



## Safety Data Sheet 50116MSA

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

#### 1.1 Product identifier

- Product Name** . Nitrogen Dioxide 0.001-0.022%, Carbon Monoxide 0.0005-1.0%, Methane 0.0-2.5%, Oxygen 0.0-23.5%
- MSA P/N** . 10058036, 10058034, 10058171, 10058172, 10150597, 10150598

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

- Relevant identified use(s)** . Calibration of Monitoring and Research Equipment

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

- Manufacturer** . Air Liquide **U.S. Supplier** Mine Safety Appliances Company  
2700 Post Oak Blvd. Cranberry Township  
Houston, TX 77056 Pennsylvania U.S.A. 16066  
United States  
www.us.airliquide.com 1-800-MSA-2222  
sds@airliquide.com www.msanet.com/prism
- 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** . Compressed Gas - H280  
Reproductive Toxicity 1A - H360D  
Specific Target Organ Toxicity Repeated Exposure 2 - H373
- DSD/DPD** . Harmful (Xn)  
Substances Toxic To Reproduction - Category 1  
R20, R48/20, R61

#### 2.2 Label Elements

CLP

**DANGER**



- Hazard statements**
- H280 - Contains gas under pressure; may explode if heated
  - H360D - May damage the unborn child.
  - H373 - May cause damage to organs 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.
  - P260 - Do not breathe gas.
  - P281 - Use personal protective equipment as required.

- Response**
- P314 - Get medical advice/attention if you feel unwell.
  - P308+P313 - IF exposed or concerned: Get medical advice/attention.

- Storage/Disposal**
- P403 - Store in a well-ventilated place.
  - 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**
- R20 - Harmful by inhalation.
  - R48/20 - Harmful: danger of serious damage to health by prolonged exposure through inhalation.
  - R61 - May cause harm to the unborn child.

- Safety phrases**
- S53 - Avoid exposure - obtain special instructions before use.

**2.3 Other Hazards**

- CLP**
- This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces. According to Regulation (EC) No. 1272/2008 (CLP) this material is considered hazardous.

- DSD/DPD**
- This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces. According to European Directive 1999/45/EC this material is considered dangerous.

---

**United States (US)**

According to OSHA 29 CFR 1910.1200 HCS

**2.1 Classification of the substance or mixture**

- OSHA HCS 2012**
- Compressed Gas - H280
  - Reproductive Toxicity 1A - H360
  - Simple Asphyxiant

**2.2 Label elements**

**OSHA HCS 2012**

**DANGER**



- Hazard statements**
- Contains gas under pressure; may explode if heated - H280
  - May damage fertility or the unborn child. - H360
  - May displace oxygen and cause rapid suffocation.

**Precautionary statements**

- Prevention**
- Obtain special instructions before use. - P201
  - Do not handle until all safety precautions have been read and understood. - P202
  - Wear protective gloves/protective clothing/eye protection/face protection. - P280

**Response** • IF exposed or concerned: Get medical advice/attention. - P308+P313

**Storage/Disposal** • Store in a well-ventilated place. - P403  
 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 Very Toxic - D1A  
 Other Toxic Effects - D2A

## 2.2 Label elements

### WHMIS



- Compressed Gas -  
 A Very Toxic - D1A  
 Other Toxic Effects - D2A

## 2.3 Other hazards

### WHMIS

- This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces.  
 In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

## 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<br>EU Index:008-001-00-8 | 0% TO<br>23.5% | NDA       | EU DSD/DPD: Annex VI, Table 3.2: O R8<br>EU CLP: Annex VI, Table 3.1: Ox. Gas 1, H270; Press. Gas - Comp., H280<br>OSHA HCS 2012: Ox. Gas 1; Press Gas. - Comp. |
|               | CAS:74-82-8<br>EC   |                |           | EU DSD/DPD: Annex VI, Table 3.2: F+ R12   |

|                  |  |                  |   |   |
|------------------|--|------------------|---|---|
| Methane          | <b>Number:</b> 200-812-7<br><b>EU Index:</b> 601-001-00-4                              | 0% TO 2.5%       | NDA   | <b>EU CLP:</b> Annex VI, Table 3.1: Flam. Gas 1, H220; Press. Gas - Comp., H280<br><b>OSHA HCS 2012:</b> Flam. Gas 1; Press. Gas - Comp; Simp. Asphyx.  |
| Carbon monoxide  | <b>CAS:</b> 630-08-0<br><b>EC Number:</b> 211-128-3<br><b>EU Index:</b> 006-001-00-2   | 0.0005% TO 1%    | Inhalation-Rat<br>LC50 • 1807 ppm 4 Hour(s) | <b>EU DSD/DPD:</b> Annex VI, Table 3.2: F+ R12 T R23-48/23 Repr.Cat.1 R61<br><b>EU CLP:</b> Annex VI, Table 3.1: Flam. Gas 1, H220; Press. Gas - Comp., H280; Repr. 1A, H360D; Acute Tox. 3 *, H331; STOT RE 1, H372<br><b>OSHA HCS 2012:</b> Flam. Gas 1; Press Gas - Comp.; Repr 1A; Acute Tox. 3 (inhl)  |
| Nitrogen dioxide | <b>CAS:</b> 10102-44-0<br><b>EC Number:</b> 233-272-6<br><b>EU Index:</b> 007-002-00-0 | 0.001% TO 0.022% | Inhalation-Rat<br>LC50 • 88 ppm 4 Hour(s)   | <b>EU DSD/DPD:</b> Annex VI, Table 3.2: T+ R26 C R34 O R8<br><b>EU CLP:</b> Annex VI, Table 3.1: Press Gas - Liq., H280; Ox. Gas 1, H270; Acute Tox. 1, H330; Skin Corr. 1B, H314<br><b>OSHA HCS 2012:</b> Press. Gas - Liq.; Ox. Gas 1; Skin Corr. 1; Eye Dam. 1; STOT SE 1 (Lungs, Blood (Methemoglobin former)); STOT RE 1 (Lungs, Inhl); Acute Tox. 1 (inhl); Muta. 2 |
| Nitrogen         | <b>CAS:</b> 7727-37-9<br><b>EINECS:</b> 231-783-9                                      | Balance          | NDA   | <b>EU DSD/DPD:</b> Not Classified<br><b>EU CLP:</b> Self Classified: Press. Gas - Comp., H280<br><b>OSHA HCS 2012:</b> Press. Gas - Comp.; Simp. Asphyx.  |

