P313 - If exposed or concerned: Get medical advice/attention
P403 - Store in a well-ventilated place
P405 - Store locked up
P501 - Dispose of contents/container in accordance with local/regional/national/international regulations
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>90.88 - 99</td>
<td>Compressed 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 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 after inhalation: May displace oxygen and cause rapid suffocation. May cause respiratory irritation. May cause damage to organs (liver, kidneys).

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: May cause damage to organs (kidneys) through prolonged or repeated exposure.

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 to extinguish.

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.
- **Emergency procedures**: Escape the danger area by the closest safe route. Close doors and windows of adjacent premises. Keep containers closed. Mark the danger area. Seal off low-lying areas. Keep upwind.

### 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. Close valve after each use and when empty.
- **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.
- **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. Store locked up.
- **Incompatible products**: None known.
- **Incompatible materials**: None known.

### 7.3. Specific end use(s)
See Section 1.2.

## SECTION 8: Exposure controls/personal protection
### 8.1. Control parameters
<table>
<thead>
<tr>
<th>Hexafluoropropene (1.00% - 9.12%) in Nitrogen</th>
<th>ACGIH</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSHA</td>
<td></td>
<td>Not applicable</td>
</tr>
<tr>
<td>Nitrogen (7727-37-9)</td>
<td></td>
<td>Not applicable</td>
</tr>
<tr>
<td>ACGIH</td>
<td></td>
<td>Not applicable</td>
</tr>
<tr>
<td>OSHA</td>
<td></td>
<td>Not applicable</td>
</tr>
<tr>
<td>Hexafluoropropene (R1216) (116-15-4)</td>
<td></td>
<td>ACGIH TWA (ppm)</td>
</tr>
<tr>
<td>ACGIH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA</td>
<td></td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

### 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.
Molecular mass: Not applicable for gas-mixtures.
Color: Colorless
Odor: Odorless
Odor threshold: No Data Available
pH: No data available
Relative evaporation rate (butyl acetate=1): No data available
Melting point: No Data Available
Freezing point: No data available
Boiling point: No Data Available
Flash point: No Data Available
Auto-ignition temperature: No data available
Decomposition temperature: No data available
Flammability (solid, gas): See Section 2.1 and 2.2
Vapor pressure: No data available
Relative vapor density at 20 °C: No data available
Relative density: No data available
Relative gas density: Heavier or similar to air.
Solubility: Water: Solubility in water of component(s) of the mixture:
• : 20 mg/l • :
Log Pow: No data available
Log Kow: No data available
Viscosity, kinematic: No data available
Viscosity, dynamic: No data available
Explosive properties: Not applicable - not flammable.
Oxidizing properties: None.
Explosive limits: Not applicable - not flammable

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.

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

##### Acute toxicity

<table>
<thead>
<tr>
<th>Substance</th>
<th>LC50 inhalation rat (ppm)</th>
<th>LC50 inhalation rat (mg/l)</th>
<th>ATE US (gases)</th>
<th>ATE US (vapors)</th>
<th>ATE US (dust, mist)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen (7727-37-9)</td>
<td>820000 ppm/4h</td>
<td>820000 mg/m³ (Exposure time: 4 h)</td>
<td>1825.23 ppm/4h</td>
<td>11.200 mg/l/4h</td>
<td>11.200 mg/l/4h</td>
</tr>
<tr>
<td>Hexafluoropropene (R1216) (116-15-4)</td>
<td></td>
<td></td>
<td>1825.230 ppmV/4h</td>
<td>11.200 mg/l/4h</td>
<td>11.200 mg/l/4h</td>
</tr>
</tbody>
</table>

##### Skin corrosion/irritation

- Not classified

##### Serious eye damage/irritation

- Not classified

##### Respiratory or skin sensitization

- Not classified

##### Germ cell mutagenicity

- Not classified

##### Carcinogenicity

- Not classified

##### Reproductive toxicity

- Not classified

##### Specific target organ toxicity (single exposure)

- May cause damage to organs (liver, kidneys). May cause respiratory irritation.

##### Specific target organ toxicity (repeated exposure)

- May cause damage to organs (kidneys) through prolonged or repeated exposure.

##### Aspiration hazard

- Not classified

##### Symptoms/injuries after inhalation

- May displace oxygen and cause rapid suffocation. May cause respiratory irritation. May cause damage to organs (liver, kidneys).

##### 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

- May cause damage to organs (kidneys) through prolonged or repeated exposure.

### SECTION 12: Ecological information

#### 12.1. Toxicity

- No additional information available

#### 12.2. Persistence and degradability

<table>
<thead>
<tr>
<th>Substance</th>
<th>Persistence and degradability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen (7727-37-9)</td>
<td>No ecological damage caused by this product.</td>
</tr>
<tr>
<td>Hexafluoropropene (R1216) (116-15-4)</td>
<td>No data available. Study scientifically unjustified.</td>
</tr>
</tbody>
</table>

#### 12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>Substance</th>
<th>Bioaccumulative potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen (7727-37-9)</td>
<td>Not applicable for inorganic gases.</td>
</tr>
<tr>
<td>Hexafluoropropene (R1216) (116-15-4)</td>
<td>(no bioaccumulation expected)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substance</th>
<th>BCF fish 1</th>
<th>Log Pow</th>
<th>Bioaccumulative potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hexafluoropropene (R1216) (116-15-4)</td>
<td>(no bioaccumulation expected)</td>
<td>1.88</td>
<td>Not expected to bioaccumulate due to the low log Kow (log Kow &lt; 4). Refer to section 9.</td>
</tr>
</tbody>
</table>

#### 12.4. Mobility in soil

<table>
<thead>
<tr>
<th>Substance</th>
<th>Ecology - soil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen (7727-37-9)</td>
<td>No ecological damage caused by this product.</td>
</tr>
</tbody>
</table>
Hexafluoropropene (1.00% - 9.12%) in Nitrogen
Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

<table>
<thead>
<tr>
<th>Hexafluoropropene (R1216) (116-15-4)</th>
<th>Because of its high volatility, the product is unlikely to cause ground or water pollution.</th>
</tr>
</thead>
</table>

12.5. Other adverse effects

| Effect on ozone layer | No known effects from this product. |
| Effect on the global warming | Contains greenhouse gas(es) not covered by 842/2006/EC. |

SECTION 13: Disposal considerations

13.1. Waste treatment methods

| Waste treatment methods | 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. |
| Waste disposal recommendations | Refer to the CGA Pamphlet P-63 "Disposal of Gases" available at www.cganet.com for more guidance on suitable disposal methods. |

SECTION 14: Transport information

In accordance with DOT

| Transport document description | UN1956 Compressed gas, n.o.s. (Nitrogen, Hexafluoropropene), 2.2 |
| UN-No.(DOT) | UN1956 |
| Proper Shipping Name (DOT) | Compressed gas, n.o.s. |
| 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 Symbols

| DOT Packaging Exceptions (49 CFR 173.xxx) | 306;307 |
| DOT Packaging Non Bulk (49 CFR 173.xxx) | 302;305 |
| DOT Packaging Bulk (49 CFR 173.xxx) | 314;315 |
| DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) | 75 kg |
| 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. |

ADR

No additional information available

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

<table>
<thead>
<tr>
<th>Substance</th>
<th>Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen (7727-37-9)</td>
<td>Listed on the United States TSCA (Toxic Substances Control Act) inventory</td>
</tr>
<tr>
<td>Hexafluoropropene (R1216) (116-15-4)</td>
<td>Listed on the United States TSCA (Toxic Substances Control Act) inventory</td>
</tr>
</tbody>
</table>

**EPA TSCA Regulatory Flag**

T - T - indicates a substance that is the subject of a Section 4 test rule under TSCA.

### 15.2. International regulations

#### CANADA

<table>
<thead>
<tr>
<th>Substance</th>
<th>Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen (7727-37-9)</td>
<td>Listed on the Canadian DSL (Domestic Sustances List)</td>
</tr>
<tr>
<td>Hexafluoropropene (R1216) (116-15-4)</td>
<td>Listed on the Canadian NDSL (Non-Domestic Substances List)</td>
</tr>
</tbody>
</table>

**WHMIS Classification**

- Class A - Compressed Gas

#### EU-Regulations

<table>
<thead>
<tr>
<th>Substance</th>
<th>Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen (7727-37-9)</td>
<td>Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)</td>
</tr>
<tr>
<td>Hexafluoropropene (R1216) (116-15-4)</td>
<td>Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)</td>
</tr>
</tbody>
</table>

**Classification according to Regulation (EC) No. 1272/2008 [CLP]**

- Not classified

**Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]**

### 15.2. National regulations

#### Nitrogen (7727-37-9)

- Listed on the AICS (Australian Inventory of Chemical Substances)
- Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
- Listed on the Korean ECL (Existing Chemicals List)
- Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

#### Hexafluoropropene (R1216) (116-15-4)

- Listed on the AICS (Australian Inventory of Chemical Substances)
- Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
- Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
- Listed on the Korean ECL (Existing Chemicals List)
- Listed on NZIoC (New Zealand Inventory of Chemicals)
- Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

### 15.3. US State regulations

<table>
<thead>
<tr>
<th>Substance</th>
<th>Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen (7727-37-9)</td>
<td>U.S. - Massachusetts - Right To Know List</td>
</tr>
<tr>
<td></td>
<td>U.S. - New Jersey - Right to Know Hazardous Substance List</td>
</tr>
<tr>
<td></td>
<td>U.S. - Pennsylvania - RTK (Right to Know) List</td>
</tr>
<tr>
<td>Hexafluoropropene (R1216) (116-15-4)</td>
<td>U.S. - New Jersey - Right to Know Hazardous Substance 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.
### Hexafluoropropene (1.00% - 9.12%) in Nitrogen

**Safety Data Sheet**

According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Full text of H-phrases:

<table>
<thead>
<tr>
<th>Acute Tox. 4 (Inhalation:gas)</th>
<th>Acute toxicity (inhalation:gas) Category 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressed gas</td>
<td>Gases under pressure Compressed gas</td>
</tr>
<tr>
<td>Liquefied gas</td>
<td>Gases under pressure Liquefied gas</td>
</tr>
<tr>
<td>STOT RE 2</td>
<td>Specific target organ toxicity (repeated exposure) Category 2</td>
</tr>
<tr>
<td>STOT SE 2</td>
<td>Specific target organ toxicity (single exposure) Category 2</td>
</tr>
<tr>
<td>STOT SE 3</td>
<td>Specific target organ toxicity (single exposure) Category 3</td>
</tr>
<tr>
<td>H280</td>
<td>Contains gas under pressure, may explode if heated</td>
</tr>
<tr>
<td>H332</td>
<td>Harmful if inhaled</td>
</tr>
<tr>
<td>H335</td>
<td>May cause respiratory irritation</td>
</tr>
<tr>
<td>H371</td>
<td>May cause damage to organs</td>
</tr>
<tr>
<td>H373</td>
<td>May cause damage to organs through prolonged or repeated exposure</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 product. To the best of Air Liquide America Corporation’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 product 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.