



MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards

1. PRODUCT AND COMPANY INFORMATION

CHEMICAL NAME; CLASS: NON-FLAMMABLE GAS MIXTURE

LASAL MIXTURES: p51, 53, 54, 58, 59, 61, p61, 62, 63, 65, 66, 68, 70, 72, 73, p73, 77, 80, 83, 84, 85, 92, 95, 97, 98

Containing Carbon Dioxide (1-16%), Nitrogen (1-55%) and Helium (Balance)

SYNONYMS: Not Applicable

CHEMICAL FAMILY: Not Applicable

FORMULA: Not Applicable

LASAL (The Perfect Combination) The Perfect Combination of laser equipment and gas is the secret of your success. Lasing gas contributes to the power of your laser and stabilized the beam, allowing you to tap your laser's full potential while minimizing the risk of damage to your equipment. **LASAL** is a range of research-backed gases that will help our customers achieve a superior return on investment. Specially blended, application-proven, **LASAL** gases are manufactured to the same precision standards as laser devices. **LASAL** gases help assure maximum power output and beam stability while increasing the life of optics and electrodes.

PRODUCT USE:

Document Number: 10056

For use in laser operations.

MANUFACTURED/SUPPLIED FOR:

ADDRESS:

EMERGENCY PHONE:

BUSINESS PHONE:



2700 Post Oak Drive

Houston, TX 77056-8229

CHEMTREC: 1-800-424-9300

General MSDS Information 1-713/866-2896

Fax on Demand: 1-800/231-1366

2. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: This is a colorless, nonflammable gas mixture which is odorless or which has an acrid odor. A significant hazard associated with releases of this gas mixture is the potential for over-exposure to Carbon Dioxide (a component of this gas mixture). Inhalation of Carbon Dioxide can increase respiration and heart rate (possibly resulting in circulatory insufficiency) and cause nausea, dizziness, headache, mental confusion. This gas mixture may also cause eye irritation. Inhalation overexposures may be fatal due to Carbon Dioxide overexposure or oxygen deficiency. A cylinder rupture hazard exists when this gas mixture, which is under pressure, is subject to heat or flames.

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

INHALATION: Inhalation of gas mixtures which contain elevated levels of Carbon Dioxide (a powerful cerebral vasodilator) can cause adverse health effects. If inhaled at concentrations between 2-10% Carbon Dioxide can cause nausea, dizziness, headache, mental confusion, increased blood pressure and respiratory rate. Carbon Dioxide initially stimulates respiration and then causes respiratory depression. Repeated inhalation of low concentrations (3-5%) have no known permanent harmful effects. Symptoms of over-exposure to Carbon Dioxide in humans are as follows:

CONCENTRATION OF CARBON DIOXIDE

OBSERVED EFFECT

1%	Slight increase in breathing rate.
2%	Breathing rate increases to 50% above normal level. Prolonged exposure can cause headache, tiredness.
3%	Breathing increases to twice normal rate and becomes labored. Weak narcotic effect. Impaired hearing, headache, increase in blood pressure and pulse rate.
4-5%	Breathing increases to approximately four times normal rate, symptoms of intoxication become evident and slight choking may be felt.
5-10 %	Characteristic sharp odor noticeable. Very labored breathing, headache, visual impairment and ringing in the ears. Judgment may be impaired, followed within minutes by loss of consciousness.
>10%	Unconsciousness occurs more rapidly above 10% level. Prolonged exposure to high concentrations may eventually result in death from asphyxiation.

This gas mixture can also cause symptoms of oxygen deprivation (asphyxiation) when present in high enough concentrations to significantly lower oxygen concentration. 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. It should be noted that before adverse health effects or suffocation could occur the effects of overexposure to Carbon Dioxide may be felt.

OTHER POTENTIAL HEALTH EFFECTS: Moisture in the air could lead to the formation of carbonic acid from the Carbon Dioxide present in this gas mixture, which can be irritating to the eyes.