See Section 16 for full text of H-statements and R-phrases.

## 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

- Although exposure is unlikely, in case of contact immediately flush skin with running water. If skin irritation develops get medical advice/attention.

#### Eye

- First aid is not expected to be necessary if material is used under ordinary conditions and as recommended. If irritation develops and persists, get medical 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. A potential health hazard associated with this gas is anoxia.

### 4.4 Other information

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO GASES WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. At a minimum, Self-Contained Breathing Apparatus must be worn. Victim(s) who experience any adverse effect after overexposure 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 MSDS to physician or other health professional with victim(s).

## Section 5 - Firefighting Measures

### 5.1 Extinguishing media

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

**Unsuitable Extinguishing Media** . None known.

## 5.2 Special hazards arising from the substance or mixture

**Unusual Fire and Explosion Hazards** . 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.  
Always wear thermal protective clothing when handling refrigerated/cryogenic liquids. 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

- Prevent spreading of vapors through sewers, ventilation systems and confined areas.

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

**Containment/Clean-up Measures** . Stop leak if you can do it without risk. 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.

### 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. 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   | China Highly Toxic Goods  |
| Methane (74-82-8)                   | TWAs     | 1000 ppm TWA<br>(listed under Aliphatic hydrocarbon gases: Alkane C1-4) | 1000 ppm TWA    | Not established   | Not established   | Not established   |
| Carbon monoxide (630-08-0)          | Ceilings | Not established   | Not established | Not established   | 20 mg/m3 Ceiling [MAC] (high altitude area, 2000-3000m);<br>15 mg/m3 Ceiling [MAC] (high altitude area, >3000m) | Not established   |
|                                     | STELs    | Not established   | Not established | 200 ppm STEV; 230 mg/m3 STEV  | 30 mg/m3 STEL (not in high altitude area)   | 30 mg/m3 STEL (not in high altitude area)                                 |
|                                     | TWAs     | 25 ppm TWA  | 25 ppm TWA      | 35 ppm TWAEV; 40 mg/m3 TWAEV  | 20 mg/m3 TWA (not in high altitude area)  | 20 mg/m3 TWA (not in high altitude area)                                  |
| Nitrogen dioxide (10102-44-0)       | STELs    | Not established   | 5 ppm STEL      | Not established   | 10 mg/m3 STEL   | 10 mg/m3 STEL   |
|                                     | TWAs     | 0.2 ppm TWA   | 3 ppm TWA       | 3 ppm TWAEV; 5.6 mg/m3 TWAEV  | 5 mg/m3 TWA   | 5 mg/m3 TWA   |
| Exposure Limits/Guidelines (Con't.) |          |   |                 |   |   |   |
|                                     | Result   | France  | Germany DFG     | Germany TRGS  | Ireland   | Israel  |
| Methane (74-82-8)                   | TWAs     | Not established   | Not established | Not established   | 1000 ppm TWA  | 1000 ppm TWA (gas, listed under Aliphatic hydrocarbon gases: Alkane C1-4) |
|                                     | TWAs     | 50 ppm TWA [VME];<br>55 mg/m3 TWA [VME]                                 | Not established | 30 ppm TWA AGW<br>(The risk of damage to the embryo or fetus cannot be excluded even when AGW and BGW values are observed, exposure factor 2);<br>35 mg/m3 TWA AGW<br>(The risk of damage | 20 ppm TWA; 23 mg/m3 TWA  | 25 ppm TWA  |

|                                  |          |  |                                     |   |                              |                 |
|----------------------------------|----------|--|-------------------------------------|---|------------------------------|-----------------|
| Carbon monoxide<br>(630-08-0)    |          |  |                                     | to the embryo or fetus cannot be excluded even when AGW and BGW values are observed, exposure factor 2) |                              |                 |
|                                  | STELs    | Not established                        | Not established                     | Not established   | 100 ppm STEL; 115 mg/m3 STEL | Not established |
|                                  | Ceilings | Not established                        | 60 ppm Peak; 70 mg/m3 Peak          | Not established   | Not established              | Not established |
|                                  | MAKs     | Not established                        | 30 ppm TWA MAK; 35 mg/m3 TWA MAK    | Not established   | Not established              | Not established |
| Nitrogen dioxide<br>(10102-44-0) | STELs    | 3 ppm STEL [VLCT]; 6 mg/m3 STEL [VLCT] | Not established                     | Not established   | 5 ppm STEL; 9 mg/m3 STEL     | Not established |
|                                  | TWAs     | Not established                        | Not established                     | Not established   | 3 ppm TWA; 5 mg/m3 TWA       | 0.2 ppm TWA     |
|                                  | Ceilings | Not established                        | 0.5 ppm Peak; 0.95 mg/m3 Peak       | Not established   | Not established              | Not established |
|                                  | MAKs     | Not established                        | 0.5 ppm TWA MAK; 0.95 mg/m3 TWA MAK | Not established   | Not established              | Not established |

