



## MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI, Canadian WHMIS, Australian WorkSafe, Japanese Industrial Standard JIS Z 7250:2000, and European Union REACH Regulations

### SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** NON-FLAMMABLE GAS MIXTURE Containing One or More of the Following Components in a Nitrogen Balance Gas: Carbon Monoxide, 0.0005 – 1.0%; Hydrogen, 0 – 2.0%; Methane, 0 – 2.5%; Oxygen, 0 – 23.5%

**CHEMICAL FAMILY NAME:** Not Applicable

**FORMULA:** Not Applicable

**PRODUCT USE:** Calibration of Monitoring and Research Equipment

**DOCUMENT NUMBER:** MSDS 1005  
(99-0013, 99-0020, 99-0027, 99-0109, 99-0135, 99-0160, 99-0193)

**U.N. NUMBER:** UN1956

**U.N. DANGEROUS GOODS CLASS:** Compressed gases, n.o.s. (\*Oxygen, Nitrogen) \* or the gas component with the next highest concentration next to Nitrogen.

**SUPPLIER/MANUFACTURER'S NAME:** **PortaGAS, Inc.**

**ADDRESS:** 1202 E. Sam Houston Pkwy S., Pasadena, TX 77503

**EMERGENCY PHONE:** **TOLL-FREE in USA/Canada:** (800)255-3924  
**International calls:** +1 813 248 0585  
**Australian Poison Control:** 13 11 26  
**Australian Fire Brigade:** 000

**BUSINESS PHONE:** (713) 928-6477 General MSDS Info

**DATE OF PREPARATION:** October 2012

**DATE OF LAST REVISION:** October 2012

### SECTION 2 - HAZARDS IDENTIFICATION

**EMERGENCY OVERVIEW:** This product is a colorless, odorless gas. Carbon Monoxide, a component of this gas mixture, is a chemical asphyxiant and can produce significant, adverse health effects at relatively low concentrations. Over-exposure to Carbon Monoxide can cause nausea, dizziness, headaches, and collapse. Additionally, releases of this product may produce oxygen-deficient atmospheres (especially in small confined spaces or other poorly-ventilated environments); individuals in such atmospheres may be asphyxiated.

#### US DOT SYMBOLS



#### CANADA (WHMIS) SYMBOLS



#### EUROPEAN and (GHS) HAZARD SYMBOLS



Signal Word: **Danger**

#### EU LABELING AND CLASSIFICATION:

##### Classification of the substance or mixture according to Regulation (EC) No1272/2008

Aspiration Hazard Category 1  
Pressurized Gas  
Acute Toxicity Inhalation Category 3

##### According to European Directive 67/548/EEC as amended.

Harmful by inhalation, pressurized gas

##### Hazard Statement(s):

H304: May be fatal if swallowed and enters airways.  
H270: May cause or intensify fire, oxidizer.  
H280: Contains gas under pressure, may explode if heated.  
H331: Toxic if inhaled.

##### Precautionary Statement(s):

P261: Avoid breathing gas.  
P271: Use only in well-ventilated area.  
P281: Use personal protective equipment as required.  
P314: Get medical advice/attention if you feel unwell.  
P403: Store in a well-ventilated place.

##### Hazard Symbol(s):

[Xn] Harmful; [O] Oxidizer

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**Risk Phrases:** Simple Asphyxiant

R8: Contact with combustible material may cause fire.  
R23: Toxic by inhalation.  
R48/20: Harmful: danger of serious damage to health by prolonged exposure through inhalation.

**Safety Phrases:**

S9: Keep container in a well-ventilated area.  
S23: Do not breathe gas.  
S36/37: Wear suitable protective clothing and gloves.

