

## Safety Data Sheet



### Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

#### 1.1 Product identifier

|              |                                                                                          |
|--------------|------------------------------------------------------------------------------------------|
| Product Name | • Oxygen (50%), Nitrous Oxide (40%), Carbon Dioxide (6%), Enflurane (2.7%), Argon (1.3%) |
| Synonyms     | • 4733                                                                                   |
| Product Code | • 90110                                                                                  |

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

|                            |                   |
|----------------------------|-------------------|
| Relevant identified use(s) | • Calibration Gas |
|----------------------------|-------------------|

#### 1.3 Details of the supplier of the safety data sheet

|                       |                                                                                                                           |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------|
| Manufacturer          | • Air Liquide<br>2700 Post Oak Blvd.<br>Houston, TX 77056<br>United States<br>www.us.airliquide.com<br>sds@airliquide.com |
| Telephone (Technical) | • 713-896-2896                                                                                                            |
| Telephone (Technical) | • 800-819-1704                                                                                                            |

#### 1.4 Emergency telephone number

|              |                                           |
|--------------|-------------------------------------------|
| Manufacturer | • 800-424-9300 - CHEMTREC                 |
| Manufacturer | • +1 703-527-3887 - Outside United States |

### Section 2: Hazards Identification

#### EU/EEC

According to Regulation (EC) No 1272/2008 (CLP)/REACH 1907/2006 [amended by 453/2010]

According to EU Directive 67/548/EEC (DSD) or 1999/45/EC (DPD)

#### 2.1 Classification of the substance or mixture

|         |                                                                                                                                                                                                                                                                    |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CLP     | • Oxidizing Gases 1 - H270<br>Compressed Gas - H280<br>Specific Target Organ Toxicity Single Exposure 3: Narcotic Effects - H336<br>Germ Cell Mutagenicity 2 - H341<br>Reproductive Toxicity 2 - H361<br>Specific Target Organ Toxicity Repeated Exposure 2 - H373 |
| DSD/DPD | • Oxidizing (O)<br>Harmful (Xn)<br>Substances Toxic To Reproduction - Category 3<br>Mutagenic Substances - Category 3<br>R8, R48/20, R63, R67, R68                                                                                                                 |

#### 2.2 Label Elements

## CLP

### DANGER



- Hazard statements**
- H270 - May cause or intensify fire; oxidizer
  - H280 - Contains gas under pressure; may explode if heated
  - H336 - May cause drowsiness or dizziness
  - H341 - Suspected of causing genetic defects.
  - H361 - Suspected of damaging fertility or the unborn child.
  - H373 - May cause damage to organs - Nervous System/Bone Marrow through prolonged or repeated exposure

### Precautionary statements

- Prevention**
- P201 - Obtain special instructions before use.
  - P202 - Do not handle until all safety precautions have been read and understood.
  - P220 - Keep/Store away from clothing and other combustible materials.
  - P244 - Keep reduction valves free from grease and oil.
  - P260 - Do not breathe gas.
  - P271 - Use only outdoors or in a well-ventilated area.
  - P281 - Use personal protective equipment as required.
- Response**
- P370+P376 - In case of fire: Stop leak if safe to do so.
  - P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
  - P312 - Call a POISON CENTER or doctor/physician if you feel unwell.
  - P314 - Get medical advice/attention if you feel unwell.
  - P308+P313 - IF exposed or concerned: Get medical advice/attention.
- Storage/Disposal**
- P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
  - P405 - Store locked up.
  - P501 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

## DSD/DPD



- Risk phrases**
- R8 - Contact with combustible material may cause fire.
  - R48/20 - Harmful: danger of serious damage to health by prolonged exposure through inhalation.
  - R63 - Possible risk of harm to the unborn child.
  - R67 - Vapours may cause drowsiness and dizziness.
  - R68 - Possible risk of irreversible effects.

- Safety phrases**
- S37 - Wear suitable gloves.

## 2.3 Other Hazards

### CLP

- According to Regulation (EC) No. 1272/2008 (CLP) this material is considered hazardous.

### DSD/DPD

- According to European Directive 1999/45/EC this preparation is considered dangerous.

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## United States (US)

According to OSHA 29 CFR 1910.1200 HCS

### 2.1 Classification of the substance or mixture

#### OSHA HCS 2012

- Oxidizing Gases 1 - H270
- Compressed Gas - H280
- Specific Target Organ Toxicity Single Exposure 3: Narcotic Effects - H336
- Germ Cell Mutagenicity 2 - H341

Reproductive Toxicity 2 - H361  
Specific Target Organ Toxicity Repeated Exposure 2 - H373

## 2.2 Label elements

OSHA HCS 2012

### DANGER



- Hazard statements**
- May cause or intensify fire; oxidizer - H270
  - Contains gas under pressure; may explode if heated - H280
  - May cause drowsiness or dizziness - H336
  - Suspected of causing genetic defects. - H341
  - Suspected of damaging fertility or the unborn child. - H361
  - May cause damage to organs (Nervous System, Bone Marrow) through prolonged or repeated exposure - H373