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

|                               | Result                        | NIOSH                              | OSHA                     | Portugal              | Spain  | Sweden   |
|-------------------------------|-------------------------------|------------------------------------|--------------------------|-----------------------|--|--|
| Methane<br>(74-82-8)          | TWAs                          | Not established                    | Not established          | 1000 ppm TWA [VLE-MP] | 1000 ppm TWA [VLA-ED]  | Not established  |
| Carbon monoxide<br>(630-08-0) | TWAs                          | 35 ppm TWA; 40 mg/m3 TWA           | 50 ppm TWA; 55 mg/m3 TWA | 25 ppm TWA [VLE-MP]   | 25 ppm TWA [VLA-ED]; 29 mg/m3 TWA [VLA-ED]   | 20 ppm LLV (regulated under exhaust fumes, listed under Exhaust fumes); 25 mg/m3 LLV (regulated under exhaust fumes, listed under Exhaust fumes); 35 ppm LLV; 40 mg/m3 LLV |
|                               | Biological Limit Values (BLV) | Not established                    | Not established          | Not established       | 3.5 % of Carboxyhemoglobin in total hemoglobin blood end of shift<br>Carboxyhemoglobin (2,F,I); 20 ppm alveolar air end of shift CO end-cut of exhaled air (2,F,I) | Not established  |
|                               | STELs                         | Not established                    | Not established          | Not established       | Not established  | 100 ppm STV; 120 mg/m3 STV   |
|                               | Ceilings                      | 200 ppm Ceiling; 229 mg/m3 Ceiling | Not established          | Not established       | Not established  | Not established  |
|                               | STELs                         | 1 ppm STEL; 1.8 mg/m3 STEL         | Not established          | 5 ppm STEL [VLE-CD]   | 5 ppm STEL [VLA-EC]; 9.6 mg/m3 STEL [VLA-EC]   | Not established  |
|                               |                               |                                    |                          |                       |  | 1 ppm LLV (listed under Exhausted  |

|                               |          |                 |                                |                    |  |  |
|-------------------------------|----------|-----------------|--------------------------------|--------------------|--|--|
| Nitrogen dioxide (10102-44-0) | TWAs     | Not established | Not established                | 3 ppm TWA [VLE-MP] | 3 ppm TWA [VLA-ED]; 5.7 mg/m3 TWA [VLA-ED] | gasses); 2 mg/m3 LLV (listed under Exhausted gasses); 2 ppm LLV (as Nitrogen oxide); 4 mg/m3 LLV (as Nitrogen oxide) |
|                               | Ceilings | Not established | 5 ppm Ceiling; 9 mg/m3 Ceiling | Not established    | Not established                            | 5 ppm CLV; 10 mg/m3 CLV  |

**Exposure Control Notations**

**Portugal**

- Nitrogen dioxide (10102-44-0): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)
- Nitrogen (7727-37-9): **Simple Asphyxiants:** (Simple Asphyxiant)

**France**

- Carbon monoxide (630-08-0): **Reproductive Toxins:** (Reproductive Toxin category 1)

**Ireland**

- Carbon monoxide (630-08-0): **Substances with Potential Chronic Health Effects:** (Repr1A)
- Methane (74-82-8): **Simple Asphyxiants:** (Asphyxiant)
- Nitrogen (7727-37-9): **Simple Asphyxiants:** (Asphyxiant)

**Spain**

- Carbon monoxide (630-08-0): **Reproductive Toxins:** (known reproductive toxins with classification from human data)
- Nitrogen (7727-37-9): **Simple Asphyxiants:** (simple asphyxiant)

**Sweden**

- Carbon monoxide (630-08-0): **Reproductive Toxins:** (Causes reproductive disturbances)

**Germany DFG**

- Nitrogen dioxide (10102-44-0): **Carcinogens:** (Category 3B (could be carcinogenic for man)) | **Pregnancy:** (classification not yet possible)
- Carbon monoxide (630-08-0): **Pregnancy:** (risk to embryo/fetus probable)