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

ACUTE: Inhalation of this gas mixture can cause nausea, dizziness, visual disturbances, shaking, headache, mental confusion, sweating, increased heartbeat, and elevated blood pressure and respiratory rate. This gas mixture can cause eye irritation.

CHRONIC: There are currently no known adverse health effects associated with chronic exposure to this gas mixture.

TARGET ORGANS: ACUTE: Respiratory system, central nervous system, eyes. CHRONIC: None known.

3. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	mole %	EXPOSURE LIMITS IN AIR					
			ACGIH		OSHA		NIOSH IDLH ppm	OTHER ppm
			TLV ppm	STEL ppm	PEL ppm	STEL ppm		
Carbon Dioxide	124-38-9	1-16%	5000	30,000	5000 10,000 (Vacated 1989 PEL)	30,000 (Vacated 1989 PEL)	40,000	NIOSH REL: TWA = 5000 STEL = 30,000 (ceiling) DFG-MAK: TWA = 5000 PEAK = 2•MAK 10 min., momentary value
Nitrogen	7727-37-9	1-55%	There are no specific exposure limits for Nitrogen. Nitrogen is a simple asphyxiant (SA). Oxygen levels should be maintained above 19.5%.					
Helium	7440-59-7	Balance	There are no specific exposure limits for Helium. Helium is a simple asphyxiant (SA). Oxygen levels should be maintained above 19.5%.					

This material is classified as hazardous under OSHA regulations in the United States and the WHMIS in Canada.

NE = Not Established.

See Section 16 for Definitions of Terms Used.

NOTE (1): 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.

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.

Remove victim(s) to fresh air as quickly as possible. Only trained personnel should administer supplemental oxygen and/or cardio-pulmonary resuscitation, if necessary. Victim(s) must be taken for medical attention. Rescuers should be taken for medical attention if necessary. Take copy of label and MSDS to physician or other health professional with victim(s).

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing respiratory conditions may be aggravated by over-exposure to this product.

RECOMMENDATIONS TO PHYSICIANS: Administer oxygen, if necessary. Treat symptoms and eliminate exposure.

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: Use extinguishing media appropriate for surrounding fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS: This gas mixture does not burn; 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 fire-fighters must wear Self-Contained Breathing Apparatus and full protective equipment. If necessary, increase ventilation to prevent concentration of Carbon Dioxide. Evacuation may be necessary. Refer to the North American Emergency Response Guidebook for additional information.

6. ACCIDENTAL RELEASE MEASURES

LEAK RESPONSE: Evacuate immediate area. Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. Minimum Personal Protective Equipment should be **Level B: Self-Contained Breathing Apparatus**. Locate and seal the source of the leaking gas. Allow the gas to dissipate. Monitor the surrounding area for the level of Carbon Dioxide and oxygen. Carbon Dioxide levels must be below the exposure level listed in Section 2 (Composition and 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. Attempt to close the main source valve prior to entering the area. If this does not stop the release (or if it is not possible to reach the valve), allow the gas to release in place or remove it to a safe area, away from sources of ignition, and allow the gas to be released there. If gas is leaking incidentally from the cylinder or its valve, contact your supplier.

7. HANDLING AND STORAGE

WORK PRACTICES 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 overexposure to Carbon Dioxide, or oxygen deficiency).

STORAGE AND HANDLING PRACTICES: Cylinders should be stored upright (with valve-protection cap in place) and firmly secured to prevent falling or being knocked over. Cylinders can be stored in the open, but in such cases, should be protected against extremes of weather and from the dampness of the ground to prevent rusting. Cylinders should be stored in dry, well-ventilated areas away from sources of heat, ignition, and direct sunlight. Keep storage area clear of materials that can burn. Do not allow area where cylinders are stored to exceed 52°C (125°F). Store containers away from heavily trafficked areas and emergency exits. Store away from process and gas production areas, elevators, building and room exits, or main aisles leading to exits. Protect cylinders against physical damage. Keep the smallest amount on-site as is necessary.

