1. PRODUCT IDENTIFICATION

CHEMICAL NAME: CLASS: NON-FLAMMABLE GAS MIXTURE

Containing the Following Component in a Nitrogen Balance Gas:

Nitric Oxide: 0.0005 - 0.02 %

SYNONYMS: Not Applicable

CHEMICAL FAMILY NAME: Not Applicable

FORMULA: Not Applicable

Document Number: 50026

Note: The Material Safety Data Sheet is for this gas mixture supplied in cylinders with 33 cubic feet (935 liters) or less gas capacity (DOT - 39 cylinders). This MSDS has been developed for various gas mixtures with the composition of components within the ranges listed in Section 2 (Composition and Information on Ingredients). Refer to the product label for information on the actual composition of the product.

PRODUCT USE: Calibration of Monitoring and Research Equipment

SUPPLIER/MANUFACTURER'S NAME: CALG AZ, LLC

ADDRESS: 821 Chesapeake Drive

Cambridge, MD 21613

EMERGENCY PHONE: CHEMTREC: 1-800-424-9300

1-410-228-6400

BUSINESS PHONE: General MSDS Information: 1-713/868-0440

Fax on Demand: 1-800/231-1366

2. COMPOSITION AND INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CHEMICAL NAME</th>
<th>CAS #</th>
<th>mole %</th>
<th>EXPOSURE LIMITS IN AIR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitric Oxide</td>
<td>10102-43-9</td>
<td>0.0005-0.02%</td>
<td>ACGIH-TLV ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TWA</td>
</tr>
</tbody>
</table>
| Nitrogen      | 7727-37-9 | Balance | There are no specific exposure limits for Nitrogen. Nitrogen is a simple asphyxiating agent (SA). Oxygen levels should be maintained above 19.5%.

200 - 700 ppm Severe pulmonary edema and for 30 - 60 minutes symptoms of pulmonary dysfunction. Acute exposure through inhalation may result in dyspnea and irritation of the nose and throat, choking, coughing, and bronchospasm. Severe over-exposure may cause death through systemic, delayed pulmonary edema. Health effects observed after over-exposures to Nitric Oxide include the following:

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: This gas mixture is a colorless gas with an irritating odor. Nitric Oxide (Nitrogen Monoxide), a component of this gas mixture, can produce brownish Nitrogen Dioxide after reaction with oxygen. Nitric Oxide can produce adverse health effects in extremely low concentrations (i.e. skin and eye irritation, dry throat); symptoms of over-exposure may not become apparent for up to 72 hours. Releases of this gas mixture may produce oxygen-deficient atmospheres (especially in confined spaces or other poorly-ventilated environments); individuals in such atmospheres may be asphyxiated.

SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE: The most significant route of over-exposure for this gas mixture is by inhalation.

INHALATION: Due to the small size of an individual cylinder of this gas mixture, no unusual health effects from over-exposure to the product are anticipated under routine circumstances of use. If this gas mixture is released in a small, poorly-ventilated area (i.e. an enclosed or confined space), over-exposure to Nitric Oxide or an oxygen-deficient environment may occur. Exposure to Nitric Oxide gas in low concentrations produces an irritating effect on the mucous membranes of the eyes, nose, throat, and lungs. Acute exposure through inhalation may result in dizziness and irritation of the nose and throat, choking, coughing, and bronchospasm. Severe over-exposure may cause death through systemic, delayed pulmonary edema. Health effects observed after over-exposures to Nitric Oxide include the following:

CONCENTRATION OF NITRIC OXIDE: 0.0005 - 0.02 %

OBSERVED EFFECT

35 ppm for 6 hours Delayed pulmonary irritation (5 - 72 hours).

100 - 150 ppm Delayed pulmonary edema and for 30 - 60 minutes symptoms of pulmonary dysfunction.

200 - 700 ppm Severe pulmonary edema may result after a delay any exposure of 5-8 hours.

NOTE: This gas mixture contains 5-200 ppm Nitric Oxide. Data pertinent to higher concentrations of Nitric Oxide are provided to give complete information on effects observed in humans after over-exposures have occurred.