**8.2 Exposure controls**

**Engineering Measures/Controls**

- Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

**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

= Maximale Arbeitsplatz Konzentration is the maximum permissible

MAK concentration

NIOSH = National Institute of Occupational Safety and Health

OSHA = Occupational Safety and Health Administration

= Short Term Exposure Limits are based on 15-minute

STEL exposures

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

TWA exposures

TWAEV = Time-Weighted Average Exposure Value

**Section 9 - Physical and Chemical Properties**

## 9.1 Information on Physical and Chemical Properties

| <b>Material Description</b>         |  |                        |   |
|-------------------------------------|--|------------------------|---|
| Physical Form                       | Gas                                    | Appearance/Description | Colorless gas with a faint pungent odor.              |
| Color                               | Colorless                              | Odor                   | Pungent   |
| Odor Threshold                      | 0.11 to 0.14 ppm<br>(Nitrogen Dioxide) |                        |   |
| <b>General Properties</b>           |  |                        |   |
| Boiling Point                       | -195.8 C(-320.44 F)<br>(Nitrogen)      | Melting Point          | -210 C(-346 F)<br>(Nitrogen)                          |
| Decomposition Temperature           | Data lacking                           | pH                     | Not relevant  |
| Specific Gravity/Relative Density   | 0.906 Water=1<br>(Nitrogen)            | Density                | 0.072 lb(s)/ft <sup>3</sup> @ 0 C(32 F)<br>(Nitrogen) |
| Water Solubility                    | Data lacking                           | Viscosity              | Data lacking  |
| Explosive Properties                | Data lacking                           | Oxidizing Properties:  | Data lacking  |
| <b>Volatility</b>                   |  |                        |   |
| Vapor Pressure                      | Data lacking                           | Vapor Density          | Data lacking  |
| Evaporation Rate                    | Data lacking                           |                        |   |
| <b>Flammability</b>                 |  |                        |   |
| Flash Point                         | Not relevant                           | UEL                    | Not relevant  |
| LEL                                 | Not relevant                           | Autoignition           | Data lacking  |
| Flammability (solid, gas)           | Nonflammable Gas.                      |                        |   |
| <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.

### 10.5 Incompatible materials

- Nitrogen reacts with Li, Nd, and Ti at high temperatures.

### 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

| Components                          |            |   |
|-------------------------------------|------------|---|
| Nitrogen dioxide (0.001% TO 0.022%) | 10102-44-0 | <b>Acute Toxicity:</b> Inhalation-Rat LC50 • 88 ppm 4 Hour(s);<br><b>Mutagen:</b> Unscheduled DNA synthesis • Inhalation-Rat • 30 ppm 1 Hour(s); Cytogenetic analysis • Inhalation-Rat • 27 ppm 3 Hour(s)-Continuous; Mutation in Mammalian Somatic Cells • Inhalation-Rat • 15 ppm 3 Hour(s)-Continuous; DNA adduct • Inhalation-Rat • 108 mg/kg 300 Day(s)-Intermittent |
| Carbon monoxide (0.0005% TO 1%)     | 630-08-0   | <b>Acute Toxicity:</b> Inhalation-Rat LC50 • 1807 ppm 4 Hour(s);<br><b>Reproductive:</b> Inhalation-Rat TCLo • 150 ppm (0-20D preg); <i>Reproductive Effects:Maternal Effects:Other effects; Reproductive Effects:Effects on Newborn:Biochemical and metabolic; Reproductive Effects:Effects on Newborn:Physical</i>  |
| Oxygen (0% TO 23.5%)                | 7782-44-7  | <b>Reproductive:</b> Inhalation-Rat TCLo • 10 pph 9 Hour(s)(22D preg); <i>Reproductive Effects:Specific Developmental Abnormalities:Respiratory system; Reproductive Effects:Effects on Newborn:Physical</i>  |

| GHS Properties                | Classification  |
|-------------------------------|---|
| Acute toxicity                | EU/CLP • Data lacking<br>OSHA HCS 2012 • Data lacking                                       |
| Aspiration Hazard             | EU/CLP • Data lacking<br>OSHA HCS 2012 • Data lacking                                       |
| Carcinogenicity               | EU/CLP • Data lacking<br>OSHA HCS 2012 • Data lacking                                       |
| Germ Cell Mutagenicity        | EU/CLP • Data lacking<br>OSHA HCS 2012 • Data lacking                                       |
| Skin corrosion/Irritation     | EU/CLP • Data lacking<br>OSHA HCS 2012 • Data lacking                                       |
| Skin sensitization            | EU/CLP • Data lacking<br>OSHA HCS 2012 • Data lacking                                       |
| STOT-RE                       | EU/CLP • Specific Target Organ Toxicity Repeated Exposure 2<br>OSHA HCS 2012 • Data lacking |
| STOT-SE                       | EU/CLP • Data lacking<br>OSHA HCS 2012 • Data lacking                                       |
| Toxicity for Reproduction     | EU/CLP • Toxic to Reproduction 1A<br>OSHA HCS 2012 • Toxic to Reproduction 1A               |
| Respiratory sensitization     | EU/CLP • Data lacking<br>OSHA HCS 2012 • Data lacking                                       |
| Serious eye damage/Irritation | EU/CLP • Data lacking<br>OSHA HCS 2012 • Data lacking                                       |

Route(s) of entry/exposure • Inhalation, Skin, Eye

**Potential Health Effects**

**Inhalation**

**Acute (Immediate)**

- This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces. If this material is released in a small, poorly ventilated area (i.e. an enclosed or confined space), an oxygen-deficient environment may occur. Individuals breathing such an atmosphere may experience symptoms which include headaches, ringing in ears, dizziness, drowsiness, unconsciousness, nausea, vomiting, and depression of all the senses. Under some circumstances of over-exposure, death may occur. The following effects associated with decreased levels of oxygen: increase in breathing and pulse rate, emotional upset, abnormal fatigue, nausea, vomiting, collapse, loss of consciousness, convulsive movements, respiratory collapse and death.