**HEALTH HAZARDS OR RISKS FROM EXPOSURE:**

**ACUTE:** Due to the small size of the individual cylinder of this product, no unusual health effects from exposure to the product are anticipated under routine circumstances of use. However, Carbon Monoxide (a component of this gas mixture) is toxic to humans. Symptoms of Carbon Monoxide poisoning can develop gradually, or can arise suddenly, depending on the concentration and duration of exposure. Lips and fingernails will turn bright red, which is a significant sign of Carbon Monoxide over-exposure. Other symptoms of over-exposure can include respiratory difficulty, headaches, and shortness of breath, wheezing, headache, blurred vision, memory loss, dizziness, indigestion, nausea, unconsciousness, and death.

**CHRONIC:** Chronic exposure to oxygen-deficient atmospheres (below 18% oxygen in air) may affect the heart and nervous system. Clinical studies indicate that there is a relationship between exposure to Carbon Monoxide in specific occupations (i.e. fire-fighters, foundry workers) and an increased incidence of cardiovascular problems. Carbon Monoxide is a reproductive toxin. Refer to Section 11 (Toxicological Information) of this MSDS for further information.

**TARGET ORGANS:**

ACUTE: Respiratory system, blood system.

CHRONIC: Heart, cardiovascular system, central nervous system, reproductive system.

## SECTION 3 - COMPOSITION and INFORMATION ON INGREDIENTS

| HAZARDOUS INGREDIENTS: | CAS #     | EINECS #  | ICSC # | % Vol         | HAZARD CLASSIFICATION;<br>RISK PHRASES                       |
|------------------------|-----------|-----------|--------|---------------|--|
| Carbon Monoxide        | 630-08-0  | 211-128-3 | 0023   | 0.0005 – 1.0% | HAZARD CLASSIFICATION:[T] Toxic<br>RISK PHRASES: R23, R48/23 |
| Hydrogen               | 1333-74-0 | 215-605-7 | 0001   | 0 – 2.0%      | HAZARD CLASSIFICATION:[F] Flammable<br>RISK PHRASES: R12     |
| Methane                | 74-82-8   | 200-812-7 | 0291   | 0 – 2.5%      | HAZARD CLASSIFICATION:[F] Flammable<br>RISK PHRASES: R12     |
| Oxygen                 | 7782-44-7 | 231-956-9 | 0138   | 0 – 23.5%     | HAZARD CLASSIFICATION:[O] Oxidizer<br>RISK PHRASES: R8       |
| Nitrogen               | 7727-37-9 | 231-783-9 | 1198.  | Balance       | HAZARD CLASSIFICATION:[Xi] Irritant<br>RISK PHRASES: R36/38  |

None of the trace impurities in this product contribute significantly to the hazards associated with the product.

All hazard information pertinent to the product has been provided in this Material Safety Data sheet., per the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200) and State equivalent standards

**Note:** ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-2004 format. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR, EU Directives and the Japanese Industrial Standard *JIS Z 7250: 2000*.

## SECTION 4 - FIRST-AID MEASURES

**RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO THIS PRODUCT WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT.** 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 MSDS to physician or other health professional with victim(s). No unusual health effects are anticipated after exposure to this gas mixture, due to the small cylinder size. If any adverse symptom develops after over-exposure to this gas mixture, remove victim(s) to fresh air as quickly as possible. Only trained personnel should administer supplemental oxygen and/or cardio-pulmonary resuscitation if necessary.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** Pre-existing respiratory conditions may be aggravated by over-exposure to this product. The Carbon Monoxide component of this gas mixture can aggravate some diseases of the cardiovascular system, such as coronary artery disease and angina pectoris.

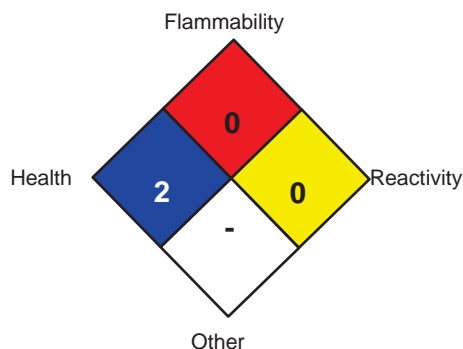
**RECOMMENDATIONS TO PHYSICIANS:** Treat symptoms and reduce over-exposure. Provide oxygen. Hyperbaric oxygen is the most efficient antidote to Carbon Monoxide poisoning, the optimum range being 2-2.5 atm. A special mask, or, preferably, a compression chamber to utilize oxygen at these pressures is required. Avoid administering stimulant drugs.