### Precautionary statements

- Prevention**
- Obtain special instructions before use. - P201
  - Do not handle until all safety precautions have been read and understood. - P202
  - Keep/Store away from clothing and other combustible materials. - P220
  - Keep reduction valves free from grease and oil. - P244
  - Do not breathe gas. - P260
  - Wash thoroughly after handling. - P264
  - Use only outdoors or in a well-ventilated area. - P271
  - Wear protective gloves/protective clothing/eye protection/face protection. - P280
- Response**
- In case of fire: Stop leak if safe to do so. - P370+P376
  - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. - P304+P340
  - Call a POISON CENTER or doctor/physician if you feel unwell. - P312
  - Get medical advice/attention if you feel unwell. - P314
  - IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician. - P309+P311
- Storage/Disposal**
- Store in a well-ventilated place. Keep container tightly closed. - P403+P233
  - Store locked up. - P405
  - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations. - P501

## 2.3 Other hazards

OSHA HCS 2012

- Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

## Canada

According to WHMIS

### 2.1 Classification of the substance or mixture

WHMIS

- Compressed Gas - A
- Oxidizing - C
- Other Toxic Effects - D2A
- Other Toxic Effects - D2B

### 2.2 Label elements

WHMIS



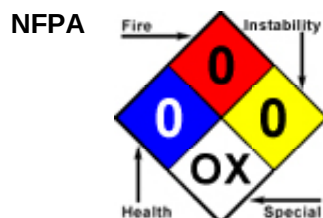
- Compressed Gas - A
- Oxidizing - C
- Other Toxic Effects - D2A
- Other Toxic Effects - D2B

## 2.3 Other hazards

### WHMIS

- In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

## 2.4 Other information



## Section 3 - Composition/Information on Ingredients

### 3.1 Substances

- Material does not meet the criteria of a substance in accordance with Regulation (EC) No 1272/2008.

### 3.2 Mixtures

| Composition                                         |                                      |      |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------|--------------------------------------|------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chemical Name                                       | Identifiers                          | %    | LD50/LC50                                                                         | Classifications According to Regulation/Directive                                                                                                                                                                                                                                                                                                                                        |
| Oxygen                                              | CAS:7782-44-7<br>EC Number:231-956-9 | 50%  | NDA                                                                               | EU DSD/DPD: Annex I - O; R8<br>EU CLP: Annex VI - Ox. Gas 1, H270; Press. Gas - Comp., H280<br>OSHA HCS 2012: Ox. Gas 1; Press Gas. - Comp.                                                                                                                                                                                                                                              |
| Nitrogen oxide                                      | CAS:10024-97-2<br>EC Number:         | 40%  | NDA                                                                               | EU DSD/DPD: Self Classified - Muta. 3, R68; Repr. 3, R63; O, R8, R67; Xn, R48/20<br>EU CLP: Self Classified - Muta. 2, H341; Repr. 2 H361; Ox. Gas 1, H270; Press. Gas - Comp., H280; STOT SE 3: Narc., H336; STOT RE 2- Nervous system & Bone Marrow, H373<br>OSHA HCS 2012: Press. Gas - Comp.; Muta. 2; Repr. 2; Ox. Gas 1; STOT SE 3: Narc.; STOT RE 2- Nervous system & Bone Marrow |
| Carbon dioxide                                      | CAS:124-38-9<br>EC Number:204-696-9  | 6%   | Inhalation-Rat LC50 • 470000 ppm 30 Minute (s)                                    | EU DSD/DPD: Not Classified<br>EU CLP: Self Classified - Press. Gas - Comp., H280<br>OSHA HCS 2012: Press. Gas - Comp.; Simp. Asphyx.                                                                                                                                                                                                                                                     |
| Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | CAS:13838-16-9<br>EINECS:237-553-4   | 2.7% | Ingestion/Oral-Rat LD50 • 5450 µL/kg<br>Inhalation-Rat LC50 • 14000 ppm 3 Hour(s) | EU DSD/DPD: Self Classified - R67; Xi, R36/37/38<br>EU CLP: Self Classified - Skin Irrit. 2, H315; Eye Irrit. 2, H319; STOT SE 3: Resp. Irrit., H335; STOT SE 3: Narc., H336<br>OSHA HCS 2012: STOT SE 3: Narc.; Skin Irrit. 2; Eye Irrit. 2A; STOT SE 3: Resp. Irrit.                                                                                                                   |
| Argon                                               | CAS:7440-37-1<br>EC Number:231-147-0 | 1.3% | NDA                                                                               | EU DSD/DPD: Not Classified<br>EU CLP: Self Classified - Press. Gas - Comp., H280<br>OSHA HCS 2012: Press. Gas - Comp.; Simp. Asphyx                                                                                                                                                                                                                                                      |

## Section 4 - First Aid Measures

### 4.1 Description of first aid measures

#### Inhalation

- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing. If signs/symptoms continue, get medical attention.

#### Skin

- IF ON SKIN: Gently wash with plenty of soap and water. Take off contaminated clothing and wash before reuse. If skin irritation occurs: Get medical advice/attention.

#### Eye

- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

#### Ingestion

- Ingestion is not considered a potential route of exposure.

### 4.2 Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

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

#### Notes to Physician

- All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

### 4.4 Other information

- RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO THIS SUBSTANCE WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. At a minimum, Self-Contained Breathing Apparatus must be worn. Victim(s) who experience any adverse effect after over-exposure to this gas mixture must be taken for medical attention. Rescuers should be taken for medical attention if necessary. Take a copy of the label and the SDS to physician or other health professional with victim(s). Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

## Section 5 - Firefighting Measures

### 5.1 Extinguishing media

**Suitable Extinguishing Media** • Use extinguishing agent suitable for type of surrounding fire.

**Unsuitable Extinguishing Media** • No data available

### 5.2 Special hazards arising from the substance or mixture

**Unusual Fire and Explosion Hazards** • May ignite combustibles (wood, paper, oil, clothing, etc.)  
Containers may explode when heated.  
Ruptured cylinders may rocket.