- Chronic (Delayed)**
  - No data available
- 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.
- Other**
  - Chronic (Delayed)**
    - May cause damage to organs through prolonged or repeated exposure. The transport of oxygen in blood ensured by haemoglobin will be slowed down because carboxyhaemoglobin instead of oxyhaemoglobin will be formed in lungs. The affinity of haemoglobin for carbon monoxide is 200 to 300 higher than for oxygen. All related health hazards will be caused by slow respiration of cells which will damage the central nervous system, collapse the cardiovascular system, cause kidney insufficiency, coma, etc.
- Reproductive Effects**
  - The Carbon Monoxide component of this gas mixture can cause teratogenic effects in humans. Severe exposure to Carbon Monoxide during pregnancy has caused adverse effects and the death of the fetus. In general, maternal symptoms are an indicator of the potential risk to the fetus since Carbon Monoxide is toxic to the mother before it is toxic to the fetus.

**Key to abbreviations**

LC = Lethal Concentration

TC = Toxic Concentration

## 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 studies have been found.

## 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       | UN1956         | Compressed gases, n.o.s. (Nitrogen, Oxygen, Carbon Monoxide) | 2.2                             | NDA                | NDA                        |
| TDG       | UN1956         | COMPRESSED GASES, N.O.S. (Nitrogen, Oxygen, Carbon Monoxide) | 2.2                             | NDA                | NDA                        |
| IMO/IMDG  | UN1956         | COMPRESSED GASES, N.O.S. (Nitrogen, Oxygen, Carbon Monoxide) | 2.2                             | NDA                | NDA                        |
| IATA/ICAO | UN1956         | Compressed gases, n.o.s. (Nitrogen, Oxygen, Carbon Monoxide) | 2.2                             | 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**

- Data lacking.

**Section 15 - Regulatory Information**

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

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

|                  |            | State Right To Know |     |     |
|------------------|------------|---------------------|-----|-----|
| Component        | CAS        | MA                  | NJ  | PA  |
| Carbon monoxide  | 630-08-0   | Yes                 | Yes | Yes |
| Methane          | 74-82-8    | Yes                 | Yes | Yes |
| Nitrogen         | 7727-37-9  | Yes                 | Yes | Yes |
| Nitrogen dioxide | 10102-44-0 | Yes                 | Yes | Yes |
| Oxygen           | 7782-44-7  | Yes                 | Yes | Yes |

|                  |            | Inventory  |             |       |           |           |
|------------------|------------|------------|-------------|-------|-----------|-----------|
| Component        | CAS        | Canada DSL | Canada NDSL | China | EU EINECS | EU ELNICS |
| Carbon monoxide  | 630-08-0   | Yes        | No          | Yes   | Yes       | No        |
| Methane          | 74-82-8    | Yes        | No          | Yes   | Yes       | No        |
| Nitrogen         | 7727-37-9  | Yes        | No          | Yes   | Yes       | No        |
| Nitrogen dioxide | 10102-44-0 | Yes        | No          | Yes   | Yes       | No        |
| Oxygen           | 7782-44-7  | Yes        | No          | Yes   | Yes       | No        |

| Inventory (Con't.) |            |      |
|--------------------|------------|------|
| Component          | CAS        | TSCA |
| Carbon monoxide    | 630-08-0   | Yes  |
| Methane            | 74-82-8    | Yes  |
| Nitrogen           | 7727-37-9  | Yes  |
| Nitrogen dioxide   | 10102-44-0 | Yes  |
| Oxygen             | 7782-44-7  | Yes  |

## Canada

### Labor

#### Canada - WHMIS - Classifications of Substances

|                    |            |                   |
|--------------------|------------|-------------------|
| • Carbon monoxide  | 630-08-0   | A, B1, D1A, D2A   |
| • Oxygen           | 7782-44-7  | A, C              |
| • Nitrogen dioxide | 10102-44-0 | A, C, D1A, D2B, E |
| • Nitrogen         | 7727-37-9  | A                 |
| • Methane          | 74-82-8    | A, B1             |

#### Canada - WHMIS - Ingredient Disclosure List

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | 0.1 %      |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | 1 %        |
| • Nitrogen         | 7727-37-9  | Not Listed |
| • Methane          | 74-82-8    | Not Listed |

### Environment

#### Canada - 2004 NPRI (National Pollutant Release Inventory)

|                    |            |                  |
|--------------------|------------|------------------|
| • Carbon monoxide  | 630-08-0   | Part 4 Substance |
| • Oxygen           | 7782-44-7  | Not Listed       |
| • Nitrogen dioxide | 10102-44-0 | Not Listed       |
| • Nitrogen         | 7727-37-9  | Not Listed       |
| • Methane          | 74-82-8    | Not Listed       |

#### Canada - 2005 NPRI (National Pollutant Release Inventory)

|                    |            |                  |
|--------------------|------------|------------------|
| • Carbon monoxide  | 630-08-0   | Part 4 Substance |
| • Oxygen           | 7782-44-7  | Not Listed       |
| • Nitrogen dioxide | 10102-44-0 | Not Listed       |
| • Nitrogen         | 7727-37-9  | Not Listed       |
| • Methane          | 74-82-8    | Not Listed       |