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## SECTION 5 - FIRE-FIGHTING MEASURES

**FLASH POINT:** Not Applicable  
**AUTOIGNITION TEMPERATURE:** Not applicable.  
**FLAMMABLE LIMITS (in air by volume, %):** Lower (LEL): Not applicable. Upper (UEL): Not applicable.  
**FIRE EXTINGUISHING MATERIALS:** Non-flammable gas mixture. Use extinguishing media appropriate for surrounding fire.  
**UNUSUAL FIRE AND EXPLOSION HAZARDS:** This gas mixture is not flammable; however, containers, when involved in fire, may rupture or burst in the heat of the fire.  
**Explosion Sensitivity to Mechanical Impact:** Not Sensitive.  
**Explosion Sensitivity to Static Discharge:** Not Sensitive.  
**SPECIAL FIRE-FIGHTING PROCEDURES:** Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment.

### NFPA RATING SYSTEM



### HMIS RATING SYSTEM

| HAZARDOUS MATERIAL IDENTIFICATION SYSTEM             |             |       |            |
|--|-------------|-------|------------|
| HEALTH HAZARD (BLUE)                                 | 2           |       |            |
| FLAMMABILITY HAZARD (RED)                            | 0           |       |            |
| PHYSICAL HAZARD (YELLOW)                             | 0           |       |            |
| PROTECTIVE EQUIPMENT                                 |             |       |            |
| EYES   | RESPIRATORY | HANDS | BODY       |
|  | See Sect 8  |       | See Sect 8 |
| For Routine Industrial Use and Handling Applications |             |       |            |

**Hazard Scale:** 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe \* = Chronic hazard

## SECTION 6 - ACCIDENTAL RELEASE MEASURES

**LEAK RESPONSE:** Due to the small size and content of the cylinder, an accidental release of this product presents significantly less risk of an oxygen deficient environment and other safety hazards than a similar release from a larger cylinder. However, as with any chemical release, extreme caution must be used during emergency response procedures. In the event of a release in which the atmosphere is unknown, and in which other chemicals are potentially involved, evacuate immediate area. Such releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a leak, clear the affected area, protect people, and respond with trained personnel. For emergency disposal, secure the cylinder and slowly discharge the gas to the atmosphere in a well-ventilated area or outdoors. Allow the gas mixture to dissipate. If necessary, monitor the surrounding area (and the original area of the release) for oxygen and Carbon Monoxide. Carbon Monoxide level must be below exposure level listed in Section 2 (Composition and Information on Ingredients) before non-emergency personnel are allowed to re-enter area. If leaking incidentally from the cylinder or its valve, contact your supplier.

## SECTION 7 - HANDLING and STORAGE

**WORK PRACTICES AND HYGIENE PRACTICES:** Be aware of any signs of dizziness or fatigue; exposures to fatal concentrations of this product could occur without any significant warning symptoms, due to oxygen deficiency. Do not attempt to repair, adjust, or in any other way modify the cylinders containing Carbon Monoxide. If there is a malfunction or another type of operational problem, contact nearest distributor immediately.

**STORAGE AND HANDLING PRACTICES:** Cylinders should be firmly secured to prevent falling or being knocked-over. Cylinders must be protected from the environment, and preferably kept at room temperature (approximately 21°C, 70°F). Cylinders should be stored in dry, well-ventilated areas, away from sources of heat, ignition, and direct sunlight. Protect cylinders against physical damage. Full and empty cylinders should be segregated. Use a first-in, first-out inventory system to prevent full containers from being stored for long periods of time. These cylinders are not refillable.