A typical Nitric Oxide over-exposure incident follows the course described in the next paragraph:

After inhalation of a few breaths of Nitric Oxide, there is no immediate reaction, or only a very slight respiratory discomfort, headache, dizziness, or lassitude. Within 5-8 hours of exposure (frequently after the employee has left the workplace and returned home), it is noticed that the victim’s lips and ears have a blue (cyanotic) color. There then follows rapidly increasing symptoms of breathing difficulty, irregular respiration, choking, dizziness, headache, increasing cyanosis, tightness in the chest, nausea, vomiting, lassitude, and palpitations. Left untreated, death frequently occurs. Physical examination immediately following over-exposure reveals an accelerated respiratory rate, decreased vital capacity, generally suppressed breathing sounds, low blood pressure, and a platelet count elevated by 10-100%.

Additionally, when this gas mixture 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, decreased vital capacity, generally suppressed breathing sounds, low blood pressure, and a platelet count elevated by 10-100%.

For Routine Industrial Use and Handling Applications
3. HAZARD IDENTIFICATION (Continued)

SKIN and EYE CONTACT: Prolonged exposure may cause potentially harmful amounts of Nitric Oxide, a component of this gas mixture, to enter the body via absorption through the skin. The skin may be irritating to the skin, especially in a moist environment, for prolonged periods. Symptoms of skin over-exposure may include scratching, pain, and redness. If Nitric Oxide contaminates the eyes, severe injury and swelling of the eye tissue may occur.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms. Over-exposure to this gas mixture may cause the following health effects:

ACUTE: Due to the small size of the individual cylinder of this gas mixture, no unusual health effects from exposure to the product are anticipated under routine circumstances of use. If this gas mixture is released in a small, poorly-ventilated area (i.e. an enclosed or confined space), over-exposure to Nitric Oxide or an oxygen-deficient environment may occur. Over-exposures to Nitric Oxide, a component of this gas mixture, may result in severe irritation and burns of eyes, skin, mucous membranes, and any other exposed tissue. If Nitric Oxide is inhaled, delayed pulmonary damage and/or burning may occur. Medical care is essential, as symptoms will rapidly worsen, possibly leading to death.

CHRONIC: Prolonged or repeated over-exposures may cause respiratory problems, bronchitis, coughing, hacking cough, nasal irritation and discharge, increased fatigue, alteration in the senses of taste and smell. Repeated over exposures to Nitric Oxide can also result in dental erosion and gum disorders.

TARGET ORGANS: ACUTE: Respiratory system, skin and eyes. CHRONIC: Skin, respiratory system, teeth, heart, central nervous system.

4. FIRST-AID MEASURES

RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO THIS GAS MIXTURE WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. At a minimum, Self-Contained Breathing Apparatus must be worn. No one should enter the gas environment without adequate protective equipment. Exposure to a gas mixture, other than a small cylinder, may result in exposure to large quantities of Nitric Oxide gas. Release measures (e.g. explosion) may result in severe injury or death. This gas mixture presents significant health hazards to firefighters. Therefore, this gas mixture presents significant health hazards to firefighters.

SPECIAL FIRE-FIGHTING PROCEDURES: Contained Breathing Apparatus and full protective equipment. Nitric Oxide, a component of this gas mixture, is non-flammable. Use extinguishing materials. Do not use water. Avoid breathing gas mixture and rapid release of gas. Do not use water to displace or extinguish. Use CO2 or dry Chemical Extinguishing Agent. Use safety equipment during firefighting. Over-exposure to this gas mixture, than a similar release from a larger cylinder. However, as with any chemical release, extreme caution must be used during emergency response measures. 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 by all personnel. In case of a leak, clear the affected area, protect personnel, and respond with trained personnel. Allow the gas mixture to dissipate. If necessary, monitor the surrounding area (and the original area of the release) for levels of Nitric Oxide and Oxygen. The level of Nitric Oxide must be at acceptable levels (see Section 2, Composition on Information on Ingredients) and the atmosphere must have at least 19.5 percent oxygen before personnel can be allowed in the area without Self-Contained Breathing Apparatus. If leaking incidentally from the cylinder, contact your supplier.

5. FIRE-FIGHTING MEASURES

FLASH POINT: Not applicable. AUTOFISSION TEMPERATURE: Not applicable. FLAMMABLE LIMITS (in air by volume, %): Lower (LFL): Not applicable. Upper (UFL): Not applicable.

6. ACCIDENTAL RELEASE MEASURES

LEAK REASON: Due to the small size and content of the cylinder, an accidental release of this gas mixture presents significantly less risk of over-exposure to Nitric Oxide, the toxic component of this gas mixture, and other safety hazards related to the remaining components of this gas mixture. This release may occur with any chemical release, extreme caution 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. In case of a leak, clear the affected area, protect personnel, and respond with trained personnel. Allow the gas mixture to dissipate. If necessary, monitor the surrounding area (and the original area of the release) for levels of Nitric Oxide and Oxygen. The level of Nitric Oxide must be at acceptable levels (see Section 2, Composition on Information on Ingredients) and the atmosphere must have at least 19.5 percent oxygen before personnel can be allowed in the area without Self-Contained Breathing Apparatus. If leaking incidentally from the cylinder, contact your supplier.

WEAR AND HYGIENE PRACTICES: Be aware of any signs of dizziness or fatigue; exposures to fatal concentrations of this gas mixture could occur without any significant warning symptoms, due to over-exposure to Nitric Oxide or oxygen deficiency. All work practices should be monitored in such a way that emergency personnel can be immediately contacted in the event of a release. Do not attempt to repair, adjust, or in any other way modify the cylinders containing this gas mixture. 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.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

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 Nitric Oxide and oxygen.
RESPIRATORY PROTECTION: No special respiratory protection is required under normal circumstances of use. Use supplied air respiratory protection if 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% are considered IDLH by OSHA. In such conditions, full-facepiece respirator with a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998). The following NIOSH respiratory protection recommendations for Nitric Oxide concentrations in air are in place.

NITRIC OXIDE
CONCENTRATION
RESPIRATORY PROTECTION
Up to 100 ppm: Any Supplied-Air Respirator (SAR) operated in a continuous-flow mode or any Chemical Cartridge Respirator with a full facepiece and cartridge(s), providing protection against Nitric Oxide. Only non-oxidizable sorbents are allowed (not charcoal), or any Powered, Air-Purifying Respirator (PAPR) with cartridge(s) providing protection against Nitric Oxide, or any Air-Purifying, Full-Facepiece Respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against Nitric Oxide. Any Air-Purifying, Full-Facepiece Respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against Nitric Oxide. Only non-oxidizable sorbents are allowed (not charcoal), or any appropriate escape-type SCBA.

Emergency or Planned Entry into Unknown Concentrations or IDLH Conditions: Any SCBA that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode, or any SAR that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary SCBA operated in a pressure-demand or other positive-pressure mode. Escape: Any Air-Purifying, Full-Facepiece Respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against Nitric Oxide. Only non-oxidizable sorbents are allowed (not charcoal), or any appropriate escape-type SCBA.

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

HAND PROTECTION: Wear leather gloves when handling cylinders. Chemically resistant gloves should be worn when using this gas mixture. 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.

5. PHYSICAL AND CHEMICAL PROPERTIES

The following information is for Nitrogen, the main component of this gas mixture.

GAS DENSITY @ 32°F (0°C) and 1 atm: 0.072 lbs/ft³ (1.153 kg/m³)
FREEZING/MELTING POINT @ 10 psig: -345.9°F (-210°C)
SPECIFIC GRAVITY (air = 1): 0.0001
SOLUBILITY IN WATER @ 32°F (0°C) and 1 atm: 0.023
EVAPORATION RATE (nBuAc = 1): Not applicable
VAPOR PRESSURE @ 70°F (21.1°C): Not applicable
COEFFICIENT WATER/ROIL DISTRIBUTION: Not applicable.

The following information is for this gas mixture.

APPEARANCE, ODOR AND COLOR: This gas mixture is a colorless gas with an irritating odor, based on the presence of Nitric Oxide. Nitric Oxide can produce brownish Nitrogen Dioxide after reaction with oxygen.

HOW TO DETECT THIS SUBSTANCE (warning properties): There are no unusual warning properties associated with a release of this gas mixture. In terms of leak detection, fittings and joints can be painted with a soap solution to detect leaks, which will be indicated by a bubble formation.

10. STABILITY AND REACTIVITY

STABILITY: Normally stable in gaseous state.
DECOMPOSITION PRODUCTS: Nitric Oxide will react with water or moist air to form nitrogen dioxide and other oxides of nitrogen. Nitric Oxide can produce brownish Nitrogen Dioxide after reaction with oxygen. Nitrogen does 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 gas mixture). Lithium reacts slowly with Nitrogen at ambient temperatures. Though Nitric Oxide is an oxidizer, the concentration of this component in the product is too low for this to be a significant hazard associated with this gas mixture.
HAZARDOUS POLMERIZATION: Will not occur.
CONDITIONS TO AVOID: Contact with moisture and incompatible materials. Cylinders exposed to high temperatures or direct flame can rupture or burst.

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA: The following toxicity data are available for the components of this gas mixture:

NITRIC OXIDE: There are no toxicology data available for Nitrogen, Nitric Oxide is a simple asphyxiant, which acts to displace oxygen in the environment.
NITRIC OXIDE (continued):
LC₅₀ (Inhalation-Rat) 1068 mg/m³/4 hours
LC₅₀ (Inhalation-Mouse) 320 ppm: Behavioral: convulsions or effect on seizure threshold Lungs, Thorax, or Respiration: cyanosis; Blood: methemoglobinemia-carboxyhemoglobin LCL₀ (Inhalation-Dog) 5000 ppm/25 minutes: Lungs, Thorax, or Respiration: pulmonary edema; Blood: methemoglobinemia-carboxyhemoglobin
NITRIC OXIDE (continued):
TLC₀ (Inhalation-Rat) 200 ppm/6 hours/7 days-intermittent: Lungs, Thorax, or Respiration: acute pulmonary edema; Blood: methemoglobinemia-carboxyhemoglobin TLC₀ (Inhalation-Rat) 50 mg/m³/6 hours/7 days-intermittent: Lungs, Thorax, or Respiration: changes in lung weight; Liver: changes in liver weight; Nutritional and Gross Metabolic: weight loss or decreased weight gain TLC₀ (Inhalation-Rat) 3 mg/m³/24 hours/14 days-continuous: Brain and Coverings: recordings from specific areas of CNS; Blood: methemoglobinemia-carboxyhemoglobin Biochemical: inhibition, induction, or change in blood or tissue levels: true cholesterinase
SUSPECTED CANCER AGENT: The components of this gas mixture are not found on the following lists: FEDERAL OSHA 2 LIST, NTP, Cal/OSHA, and IARC; therefore, they are not considered to be, nor suspected to be, cancer-causing agents by these agencies.
IRRITANT OF PRODUCT: Due to the presence of Nitric Oxide this gas mixture is irritating to the eyes, and may be irritating to the skin.
SENSITIVITY OF PRODUCT: One study involving guinea pigs exposed to 4.3 ppm Nitric Oxide, 8 hours/day for 5 days enhanced an allergic reaction to ovalbumin (a known allergen).
REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of this gas mixture and its components on the human reproductive system.
Mutation: No mutagenic effects have been described for this gas mixture. Nitric Oxide, a component of this gas mixture, has been shown to cause genetic damage in bacterial studies.
Embryotoxicity: No embryotoxic effects have been described for this gas mixture.
Teratogenicity: No teratogenic effects have been described for this gas mixture.
Reproductive Toxicity: No reproductive toxic effects have been described for this gas mixture. Nitric Oxide, a component of this gas mixture, has been shown to cause and fetal toxicity in animal studies.
A mutagen is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generations. An embroyotoxicity is a chemical which causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across generations. A teratogen is a chemical which causes damage to a developing fetus, but the damage does not propagate across generations. A reproductive toxin is any substance which interferes in any way with the reproductive process.
BIOCHEMICAL EXPOSURE INDICES (BEIs): Currently, Biological Exposure Indices (BEIs) are not applicable for the components of this gas mixture.
ENVIRONMENTAL STABILITY: The gas will be dissipated rapidly in well-ventilated areas. Complex reactions of Nitric Oxide, a component of this gas mixture, occur in the atmosphere, which contribute to air pollution. The following environmental data are applicable to the components of this gas mixture.

NITRIC OXIDE: Nitric Oxide is converted spontaneously in air to nitrogen dioxide, hence some of latter gas is invariably present whenever Nitric Oxide is found in air. At concentrations below 50 ppm, this reaction is slow. At higher concentration this reaction may occur when only quantities of nitrogen dioxide are present. Photochemical air pollution arises from a series of atmospheric reactions. The main components are ozone, oxides of nitrogen (such as Nitric Oxide), aldehydes, peroxacyclic nitrates, and hydrocarbons. Nitric Oxide can enter into the chemical reactions that lead to formation of photochemical smog.

NITROGEN: Water Solubility = 3.4 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: Due to the presence of Nitric Oxide in this gas mixture, over-exposed animals would develop respiratory system damage, as well as skin and eye disorders. Because Nitric Oxide produces corrosive solutions upon contact with moisture, plants may be damaged or destroyed.

EFFECT OF CHEMICAL ON AQUATIC LIFE: Nitric Oxide can react with water or moisture to generate soluble nitrogen dioxide and other corrosive nitrogen oxide compounds. If a release this gas mixture occurs near a body water, the release may be harmful or fatal to fish and other aquatic life. The following are aquatic toxicity data for the Nitric Oxide component of this gas mixture.

NITRIC OXIDE: Lethal (Lampsis macronius bluegill sunfish) 48 hours = 3.6 mg/L/Conditions of bioassay not specified. Lethal (Gambusia affinis mosquito fish) 282 ppm/96 hr (fish) with no conditions of bioassay not specified. LC50 (Trot) 24 hours = 10 mg/L/Conditions of bioassay not specified.

13. DISPOSAL CONSIDERATIONS

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

14. TRANSPORTATION INFORMATION

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. (Nitric Oxide, Nitrogen)

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

UN IDENTIFICATION NUMBER: UN 1956

PACKING GROUP: Not applicable.

DUTY REQUIREMENTS: Not applicable.

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.

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: This gas is considered as Dangerous Goods, per regulations of Transport Canada.

PROPER SHIPPING NAME: Compressed gases, n.o.s. (Nitric Oxide, Nitrogen)

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

UN IDENTIFICATION NUMBER: UN 1956

PACKING GROUP: Not applicable.

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 VEHICLE INDEX: 75

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2000): 121

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).

15. REGULATORY INFORMATION

ADDITIONAL U.S. REGULATIONS:

U.S. SARA REPORTING REQUIREMENTS: This gas mixture is subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986.

CHEmICAL NAME NITRIC OXIDE

SAra 302 [40 CFR 355, Appendix A] YES

SAra 304 [40 CFR Table 302-4] YES

SAra 313 [40 CFR 372.65] YES

U.S. SARA SECTION 302 EXTREMELY HAZARDOUS SUBSTANCE THRESHOLD PLANNING QUANTITY: Nitric Oxide = 100 lb (45.4 kg)

U.S. SARA SECTION 304 EXTREMELY HAZARDOUS SUBSTANCE REPORTABLE QUANTITY: Nitric Oxide = 10 lb (4.54 kg)

U.S. TSCA INVENTORY STATUS: The components of this gas mixture are listed on the TSCA Inventory.

U.S. CERCLA REPORTABLE QUANTITY (RQ): Nitric Oxide: 10 lb (4.54 kg).

OTHER U.S. FEDERAL REGULATIONS:

NITRIC OXIDE is subject to the reporting requirements of CFR 29 1910.110. Nitric Oxide is listed in Table 2.1. Depending on specific operations involving the use of this gas mixture, the regulations of the Process Safety Management of Highly Hazardous Chemicals may be applicable (29 CFR 1910.119). Under this regulation Nitric Oxide is listed in Appendix A. The threshold quantity for Nitric Oxide under this regulation is 250 lbs.

Nitric Oxide is subject to the reporting requirements of Section 112(r) of the Clean Air Act. The Threshold Quantity for this gas is 10,000 lb (4544 kg).

Nitric Oxide does not contain any Class I or Class II ozone depleting chemicals (40 CFR part 82).

Nitrogen is not listed as a Regulated Substance, per 40 CFR, Part 68, of the Risk Management for Chemical Releases. Nitric Oxide is listed on Table Z.1.

Nitric Oxide is subject to the reporting requirements of CFR 29 1910.1000. Nitric Oxide is listed on Table Z.1.

Nitric Oxide is subject to the reporting requirements of CFR 29 1910.1000. Nitric Oxide is listed on Table Z.1.

Nitric Oxide: 10 lb (4.54 kg)

Nitric Oxide: 10 lb (4.54 kg)

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

Alabama - Designated Toxic and Hazardous Substance: Nitric Oxide

Arizona - Designated Toxic and Hazardous Substance: Nitric Oxide

California - Permissible Exposure Limits for Chemical Contaminants: Nitrogen, Nitric Oxide

Florida - Substance List: Nitric Oxide

Illinois - Toxic Substance List: Nitric Oxide

Kansas - Designated Toxic and Hazardous Substances: Nitric Oxide

Michigan - Critical Materials Register: No

Missouri - Employer Information/Toxic Substance List: Nitric Oxide

New Jersey - Right to Know Hazardous Substance List: Nitric Oxide

North Dakota - List of Hazardous Chemicals, Reportable Quantities: Nitric Oxide

Pennsylvania - Hazardous Substance List: Nitric Oxide

Rhode Island - Hazardous Substance List: Nitric Oxide

Texas - Hazardous Substance List: Nitric Oxide

West Virginia - Hazardous Substance List: Nitric Oxide

Wisconsin - Toxic and Hazardous Substances: Nitric Oxide

NON-FLAMMABLE GAS MIXTURE MSDS - 50026 PAGE 4 OF 5 EFFECTIVE DATE: APRIL 19, 2005
15. REGULATORY INFORMATION (Continued)

ADDITIONAL U.S. REGULATIONS (continued): 
CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): No component of this gas mixture is on the California Proposition 65 lists.

ADDITIONAL CANADIAN REGULATIONS:
CANADIAN DSL/NDSL INVENTORY STATUS: The components of this gas mixture are listed 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: This gas mixture is categorized as a Controlled Product, Hazard Classes A and D2B, as per the Controlled Product Regulations.

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 recommend recycling for scrap metal content. CALGAZ, LLC will do this for any customer that wishes to return cylinders to us prepaid. All that is required is a phone call to make arrangements so we may anticipate arrival. Scraping cylinders involves some preparation before the metal dealer may accept them. We perform this operation as a service to valued customers who want to participate.

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.

Further information about the handling of compressed gases can be found in the following pamphlets published by: Compressed Gas Association Inc. (CGA), 1725 Jefferson Davis Highway, Suite 1004, Arlington, VA 22202-4102. Telephone: (703) 412-0900.

P-1 "Safe Handling of Compressed Gases in Containers"
AV-1 "Safe Handling and Storage of Compressed Gases"
"Handbook of Compressed Gases"

PREPARED BY:
CHEMICAL SAFETY ASSOCIATES, Inc.
PO Box 3519, La Mesa, CA 91944-3519
619/670-0599
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