#### Canada - CEPA - Greenhouse Gases Subject to Mandatory Reporting

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | Not Listed |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | Not Listed |
| • Nitrogen         | 7727-37-9  | Not Listed |
| • Methane          | 74-82-8    | 21 GWP     |

#### Canada - CEPA - Priority Substances List

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | Not Listed |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | Not Listed |
| • Nitrogen         | 7727-37-9  | Not Listed |
| • Methane          | 74-82-8    | Not Listed |

**Canada - DWQ (Drinking Water Quality) - IMACs**

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | Not Listed |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | Not Listed |
| • Nitrogen         | 7727-37-9  | Not Listed |
| • Methane          | 74-82-8    | Not Listed |

**Other**

**Canada - Accelerated Reduction/Elimination of Toxics (ARET)**

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | Not Listed |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | Not Listed |
| • Nitrogen         | 7727-37-9  | Not Listed |
| • Methane          | 74-82-8    | Not Listed |

**Canada New Brunswick**

**Environment**

**Canada - New Brunswick - Ozone Depleting Substances - Schedule A**

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | Not Listed |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | Not Listed |
| • Nitrogen         | 7727-37-9  | Not Listed |
| • Methane          | 74-82-8    | Not Listed |

**Canada - New Brunswick - Ozone Depleting Substances - Schedule B**

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | Not Listed |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | Not Listed |
| • Nitrogen         | 7727-37-9  | Not Listed |
| • Methane          | 74-82-8    | Not Listed |

**China**

**Environment**

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

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | Not Listed |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | Not Listed |
| • Nitrogen         | 7727-37-9  | Not Listed |
| • Methane          | 74-82-8    | Not Listed |

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

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | Not Listed |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | Not Listed |
| • Nitrogen         | 7727-37-9  | Not Listed |
| • Methane          | 74-82-8    | Not Listed |

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

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | Not Listed |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | Not Listed |
| • Nitrogen         | 7727-37-9  | Not Listed |

|           |         |            |
|-----------|---------|------------|
| • Methane | 74-82-8 | Not Listed |
|-----------|---------|------------|

## Other

### China - Annex I & II - Controlled Chemicals Lists

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | Not Listed |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | Not Listed |
| • Nitrogen         | 7727-37-9  | Not Listed |
| • Methane          | 74-82-8    | Not Listed |

### China - Dangerous Goods List

|                    |            |                                     |
|--------------------|------------|-------------------------------------|
| • Carbon monoxide  | 630-08-0   |                                     |
| • Oxygen           | 7782-44-7  | (compressed or refrigerated liquid) |
| • Nitrogen dioxide | 10102-44-0 | Not Listed                          |
| • Nitrogen         | 7727-37-9  | (compressed or refrigerated liquid) |
| • Methane          | 74-82-8    | (compressed or refrigerated liquid) |

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

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | Not Listed |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | Not Listed |
| • Nitrogen         | 7727-37-9  | Not Listed |
| • Methane          | 74-82-8    | Not Listed |

## Europe

### Other

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

|                    |            |                                      |
|--------------------|------------|--------------------------------------|
| • Carbon monoxide  | 630-08-0   | F+; R12 T; R23-48/23 Repr.Cat.1; R61 |
| • Oxygen           | 7782-44-7  | O; R8                                |
| • Nitrogen dioxide | 10102-44-0 | T+; R26 C; R34 O; R8                 |
| • Nitrogen         | 7727-37-9  | Not Listed                           |
| • Methane          | 74-82-8    | F+; R12                              |

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

|                    |            |   |
|--------------------|------------|---|
| • Carbon monoxide  | 630-08-0   | Not Listed  |
| • Oxygen           | 7782-44-7  | Not Listed  |
| • Nitrogen dioxide | 10102-44-0 | 10%≤C: T+; R:26 1%<br>≤C<10%: T; R:23 0.1%<br>≤C<1%: Xn; R:20 |
| • Nitrogen         | 7727-37-9  | Not Listed  |
| • Methane          | 74-82-8    | Not Listed  |

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

|                    |            |  |
|--------------------|------------|--|
| • Carbon monoxide  | 630-08-0   | F+ T R:61-12-23-48/23 S:53-45              |
| • Oxygen           | 7782-44-7  | O R:8 S:(2)-17                             |
| • Nitrogen dioxide | 10102-44-0 | O T+ R:8-26-34 S:(1/2)-9-26-28-36/37/39-45 |
| • Nitrogen         | 7727-37-9  | Not Listed                                 |
| • Methane          | 74-82-8    | F+ R:12 S:(2)-9-16-33                      |

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

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | E          |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | 5          |
| • Nitrogen         | 7727-37-9  | Not Listed |
| • Methane          | 74-82-8    | Not Listed |

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

|                    |            |                             |
|--------------------|------------|-----------------------------|
| • Carbon monoxide  | 630-08-0   | S:53-45                     |
| • Oxygen           | 7782-44-7  | S:(2)-17                    |
| • Nitrogen dioxide | 10102-44-0 | S:(1/2)-9-26-28-36/37/39-45 |
| • Nitrogen         | 7727-37-9  | Not Listed                  |
| • Methane          | 74-82-8    | S:(2)-9-16-33               |