STORAGE AND HANDLING PRACTICES (continued): 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. Use a check valve in the discharge line to prevent hazardous backflow. Never tamper with pressure relief devices in valves and cylinders.

SPECIAL PRECAUTIONS FOR HANDLING GAS CYLINDERS: Compressed gases can present significant safety hazards. The following rules are applicable to work situations in which cylinders are being used:

Before Use: Move cylinders with a suitable hand-truck. Do not drag, slide or roll cylinders. Do not drop cylinders or permit them to strike each other. Secure cylinders firmly. Leave the valve protection cap (where provided) in place until cylinder is ready for use.

During Use: Use designated CGA fittings and other support equipment. Do not use adapters. Use piping and equipment adequately designed to withstand pressures to be encountered. Do not heat cylinder by any means to increase the discharge rate of the gas mixture from the cylinder. Do not use oils or grease on gas-handling fittings or equipment. Leak check system with leak detection solution, never with flame. Immediately contact the supplier if there are any difficulties associated with operating cylinder valve. Never insert an object (e.g., wrench, screwdriver, pry bar, etc.) into valve cap openings. Doing so may damage valve, causing a leak to occur. Use an adjustable strap wrench to remove overly tight or rusted caps. Never strike an arc on a compressed gas cylinder or make a cylinder part of an electric circuit.

After Use: Close main cylinder valve. Valves should be closed tightly. Replace valve protection cap. Mark empty cylinders "EMPTY".

NOTE: Use only DOT or ASME code cylinders designed for compressed gas storage. Close valve after each use and when empty. Cylinders must not be recharged except by or with the consent of owner.

STANDARD CYLINDER VALVE CONNECTIONS FOR U.S. AND CANADA: Use the proper CGA connections, **DO NOT USE ADAPTERS:**

<u>THREADED:</u>	580
<u>PIN-INDEXED YOKE:</u>	Not Applicable
<u>ULTRA HIGH INTEGRITY:</u>	Not Applicable

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Follow practices indicated in Section 6 (Accidental Release Measures). Make certain application equipment is locked and tagged-out safely. Purge gas handling equipment with inert gas before attempting repairs. Always use this gas mixture in areas where adequate ventilation is provided.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation. Local exhaust ventilation is preferred, because it prevents chemical dispersion into the work place by eliminating it at its source. If appropriate, install automatic monitoring equipment to detect the levels of Carbon Dioxide and Oxygen.

RESPIRATORY PROTECTION: Maintain Carbon Dioxide exposures below levels listed in Section 2 (Composition and Information on Ingredients) and oxygen levels above 19.5% in the workplace. Use supplied air respiratory protection if oxygen levels are below 19.5% (air-purifying respirators will not function) or during emergency response to a release of this gas mixture. During an emergency situation, before entering the area, check for oxygen-deficient atmospheres. If respiratory protection is required, follow the requirements of the Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), or equivalent State standards. Respiratory selection guidelines from NIOSH for Carbon Dioxide are provided below for information.

CONCENTRATION

Up to 40,000 ppm:

RESPIRATORY EQUIPMENT

Supplied Air Respirator (SAR); or full-facepiece Self-Contained Breathing Apparatus (SCBA).

Emergency or Planned Entry Into Unknown Concentrations or IDLH Conditions: Positive pressure, full-facepiece SCBA; or positive pressure, full-facepiece SAR with an auxiliary positive pressure SCBA.

Escape: Escape-type SCBA.

NOTE: The IDLH concentration for Carbon Dioxide is 40,000 ppm.

EYE PROTECTION: Safety glasses. Use faceshields when handling Liquid Carbon Dioxide in high pressure containers. If necessary, refer to U.S. OSHA 29 CFR 1910.133, or Canadian Standards.