**Hazardous Combustion Products** • No data available

### 5.3 Advice for firefighters

- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.  
Wear positive pressure self-contained breathing apparatus (SCBA).  
Move containers from fire area if you can do it without risk.  
FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.  
FIRE INVOLVING TANKS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.  
FIRE INVOLVING TANKS: Cool containers with flooding quantities of water until well after fire is out.  
FIRE INVOLVING TANKS: Do not direct water at source of leak or safety devices;

icing may occur.

FIRE INVOLVING TANKS: Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.

FIRE INVOLVING TANKS: ALWAYS stay away from tanks engulfed in fire.

## Section 6 - Accidental Release Measures

### 6.1 Personal precautions, protective equipment and emergency procedures

#### Personal Precautions

- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Do not touch or walk through spilled material. Ventilate the area before entry.

#### Emergency Procedures

- Stop leak if you can do it without risk. Keep unauthorized personnel away. Keep out of low areas. Stay upwind. Do not direct water at spill or source of leak. LARGE SPILL: Consider initial downwind evacuation for at least 500 meters (1/3 mile)

### 6.2 Environmental precautions

- Avoid release to the environment.

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

#### Containment/Clean-up Measures

- Stop leak if you can do it without risk.  
Keep combustibles (wood, paper, oil, etc.) away from spilled material.  
Do not direct water at spill or source of leak.  
Use water spray to reduce vapors; do not put water directly on leak, spill area or inside container.  
If possible, turn leaking containers so that gas escapes rather than liquid.  
Isolate area until gas has dispersed.  
Ventilate the area.  
Allow substance to evaporate.

### 6.4 Reference to other sections

- Refer to Section 8 - Exposure Controls/Personal Protection and Section 13 - Disposal Considerations.

## Section 7 - Handling and Storage

### 7.1 Precautions for safe handling

#### Handling

- Use only with adequate ventilation. Ventilate closed spaces before entering. Be aware of any signs of dizziness or fatigue, especially if work is done in a poorly ventilated area; exposures to fatal concentrations of this gas mixture could occur without any significant warning symptoms, due to olfactory fatigue or oxygen deficiency. Cylinders should be firmly secured to prevent falling or being knocked-over. Do not attempt to repair, adjust, or in any other way modify cylinders. If there is a malfunction or another type of operational problem, contact nearest distributor immediately. Empty containers retain product residue and can be hazardous. Do not cut, weld, puncture or incinerate container.

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

#### Storage

- Store in a cool, dry, well-ventilated place. Do not store near combustible materials. Protect cylinders against physical damage. Cylinders should be firmly secured to prevent falling or being knocked-over.

### 7.3 Specific end use(s)

- Refer to Section 1.2 - Relevant identified uses.

## Section 8 - Exposure Controls/Personal Protection

### 8.1 Control parameters

| Exposure Limits/Guidelines                                       |          |                                                                                            |                                                  |                                                                                                                                                                                                                                                                                       |                                          |                                          |
|------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------------|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|------------------------------------------|
|                                                                  | Result   | ACGIH                                                                                      | Canada Ontario                                   | Canada Quebec                                                                                                                                                                                                                                                                         | China                                    | Europe                                   |
| Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl (13838-16-9) | TWAs     | 75 ppm TWA                                                                                 | 2 ppm TWA; 16 mg/m <sup>3</sup> TWA              | 75 ppm TWA <sub>EV</sub> ; 566 mg/m <sup>3</sup> TWA <sub>EV</sub>                                                                                                                                                                                                                    | Not established                          | Not established                          |
| Carbon dioxide (124-38-9)                                        | TWAs     | 5000 ppm TWA                                                                               | 5000 ppm TWA                                     | 5000 ppm TWA <sub>EV</sub> ; 9000 mg/m <sup>3</sup> TWA <sub>EV</sub>                                                                                                                                                                                                                 | 9000 mg/m <sup>3</sup> TWA               | 5000 ppm TWA; 9000 mg/m <sup>3</sup> TWA |
|                                                                  | STELs    | 30000 ppm STEL                                                                             | 30000 ppm STEL                                   | 30000 ppm STEV; 54000 mg/m <sup>3</sup> STEV                                                                                                                                                                                                                                          | 18000 mg/m <sup>3</sup> STEL             | Not established                          |
| Nitrogen oxide (10024-97-2)                                      | TWAs     | 50 ppm TWA                                                                                 | 25 ppm TWA; 45 mg/m <sup>3</sup> TWA             | 50 ppm TWA <sub>EV</sub> ; 90 mg/m <sup>3</sup> TWA <sub>EV</sub>                                                                                                                                                                                                                     | Not established                          | Not established                          |
| Exposure Limits/Guidelines (Con't.)                              |          |                                                                                            |                                                  |                                                                                                                                                                                                                                                                                       |                                          |                                          |
|                                                                  | Result   | France                                                                                     | Germany DFG                                      | Germany TRGS                                                                                                                                                                                                                                                                          | Ireland                                  | Israel                                   |
| Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl (13838-16-9) | TWAs     | Not established                                                                            | Not established                                  | 20 ppm TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 8); 150 mg/m <sup>3</sup> TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 8) | 50 ppm TWA; 380 mg/m <sup>3</sup> TWA    | 2 ppm TWA                                |
|                                                                  | STELs    | Not established                                                                            | Not established                                  | Not established                                                                                                                                                                                                                                                                       | Not established                          | 6 ppm STEL                               |
|                                                                  | Ceilings | Not established                                                                            | 160 ppm Peak; 1200 mg/m <sup>3</sup> Peak        | Not established                                                                                                                                                                                                                                                                       | Not established                          | Not established                          |
|                                                                  | MAKs     | Not established                                                                            | 20 ppm TWA MAK; 150 mg/m <sup>3</sup> TWA MAK    | Not established                                                                                                                                                                                                                                                                       | Not established                          | Not established                          |
| Carbon dioxide (124-38-9)                                        | TWAs     | 5000 ppm TWA [VME] (indicative limit); 9000 mg/m <sup>3</sup> TWA [VME] (indicative limit) | Not established                                  | 5000 ppm TWA AGW (exposure factor 2); 9100 mg/m <sup>3</sup> TWA AGW (exposure factor 2)                                                                                                                                                                                              | 5000 ppm TWA; 9000 mg/m <sup>3</sup> TWA | 5000 ppm TWA                             |
|                                                                  | STELs    | Not established                                                                            | Not established                                  | Not established                                                                                                                                                                                                                                                                       | Not established                          | 30000 ppm STEL                           |
|                                                                  | Ceilings | Not established                                                                            | 10000 ppm Peak; 18200 mg/m <sup>3</sup> Peak     | Not established                                                                                                                                                                                                                                                                       | Not established                          | Not established                          |
|                                                                  | MAKs     | Not established                                                                            | 5000 ppm TWA MAK; 9100 mg/m <sup>3</sup> TWA MAK | Not established                                                                                                                                                                                                                                                                       | Not established                          | Not established                          |
|                                                                  |          |                                                                                            |                                                  | 100 ppm TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are                                                                                                                                                                                |                                          |                                          |