**Germany****Environment****Germany - TA Luft - Types and Classes**

|                    |            |   |
|--------------------|------------|---|
| • Carbon monoxide  | 630-08-0   | Not Listed                                  |
| • Oxygen           | 7782-44-7  | Not Listed                                  |
| • Nitrogen dioxide | 10102-44-0 | inorganic gas Substance:<br>5.2.4, Class IV |
| • Nitrogen         | 7727-37-9  | Not Listed                                  |
| • Methane          | 74-82-8    | Not Listed                                  |

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

|                    |            |   |
|--------------------|------------|---|
| • Carbon monoxide  | 630-08-0   | Not Listed  |
| • Oxygen           | 7782-44-7  | ID Number 743, not considered<br>hazardous to water     |
| • Nitrogen dioxide | 10102-44-0 | Not Listed  |
| • Nitrogen         | 7727-37-9  | ID Number 1351, not<br>considered hazardous to<br>water |
| • Methane          | 74-82-8    | ID Number 1343, not<br>considered hazardous to<br>water |

**Germany - Water Classification (VwVwS) - Annex 2 - Water Hazard Classes**

|                    |            |   |
|--------------------|------------|---|
| • Carbon monoxide  | 630-08-0   | ID Number 257, hazard class 1<br>- low hazard to waters |
| • Oxygen           | 7782-44-7  | Not Listed  |
| • Nitrogen dioxide | 10102-44-0 | ID Number 285, hazard class 1<br>- low hazard to waters |
| • Nitrogen         | 7727-37-9  | Not Listed  |
| • Methane          | 74-82-8    | Not Listed  |

**Germany - Water Classification (VwVwS) - Annex 3**

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | Not Listed |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | Not Listed |
| • Nitrogen         | 7727-37-9  | Not Listed |
| • Methane          | 74-82-8    | Not Listed |

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

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | Not Listed |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | Not Listed |
| • Nitrogen         | 7727-37-9  | Not Listed |
| • Methane          | 74-82-8    | Not Listed |

## Portugal

### Other

#### Portugal - Prohibited Substances

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | Not Listed |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | Not Listed |
| • Nitrogen         | 7727-37-9  | Not Listed |
| • Methane          | 74-82-8    | Not Listed |

## United Kingdom

### Environment

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

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | 100000 kg  |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | Not Listed |
| • Nitrogen         | 7727-37-9  | Not Listed |
| • Methane          | 74-82-8    | 10000 kg   |

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

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | Not Listed |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | Not Listed |
| • Nitrogen         | 7727-37-9  | Not Listed |
| • Methane          | 74-82-8    | Not Listed |

### Other

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

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | Not Listed |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | Not Listed |
| • Nitrogen         | 7727-37-9  | Not Listed |
| • Methane          | 74-82-8    | Not Listed |

#### United Kingdom - List of Dangerous Substances in Water

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | Not Listed |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | Not Listed |
| • Nitrogen         | 7727-37-9  | Not Listed |
| • Methane          | 74-82-8    | Not Listed |

## United States

### Labor

#### U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | Not Listed |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | 250 lb TQ  |

|   |            |            |
|---|------------|------------|
| • Nitrogen  | 7727-37-9  | Not Listed |
| • Methane   | 74-82-8    | Not Listed |
| <b>U.S. - OSHA - Specifically Regulated Chemicals</b> |            |            |
| • Carbon monoxide                                     | 630-08-0   | Not Listed |
| • Oxygen  | 7782-44-7  | Not Listed |
| • Nitrogen dioxide                                    | 10102-44-0 | Not Listed |
| • Nitrogen  | 7727-37-9  | Not Listed |
| • Methane   | 74-82-8    | Not Listed |

**Environment**

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

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | Not Listed |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | Not Listed |
| • Nitrogen         | 7727-37-9  | Not Listed |
| • Methane          | 74-82-8    | Not Listed |

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

|                    |            |  |
|--------------------|------------|--|
| • Carbon monoxide  | 630-08-0   | Not Listed   |
| • Oxygen           | 7782-44-7  | Not Listed   |
| • Nitrogen dioxide | 10102-44-0 | 10 lb final RQ (releases to the air in amounts <1000 pounds per 24 hours which are the result of combustion and combustion-related activities are exempt from the notification requirements per 40 CFR 302.6); 4.54 kg final RQ (releases to the air in amounts <1000 pounds per 24 hours which are the result of combustion and combustion-related activities are exempt from the notification requirements per 40 CFR 302.6) |
| • Nitrogen         | 7727-37-9  | Not Listed   |
| • Methane          | 74-82-8    | Not Listed   |

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

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | Not Listed |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | Not Listed |
| • Nitrogen         | 7727-37-9  | Not Listed |
| • Methane          | 74-82-8    | Not Listed |