HAND PROTECTION: Wear gloves when handling cylinders of this gas mixture. Otherwise, wear glove protection appropriate to the specific operation for which this gas mixture is used. If necessary, refer to U.S. OSHA 29 CFR 1910.138 or appropriate Standards of Canada.

BODY PROTECTION: Use body protection appropriate for task. Safety shoes are recommended when handling cylinders. 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.

9. PHYSICAL and CHEMICAL PROPERTIES

The following information is for Helium, a main component of this gas mixture.

GAS DENSITY @ 0°C (32°F) and 1 atm: 0.0103 lbs/cu ft (1.165 kg/m³)

FREEZING/MELTING POINT (@ 10 psig): Not applicable.

SPECIFIC GRAVITY (air = 1) @ 21.1°C (70°F): 0.1381

SOLUBILITY IN WATER vol/vol @ 0°C (32°F) and 1 atm: 0.0094

EVAPORATION RATE (nBuAc = 1): Not applicable.

ODOR THRESHOLD: Not applicable. Odorless.

VAPOR PRESSURE @ 21.1°C (70°F) (psig): Not applicable.

COEFFICIENT WATER/OIL DISTRIBUTION: Not applicable.

BOILING POINT: -452.1°F (-268.9°C)

pH: Not applicable.

MOLECULAR WEIGHT: 4.00

EXPANSION RATIO: Not applicable.

SPECIFIC VOLUME (ft³/lb): 96.7

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

GAS DENSITY @ 0°C (32°F) and 1 atm: .072 lbs/cu ft (1.153 kg/m³)

FREEZING/MELTING POINT (@ 10 psig) -210°C (-345.8°F)

SPECIFIC GRAVITY (air = 1) @ 21.1°C (70°F): 0.906

SOLUBILITY IN WATER vol/vol @ 0°C (32°F) and 1 atm: 0.023

EVAPORATION RATE (nBuAc = 1): Not applicable.

ODOR THRESHOLD: Not applicable. Odorless.

VAPOR PRESSURE @ 21.1°C (70°F) psig: Not applicable.

COEFFICIENT WATER/OIL DISTRIBUTION: Not applicable.

BOILING POINT: -195.8°C (-320.4°F)

pH: Not applicable.

MOLECULAR WEIGHT: 28.01

EXPANSION RATIO: Not applicable.

SPECIFIC VOLUME (ft³/lb): 13.8

The following information is for this gas mixture.

APPEARANCE AND COLOR: This is a colorless, nonflammable gas mixture which is odorless or which has an acrid odor.

HOW TO DETECT THIS SUBSTANCE (warning properties): There are no distinct warning properties 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.

DECOMPOSITION PRODUCTS: The components of this product do not decompose, per se, but may react with other compounds in the heat of a fire. Helium, a component of this gas mixture, is inert.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Due to the presence of Carbon Dioxide, this gas mixture would be incompatible with powdered metals such as beryllium, cerium and alloys, thorium, titanium, uranium, and zirconium. Carbon Dioxide will react with alkaline materials to form carbonates and bicarbonates.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Cylinders exposed to high temperatures or direct flame can rupture or burst.

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA: The following toxicology data are available for the components of this gas mixture present in concentrations greater than or equal to 1 mole %.

CARBON DIOXIDE:

LCLo (Inhalation-Human) 9 pph/5 minutes
LCLo (Inhalation-Mammal-species unspecified) 90000 ppm/5 minutes
TCLo (Inhalation-Rat) 10000 ppm/24 hours/days-continuous: Blood: other changes

CARBON DIOXIDE (continued):

TCLo (Inhalation-Rat) 6 pph/24 hours: female 10 day(s) after conception: Reproductive: Specific Developmental Abnormalities: musculoskeletal system, cardiovascular (circulatory) system, respiratory system

CARBON DIOXIDE (continued):