**WARNING! Do not refill DOT 39 cylinders. To do so may cause personal injury or property damage.**

### SPECIAL PRECAUTIONS FOR HANDLING GAS CYLINDERS:

**WARNING!** Compressed gases can present significant safety hazards. During cylinder use, use equipment designed for these specific cylinders. Ensure all lines and equipment are rated for proper service pressure.

**PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT:** Follow practices indicated in Section 6 (Accidental Release Measures). Make certain that application equipment is locked and tagged-out safely. Always use product in areas where adequate ventilation is provided.

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## SECTION 8 - EXPOSURE CONTROLS - PERSONAL PROTECTION

### EXPOSURE LIMITS/GUIDELINES:

| Chemical Name   | CAS#      | ACGIH TWA       | OSHA TWA       | SWA TWA        |
|-----------------|-----------|-----------------|----------------|----------------|
| Carbon Monoxide | 630-08-0  | 25 ppm          | 50 ppm         | 30 ppm         |
| Hydrogen        | 1333-74-0 | Not Listed; S/A | Not Listed S/A | Not Listed S/A |
| Methane         | 74-82-8   | Not Listed S/A  | Not Listed S/A | Not Listed S/A |
| Oxygen          | 7782-44-7 | Not Listed S/A  | Not Listed S/A | Not Listed S/A |
| Nitrogen        | 7727-37-9 | Not Listed S/A  | Not Listed S/A | Not Listed S/A |

There are no specific exposure limits for Nitrogen. Nitrogen is a simple asphyxiant (SA). Oxygen levels should be maintained above 19.5%

**VENTILATION AND ENGINEERING CONTROLS:** No special ventilation systems or engineering controls are needed under normal circumstances of use. As with all chemicals, use this gas mixture in well-ventilated areas. If this gas mixture is used in a poorly-ventilated area, install automatic monitoring equipment to detect the levels of oxygen.

**RESPIRATORY PROTECTION:** No special respiratory protection is required under normal circumstances of use. Use supplied air respiratory protection if the levels of components exceed exposure limits presented in Section 2 (Composition and Information of Ingredients) and Oxygen levels are below 19.5%, or unknown, during emergency response to a release of this gas mixture. If respiratory protection is needed, use only protection authorized in the U.S. Federal OSHA Standard (29 CFR 1910.134), applicable U.S. State regulations, or the Canadian CSA Standard Z94.4-93 and applicable standards of Canadian Provinces. Oxygen levels below 19.16.33% are considered IDLH by OSHA. In such atmospheres, use of a full-face piece pressure/demand SCBA or a full face piece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998).

**EYE PROTECTION:** Safety glasses. If necessary, refer to U.S. OSHA 29 CFR 1910.133 or appropriate Canadian Standards.

**HAND PROTECTION:** No special protection is needed under normal circumstances of use. If necessary, refer to U.S. OSHA 29 CFR 1910.138 or appropriate Standards of Canada.

**BODY PROTECTION:** No special protection is needed under normal circumstances of use. If a hazard of injury to the feet exists due to falling objects, rolling objects, where objects may pierce the soles of the feet or where employee's feet may be exposed to electrical hazards, use foot protection, as described in U.S. OSHA 29 CFR 1910.136.

## SECTION 9 - PHYSICAL and CHEMICAL PROPERTIES

|   |  |
|---|--|
| <b>GAS DENSITY@32°F (0°C) and 1 atm:</b>                    | .072 lbs/ ft <sup>3</sup> (1.153 kg/m <sup>3</sup> )                               |
| <b>BOILING POINT:</b>                                       | -320.4°F (-195.8°C)  |
| <b>FREEZING/MELTING POINT (@ 10 psig):</b>                  | -210°C (-345.8°F)  |
| <b>SPECIFIC GRAVITY (air = 1) @ 70°F (21.1°C):</b>          | 0.906  |
| <b>pH:</b>  | Not applicable.  |
| <b>SOLUBILITY IN WATER vol/vol at 32°F (0°C) and 1 atm:</b> | 0.023  |
| <b>MOLECULAR WEIGHT:</b>                                    | 28.01  |
| <b>EVAPORATION RATE (nBuAc = 1):</b>                        | Not applicable.  |
| <b>EXPANSION RATIO:</b>                                     | Not applicable.  |
| <b>ODOR THRESHOLD:</b>                                      | Not applicable. Odorless.  |
| <b>SPECIFIC VOLUME (ft<sup>3</sup>/lb):</b>                 | 13.8   |
| <b>VAPOR PRESSURE @ 70°F (21.1°C) (psig):</b>               | Not applicable.  |
| <b>COEFFICIENT WATER/OIL DISTRIBUTION:</b>                  | Not applicable.  |
| <b>APPEARANCE, ODOR AND COLOR:</b>                          | This product is a colorless, odorless gas.   |
| <b>HOW TO DETECT THIS SUBSTANCE (warning properties):</b>   | There are no unusual warning properties associated with a release of this product. |

## SECTION 10 - STABILITY and REACTIVITY

**STABILITY:** Normally stable in gaseous state.

**DECOMPOSITION PRODUCTS:** The thermal decomposition products of Methane include carbon oxides. The other components of this gas mixture do not decompose, per se, but can react with other compounds in the heat of a fire.

**MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE:** Titanium will burn in Nitrogen (the main component of this product). Lithium reacts slowly with Nitrogen at ambient temperatures. Components of this product (Hydrogen, Carbon Monoxide, Methane) are also incompatible with strong oxidizers (i.e. chlorine, bromine pentafluoride, oxygen, oxygen difluoride, and nitrogen trifluoride). Carbon Monoxide is mildly corrosive to nickel and iron (especially at high temperatures and pressures).

**HAZARDOUS POLYMERIZATION:** Will not occur.

**CONDITIONS TO AVOID:** Contact with incompatible materials. Cylinders exposed to high temperatures or direct flame can rupture or burst.

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## SECTION 11 - TOXICOLOGICAL INFORMATION

**TOXICITY DATA:** The following toxicology data is available for the components of this gas mixture in 1% concentration or greater:

**CARBON MONOXIDE:** LC<sub>50</sub> (Inhalation-Rat) 1807 ppm/4 hours LC<sub>50</sub> (Inhalation-Mouse) 2444 ppm/4 hours LC<sub>50</sub> (Inhalation-Guinea Pig) 5718 ppm/4 hours LC<sub>50</sub> (Inhalation-wild bird species) 1334 ppm LCLo (Inhalation-Human) 4 mg/m<sup>3</sup>/12 hours: Behavioral: coma; Vascular: BP lowering not characterized in autonomic section; Blood: methemoglobinemia-carboxyhemoglobin LCLo (Inhalation-Man) 4000 ppm/30 minutes LCLo (Inhalation-Human) 5000 ppm/5 minutes LCLo (Inhalation-Dog) 4000 ppm/46 minutes LCLo (Inhalation-Rabbit) 4000 ppm LCLo (Inhalation-Mammal-species unspecified) 5000 ppm/5 minutes TCLo (Inhalation-Human) 600 mg/m<sup>3</sup>/10 minutes: Behavioral: headache

**HYDROGEN:** There are no specific toxicology data for Hydrogen. Hydrogen is a simple asphyxiant (SA), which acts to displace oxygen in the environment.

**METHANE:** There are no specific toxicology data for Methane. Methane is a simple asphyxiant, which acts to displace oxygen in the environment.

**NITROGEN:** There are no specific toxicology data for Nitrogen. Nitrogen is a simple asphyxiant, which acts to displace oxygen in the environment.

**OXYGEN:** The toxicity data for Oxygen are related to exposures in a hyperbaric environment and are not likely to occur in industrial exposure situations.

**SUSPECTED CANCER AGENT:** The components of this gas mixture are not found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, and IARC; therefore, they are not considered to be, nor suspected to be, cancer-causing agents by these agencies.