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

|                    |            |   |
|--------------------|------------|---|
| • Carbon monoxide  | 630-08-0   | Not Listed  |
| • Oxygen           | 7782-44-7  | Not Listed  |
| • Nitrogen dioxide | 10102-44-0 | 10 lb EPCRA RQ (Releases to the air in amounts <1000 pounds per 24 hours which are the result of combustion and combustion-related activities are exempt from the |

|  |            |   |
|--|------------|---|
|  |            | notification requirements per<br>40 CFR 355.31) |
| • Nitrogen   | 7727-37-9  | Not Listed                                      |
| • Methane  | 74-82-8    | Not Listed                                      |
| <b>U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs</b>  |            |   |
| • Carbon monoxide  | 630-08-0   | Not Listed                                      |
| • Oxygen   | 7782-44-7  | Not Listed                                      |
| • Nitrogen dioxide   | 10102-44-0 | 100 lb TPQ                                      |
| • Nitrogen   | 7727-37-9  | Not Listed                                      |
| • Methane  | 74-82-8    | Not Listed                                      |
| <b>U.S. - CERCLA/SARA - Section 313 - Emission Reporting</b>   |            |   |
| • Carbon monoxide  | 630-08-0   | Not Listed                                      |
| • Oxygen   | 7782-44-7  | Not Listed                                      |
| • Nitrogen dioxide   | 10102-44-0 | Not Listed                                      |
| • Nitrogen   | 7727-37-9  | Not Listed                                      |
| • Methane  | 74-82-8    | Not Listed                                      |
| <b>U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing</b>   |            |   |
| • Carbon monoxide  | 630-08-0   | Not Listed                                      |
| • Oxygen   | 7782-44-7  | Not Listed                                      |
| • Nitrogen dioxide   | 10102-44-0 | Not Listed                                      |
| • Nitrogen   | 7727-37-9  | Not Listed                                      |
| • Methane  | 74-82-8    | Not Listed                                      |
| <b>U.S. - RCRA (Resource Conservation &amp; Recovery Act) - Hazardous Constituents - Appendix VIII to 40 CFR 261</b> |            |   |
| • Carbon monoxide  | 630-08-0   | Not Listed                                      |
| • Oxygen   | 7782-44-7  | Not Listed                                      |
| • Nitrogen dioxide   | 10102-44-0 | waste number P078                               |
| • Nitrogen   | 7727-37-9  | Not Listed                                      |
| • Methane  | 74-82-8    | Not Listed                                      |
| <b>U.S. - RCRA (Resource Conservation &amp; Recovery Act) - P Series Wastes - Acutely Toxic Wastes</b>               |            |   |
| • Carbon monoxide  | 630-08-0   | Not Listed                                      |
| • Oxygen   | 7782-44-7  | Not Listed                                      |
| • Nitrogen dioxide   | 10102-44-0 | waste number P078                               |
| • Nitrogen   | 7727-37-9  | Not Listed                                      |
| • Methane  | 74-82-8    | Not Listed                                      |

## United States - California

### Environment

#### U.S. - California - Proposition 65 - Carcinogens List

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | Not Listed |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | Not Listed |
| • Nitrogen         | 7727-37-9  | Not Listed |
| • Methane          | 74-82-8    | Not Listed |

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

|                    |            |  |
|--------------------|------------|--|
| • Carbon monoxide  | 630-08-0   | developmental toxicity, initial<br>date 7/1/89 |
| • Oxygen           | 7782-44-7  | Not Listed                                     |
| • Nitrogen dioxide | 10102-44-0 | Not Listed                                     |

|            |           |            |
|------------|-----------|------------|
| • Nitrogen | 7727-37-9 | Not Listed |
| • Methane  | 74-82-8   | Not Listed |

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

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | Not Listed |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | Not Listed |
| • Nitrogen         | 7727-37-9  | Not Listed |
| • Methane          | 74-82-8    | Not Listed |

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

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | Not Listed |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | Not Listed |
| • Nitrogen         | 7727-37-9  | Not Listed |
| • Methane          | 74-82-8    | Not Listed |

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

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | Not Listed |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | Not Listed |
| • Nitrogen         | 7727-37-9  | Not Listed |
| • Methane          | 74-82-8    | Not Listed |

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

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | Not Listed |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | Not Listed |
| • Nitrogen         | 7727-37-9  | Not Listed |
| • Methane          | 74-82-8    | Not Listed |

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

|                    |            |                               |
|--------------------|------------|-------------------------------|
| • Carbon monoxide  | 630-08-0   |                               |
| • Oxygen           | 7782-44-7  | Not Listed                    |
| • Nitrogen dioxide | 10102-44-0 | (listed under Nitrogen oxide) |
| • Nitrogen         | 7727-37-9  | Not Listed                    |
| • Methane          | 74-82-8    | Not Listed                    |

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

|                    |            |            |
|--------------------|------------|------------|
| • Carbon monoxide  | 630-08-0   | Not Listed |
| • Oxygen           | 7782-44-7  | Not Listed |
| • Nitrogen dioxide | 10102-44-0 | Not Listed |
| • Nitrogen         | 7727-37-9  | Not Listed |
| • Methane          | 74-82-8    | 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)

- H220 - Extremely flammable gas
- H270 - May cause or intensify fire; oxidizer
- H314 - Causes severe skin burns and eye damage.
- H330 - Fatal if inhaled
- H331 - Toxic if inhaled
- H372 - Causes damage to organs through prolonged or repeated exposure.
- R8 - Contact with combustible material may cause fire.
- R12 - Extremely flammable.
- R23 - Toxic by inhalation.
- R26 - Very toxic by inhalation.
- R34 - Causes burns.
- R48/23 - Toxic: danger of serious damage to health by prolonged exposure through inhalation.

### Last Revision Date

- 05/September/2014

### Preparation Date

- 05/September/2014

### Disclaimer/Statement of Liability

- 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

---