TCLo (Inhalation-Rat) 6 pph/24 hours: female 10 day(s) after conception: Reproductive: Effects on Newborn: growth statistics (e.g.%, reduced weight gain)

CARBON DIOXIDE (continued):

TCLo (Inhalation-Rabbit) 27,000 ppm/24 hours/30 days-continuous : Behavioral: somnolence (general depressed activity)
TCLo (Inhalation-Rabbit) 13 pph/4 hours: female 9-12 day(s) after conception: Reproductive: Specific Developmental Abnormalities: musculoskeletal system
TCLo (Inhalation-Mouse) 55 pph/2 hours: male 3 day(s) pre-mating: Reproductive: Paternal Effects: spermatogenesis (incl. genetic material, sperm morphology, motility, and count)

CARBON DIOXIDE (continued):

TCLo (Inhalation-Mouse) 55 pph/4 hours: male 6 day(s) pre-mating: Reproductive: Fertility: male fertility index (e.g. # males impregnating females per # males exposed to fertile non-pregnant females)
TCLo (Inhalation-Mouse) 2 pph/8 hours: female 10 day(s) after conception: Reproductive: Fertility: post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants); Specific Developmental Abnormalities: musculoskeletal system

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

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

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 and therefore, they are not considered to be, nor suspected to be, cancer-causing agents by these agencies.

IRRITANCY OF PRODUCT: This gas mixture may be irritating to the eyes.

SENSITIZATION TO THE 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 and its components on the human reproductive system.

Mutagenicity: No mutagenicity effects have been described for this gas mixture.

Embryotoxicity: No embryotoxic effects have been described for this gas mixture.

Teratogenicity: This gas mixture is not expected to cause teratogenic effects in humans. Animal teratogenic data are available for Carbon Dioxide (a component of this gas mixture); these data were obtained during clinical studies on specific animal tissues exposed to relatively high doses.

Reproductive Toxicity: This gas mixture is not expected to cause adverse reproductive effects in humans. Animal reproductive data are available for Carbon Dioxide; these data were obtained during clinical studies on specific animal tissues exposed to relatively high doses.

A mutagen is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generation lines. An embryotoxin 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 generational lines. A teratogen is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance which interferes in any way with the reproductive process.

BIOLOGICAL EXPOSURE INDICES (BEIs): Currently, Biological Exposure Indices (BEIs) are not applicable for the components of this gas mixture.

12. ECOLOGICAL INFORMATION

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

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 adverse effect is anticipated to occur to animals or plant-life, except for frost produced in the presence of rapidly expanding gases.

EFFECT OF CHEMICAL ON AQUATIC LIFE: No evidence of an adverse effect of this gas mixture on aquatic life is currently available.

13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations. Return cylinders with any residual gas mixture to Air Liquide. Do not dispose of locally.

For emergency disposal, secure the cylinder and slowly discharge the gas to the atmosphere in a well-ventilated area or outdoors, away from all sources of ignition.

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. (Nitrogen, Helium) *or* (Nitrogen, Carbon Dioxide) *or* (Helium, Carbon Dioxide)

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

UN IDENTIFICATION NUMBER: UN 1956

PACKING GROUP: Not Applicable

DOT LABEL(S) REQUIRED: Non-Flammable Gas

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2000): 126

MARINE POLLUTANT: Carbon Dioxide is not classified by the DOT as a Marine Pollutant (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 present serious safety hazards and should be discouraged.

NOTE: Shipment of compressed gas cylinders which have not been filled with the owners consent is a violation of Federal law (49 CFR, Part 173.301 (b)).

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: This gas mixture is considered as dangerous goods, per regulations of Transport Canada. Use the above U.S. DOT information for the preparation of Canadian Shipments.

15. REGULATORY INFORMATION

ADDITIONAL U.S. REGULATIONS:

U.S. 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.

U.S. SARA THRESHOLD PLANNING QUANTITY: Not applicable.