**IRRITANCY OF PRODUCT:** This gas mixture may cause severe irritation to contaminated tissue.

**SENSITIZATION OF PRODUCT:** The components of this gas mixture are not known to be skin or respiratory sensitizers.

**REPRODUCTIVE TOXICITY INFORMATION:** Listed below is information concerning the effects of this gas mixture on the human reproductive system. Mutagenicity: The components of this gas mixture are not reported to cause mutagenic effects in humans. Embryotoxicity: The components of this gas mixture are not reported to cause embryotoxic effects in humans. Teratogenicity: This gas mixture is not expected to cause teratogenic effects in humans due to the small cylinder size and small total amount of all components. The Carbon Monoxide component of this gas mixture, which exists up to 1%, 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. Reproductive Toxicity: The components of this gas mixture are not reported to cause adverse reproductive effects in humans.

**BIOLOGICAL EXPOSURE INDICES (BEIs):** Biological Exposure Indices (BEIs) have been determined for the Carbon Monoxide component, as follows:

| CHEMICAL DETERMINANT   | SAMPLING TIME   | BEI   |
|--|---|---|
| <b>CARBON MONOXIDE</b> <ul style="list-style-type: none"><li>• Carboxyhemoglobin in blood</li><li>• Carbon monoxide in end-exhaled air</li></ul> | <ul style="list-style-type: none"><li>• End of shift</li><li>• End of shift</li></ul> | <ul style="list-style-type: none"><li>• 3.5% of hemoglobin</li><li>• 20 ppm</li></ul> |

## SECTION 12 - ECOLOGICAL INFORMATION

**ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.**

**ENVIRONMENTAL STABILITY:** The gas will be dissipated rapidly in well-ventilated areas. The following environmental data are applicable to the components of this gas mixture.

**OXYGEN:** Water Solubility = 1 volume Oxygen/32 volumes water at 20°C. Log K<sub>ow</sub> = -0.65

**NITROGEN:** Water Solubility = 2.4 volumes Nitrogen/100 volumes water at 0°C; 1.6 volumes Nitrogen/100 volumes water at 20°C.

**EFFECT OF MATERIAL ON PLANTS or ANIMALS:** No evidence is currently available on the effects of this gas mixture on plant and animal life. The Carbon Monoxide component of this gas mixture can be deadly to exposed animal life, producing symptoms similar to those experienced by humans. Carbon Monoxide may also be harmful to plant life.

## SECTION 13 - DISPOSAL CONSIDERATIONS

**PREPARING WASTES FOR DISPOSAL:** Waste disposal must be in accordance with appropriate Federal, State, and local regulations, those of Canada, Australia, EU Member States and Japan. Cylinders with undesired residual product may be safely vented outdoors with the proper regulator. For further information, refer to Section 16 (Other Information).

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## SECTION 14 - TRANSPORTATION INFORMATION

### US DOT: IATA: IMO: ADR:

**THIS GAS MIXTURE IS HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.**

**PROPER SHIPPING NAME:** Compressed gases, n.o.s. (\*Oxygen, Nitrogen) \* or the gas component with the next highest concentration next to Nitrogen.

**HAZARD CLASS NUMBER and DESCRIPTION:** 2.2 (Non-Flammable Gas)

**UN IDENTIFICATION NUMBER:** UN 1956

**PACKING GROUP:** Not applicable.

**DOT LABEL(S) REQUIRED:** Class 2.2 (Non-Flammable Gas)

**NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2000):** 126

**MARINE POLLUTANT:** The components of this gas mixture are not classified by the DOT as Marine Pollutants (as defined by 49 CFR 172.101, Appendix B).

**SPECIAL SHIPPING INFORMATION:** 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

**Note:** DOT 39 Cylinders ship in a strong outer carton (overpack). Pertinent shipping information goes on the outside of the overpack. DOT 39 Cylinders do not have transportation information on the cylinder itself.

### U.S. DEPARTMENT OF TRANSPORTATION (DOT) SHIPPING REGULATIONS:

This product is classified as dangerous goods, per U.S. DOT regulations, under 49 CFR 172.101.

### TRANSPORT CANADA, TRANSPORTATION OF DANGEROUS GOODS REGULATIONS:

This product is classified as Dangerous Goods, per regulations of Transport Canada.

**PROPER SHIPPING NAME:** Compressed gases, n.o.s. (\*Oxygen, Nitrogen) \* or the gas component with the next highest concentration next to Nitrogen.

**HAZARD CLASS NUMBER and DESCRIPTION:** 2.2 (Non-Flammable Gas)

**UN IDENTIFICATION NUMBER:** UN 1956

**PACKING GROUP:** Not Applicable

**HAZARD LABEL:** Class 2.2 (Non-Flammable Gas)

**SPECIAL PROVISIONS:** None

**EXPLOSIVE LIMIT AND LIMITED QUANTITY INDEX:** 0.12

**ERAP INDEX:** None

**PASSENGER CARRYING SHIP INDEX:** None

**PASSENGER CARRYING ROAD VEHICLE OR PASSENGER CARRYING RAILWAY VEHICLE INDEX:** 75

**NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2004):** 126

**Note:** Shipment of compressed gas cylinders via Public Passenger Road Vehicle is a violation of Canadian law (Transport Canada Transportation of Dangerous Goods Act, 1992).

### INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA):

This product is classified as Dangerous Goods, by rules of IATA

### INTERNATIONAL MARITIME ORGANIZATION (IMO) DESIGNATION:

This product is classified as Dangerous Goods by the International Maritime Organization.

### EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD (ADR):

This product is classified by the United Nations Economic Commission for Europe to be dangerous goods.

## SECTION 15 - REGULATORY INFORMATION

### UNITED STATES REGULATIONS

**SARA REPORTING REQUIREMENTS:** The components of this gas mixture are not subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act, as follows:

**TSCA:** All components in this product are listed on the US Toxic Substances Control Act (TSCA) inventory of chemicals.

### **SARA 311/312:**

Acute Health: No                      Chronic Health: No                      Fire: No                      Reactivity: No

**U.S. SARA THRESHOLD PLANNING QUANTITY:** There are no specific Threshold Planning Quantities for this gas. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

**U.S. CERCLA REPORTABLE QUANTITY (RQ):** None

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**OTHER U.S. FEDERAL REGULATIONS:** Carbon Monoxide is subject to the reporting requirements of CFR 29 1910.1000. Carbon Monoxide is listed on Table Z.1. Hydrogen and Methane are subject to the reporting requirements of Section 112(r) of the Clean Air Act. The Threshold Quantity for each of these gases is 10,000 pounds and so this mixture will not be affected by the regulation. This gas mixture does not contain any Class I or Class II ozone depleting chemicals (40 CFR part 82). Nitrogen and Oxygen are not listed as Regulated Substances, per 40 CFR, Part 68, of the Risk Management for Chemical Releases. Carbon Monoxide, Methane, and Hydrogen are listed under this regulation in Table 3 as Regulated Substances (Flammable Substances), in quantities of 10,000 lbs (4,553 kg) or greater, and so this mixture will not be affected by the regulation.

**U.S. STATE REGULATORY INFORMATION:** The components of this gas mixture are covered under the following specific State regulations:

|   |   |
|---|---|
| Alaska - Designated Toxic and Hazardous Substances:                 | Carbon Monoxide, Methane, Hydrogen.                   |
| California - Permissible Exposure Limits for Chemical Contaminants: | Carbon Monoxide, Nitrogen, Methane, Hydrogen.         |
| Florida - Substance List:   | Oxygen, Carbon Monoxide, Hydrogen.                    |
| Illinois - Toxic Substance List:                                    | Carbon Monoxide, Hydrogen.                            |
| Kansas - Section 302/313 List:                                      | No.   |
| Massachusetts - Substance List:                                     | Oxygen, Carbon Monoxide, Methane, Hydrogen.           |
| Michigan - Critical Materials Register:                             | No.   |
| Minnesota - List of Hazardous Substances:                           | Carbon Monoxide, Methane, Hydrogen.                   |
| Missouri - Employer Information/Toxic Substance List:               | Methane, Hydrogen.                                    |
| New Jersey - Right to Know Hazardous Substance List:                | Oxygen, Carbon Monoxide, Nitrogen, Methane, Hydrogen. |
| North Dakota - List of Hazardous Chemicals, Reportable Quantities:  | No.   |
| Pennsylvania - Hazardous Substance List:                            | Oxygen, Carbon Monoxide, Nitrogen, Methane, Hydrogen. |
| Rhode Island - Hazardous Substance List:                            | Oxygen, Carbon Monoxide, Nitrogen, Methane, Hydrogen. |
| Texas - Hazardous Substance List:                                   | No.   |
| West Virginia - Hazardous Substance List:                           | No.   |
| Wisconsin - Toxic and Hazardous Substances:                         | No.   |

## **CANADIAN REGULATIONS:**

**CANADIAN DSL/NDL INVENTORY STATUS:** All of the components of this product are on the DSL Inventory

**CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS:** The components of this gas mixture are not on the CEPA Priorities Substances Lists.

**CANADIAN WHMIS CLASSIFICATION and SYMBOLS:** This gas mixture is categorized as a Controlled Product, Hazard Classes A – Compressed Gases and D2B – Toxic Material, as per the Controlled Product Regulations.

## **EUROPEAN ECONOMIC COMMUNITY INFORMATION:**

**EU LABELING AND CLASSIFICATION:** Classification of the substance or mixture according to Regulation (EC) No1272/2008. See section 2 for details.

## **AUSTRALIAN INFORMATION FOR PRODUCT:**

**AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES (AICS) STATUS:** All components of this product are listed on the AICS.

**STANDARD FOR THE UNIFORM SCHEDULING OF DRUGS AND POISONS:** Not applicable.

## **JAPANESE INFORMATION FOR PRODUCT:**

**JAPANESE MINISTER OF INTERNATIONAL TRADE AND INDUSTRY (MITI) STATUS:**

The components of this product are not listed as Class I Specified Chemical Substances, Class II Specified Chemical Substances, or Designated Chemical Substances by the Japanese MITI.

## **INTERNATIONAL CHEMICAL INVENTORIES:**

Listing of the components on individual country Chemical Inventories is as follows:

|   |        |
|---|--------|
| Asia-Pac:   | Listed |
| Australian Inventory of Chemical Substances (AICS):                 | Listed |
| Korean Existing Chemicals List (ECL):                               | Listed |
| Japanese Existing National Inventory of Chemical Substances (ENCS): | Listed |
| Philippines Inventory of Chemicals and Chemical Substances (PICCS): | Listed |
| Swiss Giftliste List of Toxic Substances:                           | Listed |
| U.S. TSCA:  | Listed |

# MATERIAL SAFETY DATA SHEET

## SECTION 16 - OTHER INFORMATION

**INFORMATION ABOUT DOT-39 NRC (Non-Refillable Cylinder) PRODUCTS:** DOT 39 cylinders ship as hazardous materials when full. Once the cylinders are relieved of pressure (empty) they are not considered hazardous material or waste. Residual gas in this type of cylinder is not an issue because toxic gas mixtures are prohibited. Calibration gas mixtures typically packaged in these cylinders are Nonflammable n.o.s., UN 1956. A small percentage of calibration gases packaged in DOT 39 cylinders are flammable or oxidizing gas mixtures. For disposal of used DOT-39 cylinders, it is acceptable to place them in a landfill if local laws permit. Their disposal is no different than that employed with other DOT containers such as spray paint cans, household aerosols, or disposable cylinders of propane (for camping, torch etc.). When feasible, we recommended recycling for scrap metal content.

**MIXTURES:** When two or more gases or liquefied gases are mixed, their hazardous properties may combine to create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an Industrial Hygienist or other trained person when you make your safety evaluation of the end product. Remember, gases and liquids have properties which can cause serious injury or death.

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