|                                |          |                 |                                                |                                                                                                                                                                                 |                                      |                 |
|--------------------------------|----------|-----------------|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-----------------|
| Nitrogen oxide<br>(10024-97-2) | TWAs     | Not established | Not established                                | observed, exposure factor 2); 180 mg/m <sup>3</sup> TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 2) | 50 ppm TWA; 90 mg/m <sup>3</sup> TWA | 50 ppm TWA      |
|                                | Ceilings | Not established | 200 ppm Peak; 360 mg/m <sup>3</sup> Peak       | Not established                                                                                                                                                                 | Not established                      | Not established |
|                                | MAKs     | Not established | 100 ppm TWA MAK; 180 mg/m <sup>3</sup> TWA MAK | Not established                                                                                                                                                                 | Not established                      | Not established |

**Exposure Limits/Guidelines (Con't.)**

|                                                                     | Result   | Italy                                    | NIOSH                                                                                                                                | OSHA                                     | Portugal                | Spain                                                                                                        |
|---------------------------------------------------------------------|----------|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------|--------------------------------------------------------------------------------------------------------------|
| Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl<br>(13838-16-9) | TWAs     | Not established                          | Not established                                                                                                                      | Not established                          | 75 ppm TWA [VLE-MP]     | 75 ppm TWA [VLA-ED]; 575 mg/m <sup>3</sup> TWA [VLA-ED]                                                      |
|                                                                     | Ceilings | Not established                          | 2 ppm Ceiling (60 min exposure to waste anesthetic gas); 15.1 mg/m <sup>3</sup> Ceiling (60 min exposure to waste anesthetic gas)    | Not established                          | Not established         | Not established                                                                                              |
| Carbon dioxide<br>(124-38-9)                                        | STELs    | Not established                          | 30000 ppm STEL; 54000 mg/m <sup>3</sup> STEL                                                                                         | Not established                          | 30000 ppm STEL [VLE-CD] | Not established                                                                                              |
|                                                                     | TWAs     | 5000 ppm TWA; 9000 mg/m <sup>3</sup> TWA | 5000 ppm TWA; 9000 mg/m <sup>3</sup> TWA                                                                                             | 5000 ppm TWA; 9000 mg/m <sup>3</sup> TWA | 5000 ppm TWA [VLE-MP]   | 5000 ppm TWA [VLA-ED] (indicative limit value); 9150 mg/m <sup>3</sup> TWA [VLA-ED] (indicative limit value) |
| Nitrogen oxide<br>(10024-97-2)                                      | TWAs     | Not established                          | 25 ppm TWA (over the time exposed to waste anesthetic gas); 46 mg/m <sup>3</sup> TWA (over the time exposed to waste anesthetic gas) | Not established                          | 50 ppm TWA [VLE-MP]     | 50 ppm TWA [VLA-ED]; 92 mg/m <sup>3</sup> TWA [VLA-ED]                                                       |

**Exposure Limits/Guidelines (Con't.)**

|                                                                     | Result | Sweden                                     |
|---------------------------------------------------------------------|--------|--------------------------------------------|
| Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl<br>(13838-16-9) | STELs  | 20 ppm STV; 150 mg/m <sup>3</sup> STV      |
|                                                                     | TWAs   | 10 ppm LLV; 80 mg/m <sup>3</sup> LLV       |
| Carbon dioxide<br>(124-38-9)                                        | STELs  | 10000 ppm STV; 18000 mg/m <sup>3</sup> STV |
|                                                                     | TWAs   | 5000 ppm LLV; 9000 mg/m <sup>3</sup> LLV   |
| Nitrogen oxide<br>(10024-97-2)                                      | STELs  | 500 ppm STV; 900 mg/m <sup>3</sup> STV     |
|                                                                     | TWAs   | 100 ppm LLV; 180 mg/m <sup>3</sup> LLV     |



## Exposure Control Notations

### Portugal

•Nitrogen oxide (10024-97-2): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen) | **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen) | **Simple Asphyxiants:** (Simple Asphyxiant)

### Ireland

•Argon (7440-37-1): **Simple Asphyxiants:** (Asphyxiant)

### Spain

•Argon (7440-37-1): **Simple Asphyxiants:** (simple asphyxiant)

### Germany DFG

•Nitrogen oxide (10024-97-2): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to) | **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to)

## 8.2 Exposure controls

### Engineering Measures/Controls

- Adequate ventilation systems as needed to control concentrations of airborne contaminants below applicable threshold limit values. Use explosion-proof - electrical, ventilating and/or lighting equipment.

### Personal Protective Equipment

#### Respiratory

- Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or symptoms are experienced.

#### Eye/Face

- Wear safety glasses.

#### Skin/Body

- Wear leather gloves when handling cylinders.

### Environmental Exposure Controls

- Follow best practice for site management and disposal of waste. Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways.

### Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene

LLV = Limit Level Value is the exposure limit for 8-hour work day

MAK = Maximale Arbeitsplatz Konzentration is the maximum permissible concentration

NIOSH = National Institute of Occupational Safety and Health

OSHA = Occupational Safety and Health Administration

STEL = Short Term Exposure Limits are based on 15-minute exposures

STEV = Short Term Exposure Value

TWAEV = Time-Weighted Average Exposure Value

TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

## Section 9 - Physical and Chemical Properties

### 9.1 Information on Physical and Chemical Properties

| Material Description              |                                           |                        |                                            |
|-----------------------------------|-------------------------------------------|------------------------|--------------------------------------------|
| Physical Form                     | Gas                                       | Appearance/Description | Colorless gas with a slight ethereal odor. |
| Color                             | Colorless                                 | Odor                   | Slight ethereal odor.                      |
| Odor Threshold                    | Data lacking                              |                        |                                            |
| General Properties                |                                           |                        |                                            |
| Boiling Point                     | -183 C(-297.4 F)<br>Oxygen                | Melting Point          | -219 C(-362.2 F)<br>Oxygen                 |
| Decomposition Temperature         | Data lacking                              | pH                     | Data lacking                               |
| Specific Gravity/Relative Density | 1.14 Water=1 @ -183 C(-297.4 F)<br>Oxygen | Water Solubility       | Soluble<br>Oxygen                          |
| Viscosity                         | Data lacking                              | Explosive Properties   | Not explosive.                             |
| Oxidizing Properties:             | Oxidizing gas.                            |                        |                                            |
| Volatility                        |                                           |                        |                                            |

|                                     |                                           |               |                      |
|-------------------------------------|-------------------------------------------|---------------|----------------------|
| Vapor Pressure                      | 50800 hPa @ -118.4 C(-181.12 F)<br>Oxygen | Vapor Density | 1.11 Air=1<br>Oxygen |
| Evaporation Rate                    | Data lacking                              |               |                      |
| <b>Flammability</b>                 |                                           |               |                      |
| Flash Point                         | Not relevant                              | UEL           | Not relevant         |
| LEL                                 | Not relevant                              | Autoignition  | Not relevant         |
| Flammability (solid, gas)           | Not flammable.                            |               |                      |
| <b>Environmental</b>                |                                           |               |                      |
| Octanol/Water Partition coefficient | Data lacking                              |               |                      |

## 9.2 Other Information

- No additional physical and chemical parameters noted.

## Section 10: Stability and Reactivity

### 10.1 Reactivity

- No dangerous reaction known under conditions of normal use.

### 10.2 Chemical stability

- Stable under normal temperatures and pressures.

### 10.3 Possibility of hazardous reactions

- Hazardous polymerization will not occur.

### 10.4 Conditions to avoid

- Excess heat, sparks, open flame.

### 10.5 Incompatible materials

- Combustible materials, reducing agents.

### 10.6 Hazardous decomposition products

- No data available

## Section 11 - Toxicological Information

### 11.1 Information on toxicological effects

| Component Name                                             | CAS        | Data                                                                                                                           |
|------------------------------------------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------|
| Nitrogen oxide (40%)                                       | 10024-97-2 | <b>Mutagen:</b> dni-hmn-ihl 50 pph/24H; mnt-hmn-ihl 1000 ug/L/18Y-I;<br><b>Reproductive:</b> ihl-rat TCLo:0.1 pph (1-19D preg) |
| Carbon dioxide (6%)                                        | 124-38-9   | <b>Acute Toxicity:</b> ihl-rat LC50:470000 ppm/30M;<br><b>Reproductive:</b> ihl-rat TCLo:6 pph/24H (10D preg)                  |
| Oxygen (50%)                                               | 7782-44-7  | <b>Reproductive:</b> ihl-rat TCLo:10 pph/9H (22D preg)                                                                         |
| Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl (2.7%) | 13838-16-9 | <b>Acute Toxicity:</b> orl-rat LD50:5450 uL/kg; ihl-rat LC50:14000 ppm/3H;<br><b>Irritation:</b> eye-rbt 100 mg MOD            |

| GHS Properties           | Classification                                                                                            |
|--------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>Acute toxicity</b>    | <b>EU/CLP</b> • Classification criteria not met<br><b>OSHA HCS 2012</b> • Classification criteria not met |
| <b>Aspiration Hazard</b> | <b>EU/CLP</b> • Classification criteria not met<br><b>OSHA HCS 2012</b> • Classification criteria not met |

|                                      |                                                                                                                                                                                 |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Carcinogenicity</b>               | <b>EU/CLP</b> • Classification criteria not met<br><b>OSHA HCS 2012</b> • Classification criteria not met                                                                       |
| <b>Germ Cell Mutagenicity</b>        | <b>EU/CLP</b> • Germ Cell Mutagenicity 2<br><b>OSHA HCS 2012</b> • Germ Cell Mutagenicity 2                                                                                     |
| <b>Skin corrosion/Irritation</b>     | <b>EU/CLP</b> • Classification criteria not met<br><b>OSHA HCS 2012</b> • Classification criteria not met                                                                       |
| <b>Skin sensitization</b>            | <b>EU/CLP</b> • Classification criteria not met<br><b>OSHA HCS 2012</b> • Classification criteria not met                                                                       |
| <b>STOT-RE</b>                       | <b>EU/CLP</b> • Specific Target Organ Toxicity Repeated Exposure 2<br><b>OSHA HCS 2012</b> • Specific Target Organ Toxicity Repeated Exposure 2                                 |
| <b>STOT-SE</b>                       | <b>EU/CLP</b> • Specific Target Organ Toxicity Single Exposure 3: Narcotic Effects<br><b>OSHA HCS 2012</b> • Specific Target Organ Toxicity Single Exposure 3: Narcotic Effects |
| <b>Toxicity for Reproduction</b>     | <b>EU/CLP</b> • Toxic to Reproduction 2<br><b>OSHA HCS 2012</b> • Toxic to Reproduction 2                                                                                       |
| <b>Respiratory sensitization</b>     | <b>EU/CLP</b> • Classification criteria not met<br><b>OSHA HCS 2012</b> • Classification criteria not met                                                                       |
| <b>Serious eye damage/Irritation</b> | <b>EU/CLP</b> • Classification criteria not met<br><b>OSHA HCS 2012</b> • Classification criteria not met                                                                       |

#### Target Organs

- Nervous System, Bone Marrow

#### Route(s) of entry/exposure

- Inhalation, Skin, Eye

#### Potential Health Effects

##### Inhalation

###### Acute (Immediate)

- May affect the central nervous system. Symptoms may include dizziness, drowsiness, lethargy, coma and death.

###### Chronic (Delayed)

- Repeated and prolonged exposure may affect the Nervous System and/or Bone Marrow.

##### Skin

###### Acute (Immediate)

- Under normal conditions of use, no health effects are expected.

###### Chronic (Delayed)

- No data available

##### Eye

###### Acute (Immediate)

- Under normal conditions of use, no health effects are expected.

###### Chronic (Delayed)

- No data available

##### Ingestion

###### Acute (Immediate)

- Ingestion is not anticipated to be a likely route of exposure to this product.

###### Chronic (Delayed)

- Ingestion is not anticipated to be a likely route of exposure to this product.

##### Mutagenic Effects

- Repeated and prolonged exposure may cause mutagenic effects.

##### Reproductive Effects

- Nitrous oxide has been shown to cause birth defects in rats.

#### Key to abbreviations

TC = Toxic Concentration

LC = Lethal Concentration

LD = Lethal Dose

## Section 12 - Ecological Information

## 12.1 Toxicity

- Material data lacking.

## 12.2 Persistence and degradability

- Material data lacking.

## 12.3 Bioaccumulative potential

- Material data lacking.

## 12.4 Mobility in Soil

- Material data lacking.

## 12.5 Results of PBT and vPvB assessment

- PBT and vPvB assessment has not been conducted for this material.

## 12.6 Other adverse effects

- No adverse ecological effects are expected.

## Section 13 - Disposal Considerations

### 13.1 Waste treatment methods

#### Product waste

- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

#### Packaging waste

- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

## Section 14 - Transport Information

|           | 14.1 UN number | 14.2 UN proper shipping name                              | 14.3 Transport hazard class(es) | 14.4 Packing group | 14.5 Environmental hazards |
|-----------|----------------|-----------------------------------------------------------|---------------------------------|--------------------|----------------------------|
| DOT       | UN3156         | Compressed gas, oxidizing, n.o.s. (Oxygen, Nitrous Oxide) | 2.2,5.1                         | NDA                | NDA                        |
| TDG       | UN3156         | COMPRESSED GAS, OXIDIZING, N.O.S. (Oxygen, Nitrous Oxide) | 2.2,5.1                         | NDA                | NDA                        |
| IMO/IMDG  | UN3156         | COMPRESSED GAS, OXIDIZING, N.O.S. (Oxygen, Nitrous Oxide) | 2.2,5.1                         | NDA                | NDA                        |
| IATA/ICAO | UN3156         | Compressed gas, oxidizing, n.o.s. (Oxygen, Nitrous Oxide) | 2.2,5.1                         | NDA                | NDA                        |

### 14.6 Special precautions for user

- Cylinders should be transported in a secure position, in a well-ventilated vehicle. The transportation of compressed gas cylinders in automobiles or in closed-body vehicles can present serious safety hazards. If transporting these cylinders in vehicles, ensure these cylinders are not exposed to extremely high temperatures (as may occur in an enclosed vehicle on a hot day). Additionally, the vehicle should be well-ventilated during transportation.

### 14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

- Not relevant.

## Section 15 - Regulatory Information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or

**mixture****SARA Hazard Classifications** • Fire, Pressure(Sudden Release of), Acute, Chronic

| State Right To Know                                 |            |     |     |     |
|-----------------------------------------------------|------------|-----|-----|-----|
| Component                                           | CAS        | MA  | NJ  | PA  |
| Argon                                               | 7440-37-1  | Yes | Yes | Yes |
| Carbon dioxide                                      | 124-38-9   | Yes | Yes | Yes |
| Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Yes | No  | No  |
| Nitrogen oxide                                      | 10024-97-2 | Yes | Yes | Yes |
| Oxygen                                              | 7782-44-7  | Yes | Yes | Yes |

| Inventory                                           |            |            |             |       |           |           |
|-----------------------------------------------------|------------|------------|-------------|-------|-----------|-----------|
| Component                                           | CAS        | Canada DSL | Canada NDSL | China | EU EINECS | EU ELNICS |
| Argon                                               | 7440-37-1  | Yes        | No          | Yes   | Yes       | No        |
| Carbon dioxide                                      | 124-38-9   | Yes        | No          | Yes   | Yes       | No        |
| Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | No         | No          | No    | Yes       | No        |
| Nitrogen oxide                                      | 10024-97-2 | Yes        | No          | Yes   | Yes       | No        |
| Oxygen                                              | 7782-44-7  | Yes        | No          | Yes   | Yes       | No        |

| Inventory (Con't.)                                  |            |      |
|-----------------------------------------------------|------------|------|
| Component                                           | CAS        | TSCA |
| Argon                                               | 7440-37-1  | Yes  |
| Carbon dioxide                                      | 124-38-9   | Yes  |
| Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | No   |
| Nitrogen oxide                                      | 10024-97-2 | Yes  |
| Oxygen                                              | 7782-44-7  | Yes  |

**Canada****Labor****Canada - WHMIS - Classifications of Substances**

|                                                       |            |                                                                            |
|-------------------------------------------------------|------------|----------------------------------------------------------------------------|
| • Nitrogen oxide                                      | 10024-97-2 | A, C, D2A                                                                  |
| • Oxygen                                              | 7782-44-7  | A, C                                                                       |
| • Carbon dioxide                                      | 124-38-9   | A; Uncontrolled product according to WHMIS classification criteria (solid) |
| • Argon                                               | 7440-37-1  | A                                                                          |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed                                                                 |

**Canada - WHMIS - Ingredient Disclosure List**

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | 0.1 %      |
| • Oxygen                                              | 7782-44-7  | Not Listed |
| • Carbon dioxide                                      | 124-38-9   | 1 %        |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

**Environment****Canada - CEPA - Priority Substances List**

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | Not Listed |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

**China****Environment****China - Ozone Depleting Substances - First Schedule**

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | Not Listed |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

**China - Ozone Depleting Substances - Second Schedule**

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | Not Listed |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

**China - Ozone Depleting Substances - Third Schedule**

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | Not Listed |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

**Other****China - Annex I & II - Controlled Chemicals Lists**

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | Not Listed |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

**China - Dangerous Goods List**

|                                                       |            |                                    |
|-------------------------------------------------------|------------|------------------------------------|
| • Nitrogen oxide                                      | 10024-97-2 | UN1070; UN2201                     |
| • Oxygen                                              | 7782-44-7  | UN1072; UN1073                     |
| • Carbon dioxide                                      | 124-38-9   | UN1013; UN1845 PG = III;<br>UN2187 |
| • Argon                                               | 7440-37-1  | UN1006; UN1951                     |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed                         |

**China - Export Control List - Part I Chemicals**

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | Not Listed |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

## Europe

### Other

#### EU - CLP (1272/2008) - Annex VI - Table 3.2 - Classification

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | O; R8      |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

#### EU - CLP (1272/2008) - Annex VI - Table 3.2 - Concentration Limits

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | Not Listed |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

#### EU - CLP (1272/2008) - Annex VI - Table 3.2 - Labelling

|                                                       |            |                |
|-------------------------------------------------------|------------|----------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed     |
| • Oxygen                                              | 7782-44-7  | O R:8 S:(2)-17 |
| • Carbon dioxide                                      | 124-38-9   | Not Listed     |
| • Argon                                               | 7440-37-1  | Not Listed     |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed     |

#### EU - CLP (1272/2008) - Annex VI - Table 3.2 - Notes - Substances and Preparations

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | Not Listed |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

#### EU - CLP (1272/2008) - Annex VI - Table 3.2 - Safety Phrases

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | S:(2)-17   |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

## Germany

### Environment

#### Germany - TA Luft - Types and Classes

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | Not Listed |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

#### Germany - Water Classification (VwVwS) - Annex 1

|                  |            |                                                  |
|------------------|------------|--------------------------------------------------|
| • Nitrogen oxide | 10024-97-2 | Not Listed                                       |
| • Oxygen         | 7782-44-7  | ID Number 743, not considered hazardous to water |
| • Carbon dioxide | 124-38-9   | ID Number 256, not considered hazardous to water |

|                                                                                |            |                                                      |
|--------------------------------------------------------------------------------|------------|------------------------------------------------------|
| • Argon                                                                        | 7440-37-1  | ID Number 1348, not considered hazardous to water    |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl                          | 13838-16-9 | Not Listed                                           |
| <b>Germany - Water Classification (VwVwS) - Annex 2 - Water Hazard Classes</b> |            |                                                      |
| • Nitrogen oxide                                                               | 10024-97-2 | ID Number 767, hazard class 1 - low hazard to waters |
| • Oxygen                                                                       | 7782-44-7  | Not Listed                                           |
| • Carbon dioxide                                                               | 124-38-9   | Not Listed                                           |
| • Argon                                                                        | 7440-37-1  | Not Listed                                           |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl                          | 13838-16-9 | Not Listed                                           |
| <b>Germany - Water Classification (VwVwS) - Annex 3</b>                        |            |                                                      |
| • Nitrogen oxide                                                               | 10024-97-2 | Not Listed                                           |
| • Oxygen                                                                       | 7782-44-7  | Not Listed                                           |
| • Carbon dioxide                                                               | 124-38-9   | Not Listed                                           |
| • Argon                                                                        | 7440-37-1  | Not Listed                                           |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl                          | 13838-16-9 | Not Listed                                           |

**Other****Germany - Specifically Regulated Chemicals in TRGS**

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | Not Listed |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

**Portugal****Other****Portugal - Prohibited Substances**

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | Not Listed |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

**United Kingdom****Environment****United Kingdom - Pollution Inventory - Schedule 1 - Thresholds for Releases to Air**

|                                                       |            |                                                                                                                                          |
|-------------------------------------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------|
| • Nitrogen oxide                                      | 10024-97-2 | 10000 kg                                                                                                                                 |
| • Oxygen                                              | 7782-44-7  | Not Listed                                                                                                                               |
| • Carbon dioxide                                      | 124-38-9   | 10000000 kg (qualifying renewable fuel sources are reportable when the total amount of CO2 released is above 10 million kg); 10000000 kg |
| • Argon                                               | 7440-37-1  | Not Listed                                                                                                                               |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed                                                                                                                               |

**United Kingdom - Substances Contained in Dangerous Substances or Preparations**

|                  |            |            |
|------------------|------------|------------|
| • Nitrogen oxide | 10024-97-2 | Not Listed |
| • Oxygen         | 7782-44-7  | Not Listed |



|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

**Other****United Kingdom - Workplace Exposure Limits (WELs) - Substances in Review**

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | Not Listed |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

**United Kingdom - The Red List - Dangerous Substances in Water**

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | Not Listed |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

**United States****Labor****U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals**

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | Not Listed |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

**U.S. - OSHA - Specifically Regulated Chemicals**

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | Not Listed |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

**Environment****U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants**

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | Not Listed |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

**U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities**

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | Not Listed |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

**U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities**

|                  |            |            |
|------------------|------------|------------|
| • Nitrogen oxide | 10024-97-2 | Not Listed |
| • Oxygen         | 7782-44-7  | Not Listed |

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

**U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs**

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | Not Listed |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

**U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs**

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | Not Listed |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

**U.S. - CERCLA/SARA - Section 313 - Emission Reporting**

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | Not Listed |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

**U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing**

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | Not Listed |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

**United States - California****Environment****U.S. - California - Proposition 65 - Carcinogens List**

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | Not Listed |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

**U.S. - California - Proposition 65 - Developmental Toxicity**

|                                                       |            |                                             |
|-------------------------------------------------------|------------|---------------------------------------------|
| • Nitrogen oxide                                      | 10024-97-2 | developmental toxicity, initial date 8/1/08 |
| • Oxygen                                              | 7782-44-7  | Not Listed                                  |
| • Carbon dioxide                                      | 124-38-9   | Not Listed                                  |
| • Argon                                               | 7440-37-1  | Not Listed                                  |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed                                  |

**U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)**

|                  |            |            |
|------------------|------------|------------|
| • Nitrogen oxide | 10024-97-2 | Not Listed |
| • Oxygen         | 7782-44-7  | Not Listed |
| • Carbon dioxide | 124-38-9   | Not Listed |
| • Argon          | 7440-37-1  | Not Listed |

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |
|-------------------------------------------------------|------------|------------|

**U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)**

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | Not Listed |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

**U.S. - California - Proposition 65 - Reproductive Toxicity - Female**

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | Not Listed |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

**U.S. - California - Proposition 65 - Reproductive Toxicity - Male**

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | Not Listed |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

**United States - Pennsylvania****Labor****U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List**

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | Not Listed |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

**U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances**

|                                                       |            |            |
|-------------------------------------------------------|------------|------------|
| • Nitrogen oxide                                      | 10024-97-2 | Not Listed |
| • Oxygen                                              | 7782-44-7  | Not Listed |
| • Carbon dioxide                                      | 124-38-9   | Not Listed |
| • Argon                                               | 7440-37-1  | Not Listed |
| • Ether, 2-chloro-1,1,2-trifluoroethyl difluoromethyl | 13838-16-9 | Not Listed |

**15.2 Chemical Safety Assessment**

- No Chemical Safety Assessment has been carried out.

**15.3 Other Information**

- WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

**Section 16 - Other Information****Relevant Phrases (code & full text)**

- H315 - Causes skin irritation  
H319 - Causes serious eye irritation  
H335 - May cause respiratory irritation  
R36/37/38 - Irritating to eyes, respiratory system and skin.

**Last Revision Date** R67 - Vapours may cause drowsiness and dizziness.

**Preparation Date**

**Disclaimer/Statement of Liability**

- 10/December/2013
- 04/June/2013
- To the best of Air Liquide'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.

**Key to abbreviations**

NDA = No Data Available

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