U.S. CERCLA REPORTABLE QUANTITIES (RQ): Not applicable.

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

OTHER U.S. FEDERAL REGULATIONS:

- Carbon Dioxide is subject to the reporting requirements of CFR 29 1910.1000.
- This gas mixture does not contain any Class I or Class II ozone depleting chemicals (40 CFR part 82).
- No component of this gas mixture is subject to the reporting requirements of Section 112(r) of the Clean Air Act.
- The components of this gas mixture are not listed as Regulated Substances, per 40 CFR, Part 68, of the Risk Management for Chemical Releases.
- The regulations of the Process Safety Management of Highly Hazardous Chemicals (29 CFR 1910.119) are not applicable to this gas mixture.

15. REGULATORY INFORMATION (Continued)

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 Dioxide, Helium, Nitrogen.

California - Permissible Exposure Limits for Chemical Contaminants: Carbon Dioxide, Helium.

Florida - Substance List: Carbon Dioxide, Helium, Nitrogen.

Illinois - Toxic Substance List: Carbon Dioxide, Helium.

Kansas - Section 302/313 List: No.

Massachusetts - Substance List: Carbon Dioxide, Helium, Nitrogen.

Michigan - Critical Materials Register: No.
Minnesota - List of Hazardous Substances: Carbon Dioxide, Helium.

Missouri - Employer Information/Toxic Substance List: Carbon Dioxide, Helium.

New Jersey - Right to Know Hazardous Substance List: Carbon Dioxide, Helium, Nitrogen.

North Dakota - List of Hazardous Chemicals, Reportable Quantities: No.

Pennsylvania - Hazardous Substance List: Carbon Dioxide, Helium, Nitrogen.

Rhode Island - Hazardous Substance List: Carbon Dioxide, Helium, Nitrogen.

Texas - Hazardous Substance List: Carbon Dioxide.

West Virginia - Hazardous Substance List: Carbon Dioxide.

Wisconsin - Toxic and Hazardous Substances: Carbon Dioxide.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): The components of this gas mixture are not on the California Proposition 65 lists.

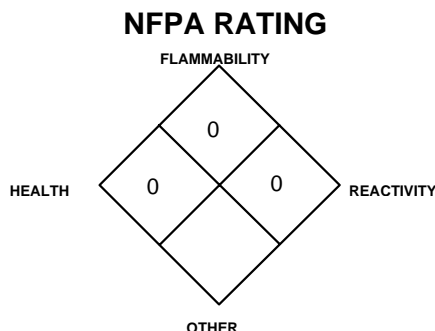
OTHER CANADIAN REGULATIONS:

CANADIAN DSL/NDL INVENTORY STATUS: The components of this mixture are listed on the Canadian DSL Inventory.

CANADIAN WHMIS REGULATIONS: This gas mixture is categorized as a Controlled Product, Hazard Class A as per the Controlled Product Regulations.

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

16. OTHER INFORMATION



HAZARDOUS MATERIAL IDENTIFICATION SYSTEM			
HEALTH	(BLUE)	0	
FLAMMABILITY	(RED)	0	
REACTIVITY	(YELLOW)	0	
PROTECTIVE EQUIPMENT		B	
EYES	RESPIRATORY	HANDS	BODY
See Section 8			
For routine industrial applications			

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.

16. OTHER INFORMATION (Continued)

Further information about gas mixtures can be found in the following pamphlets published by: Compressed Gas Association Inc. (CGA), 4221 Walney Road 5th floor, Chantilly, VA 20151-2923. Telephone: (703) 788-2700.

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.
9163 Chesapeake Drive, San Diego, CA 92123-1002
858/565-0302
Fax on Demand: 1-800/231-1366



This Material Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR, 1910.1200. Other government regulations must be reviewed for applicability to this product. To the best of Air Liquide's knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness are not guaranteed and no warranties of any type, either express or implied, are provided. The information contained herein relates only to this specific product. If this product is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition.