Praxair Material Safety Data Sheet

1. Chemical Product and Company Identification

Product Name: Compressed gases, n.o.s (nitrogen, oxygen), MSDS No. P-4862-E	**Trade Name:** MEDIBLEND Lung Diffusion Mixtures
Chemical Name: Mixtures of acetylene, carbon monoxide, helium, methane, neon, nitrogen, and oxygen	**Synonyms:** Not applicable
Formula: Mixtures of CH_4-CO-N_2-O_2, CO-He-N_2-O_2, C_2H_2-CH_4-CO-He-Ne-N_2-O_2	**Chemical Family:** Not applicable
Telephone: **Emergencies:** 1-800-645-4633* **CHEMTREC:** 1-800-424-9300* **Routine:** 1-800-PRAXAIR	**Company Name:** Praxair, Inc. 39 Old Ridgebury Road Danbury, CT 06810-5113

** Call emergency numbers 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product. For routine information, contact your supplier, Praxair sales representative, or call 1-800-PRAXAIR (1-800-772-9247).*

2. Composition/Information on Ingredients

This section covers materials of manufacture only. For custom mixtures of this product, request an MSDS for each component. See section 16 for important information about mixtures.

INGREDIENT	CAS NUMBER	CONCEN-TRATION	OSHA PEL	ACGIH TLV-TWA
Carbon Monoxide	630-08-0	0-0.4%	50 ppm	25 ppm
Methane	74-82-8	0-0.3%	None currently established	Simple asphyxiant
Acetylene	74-86-2	0-1%	None currently established	Simple asphyxiant
Helium	7440-59-7	0-20%	None currently established	Simple asphyxiant
Neon	7440-01-9	0-2%	None currently established	Simple asphyxiant
Oxygen	7782-44-7	20-23.5%	None currently established	None currently established
Nitrogen	7727-37-9	balance	None currently established	Simple asphyxiant

WARNING: Federal law prohibits dispensing without a prescription. These mixtures are intended only for the calibration of research and clinical apparatus.

3. Hazards Identification

EMERGENCY OVERVIEW

CAUTION! High-pressure gas.
May accelerate combustion.
May cause dizziness and drowsiness.
Self-contained breathing apparatus may be required by rescue workers.
Odor: None

Revised

THRESHOLD LIMIT VALUE: TLV-TWA 25 ppm, carbon monoxide (ACGIH, 1998). TLV-TWAs should be used as a guide in the control of health hazards and not as fine lines between safe and dangerous concentrations.

WARNING: Administration of lung diffusion mixtures may be hazardous or contraindicated. For use only by or under the supervision of a licensed practitioner who is experienced in the use and administration of lung diffusion mixtures and is familiar with the indications, effects, dosage methods, and frequency and duration of administration, and with the hazards, contraindications, and the side effects and the precautions to be taken.

EFFECTS OF A SINGLE (ACUTE) OVEREXPOSURE:

INHALATION–No harm expected.

SKIN CONTACT–No harm expected.

SWALLOWING–No harm expected.

EYE CONTACT–No harm expected.

EFFECTS OF REPEATED (CHRONIC) OVEREXPOSURE: No harm expected.

OTHER EFFECTS OF OVEREXPOSURE: None known.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: The toxicology and the physical and chemical properties of this product suggest that overexposure is unlikely to aggravate existing medical conditions.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION: None known.

CARCINOGENICITY: None of the components of this mixture is listed by NTP, OSHA, or IARC.

4. First Aid Measures

INHALATION: No emergency care anticipated.

SKIN CONTACT: No emergency care anticipated.

SWALLOWING: No emergency care anticipated.

EYE CONTACT: No emergency care anticipated.

***NOTES TO PHYSICIAN*:** *Typical mixtures include 900-1000 ppm CO/21% O_2/balance N_2, 0.285-3.0% CO/21% O_2/balance N_2, 0.38-0.4% CO/0.5% Ne/0.5% C_2H_2 (acetylene)/21% O_2/balance N_2.*

5. Fire Fighting Measures

FLASH POINT (test method)	Not applicable	**AUTOIGNITION TEMPERATURE**	Not applicable	
FLAMMABLE LIMITS IN AIR, % by volume	**LOWER**	Not applicable	**UPPER**	Not applicable

EXTINGUISHING MEDIA: Oxidizing agent; may accelerate combustion. Use media appropriate for surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES: CAUTION! High-pressure gas. Evacuate all personnel from danger area. Immediately deluge cylinders with water from maximum distance until cool,

then move them away from fire area if without risk. On-site fire brigades must comply with OSHA 29 CFR 1910.156.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Oxidizing agent; may accelerate combustion. Contact with flammable materials may cause fire or explosion. Heat of fire can build pressure in cylinder and cause it to rupture. No part of cylinder should be subjected to a temperature higher than 125°F (52°C). Cylinders containing this mixture are equipped with a pressure relief device. (Exceptions may exist where authorized by DOT.)

HAZARDOUS COMBUSTION PRODUCTS: None known.

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Caution! High-pressure gas. Shut off flow if you can do so without risk.

WASTE DISPOSAL METHOD: Prevent waste from contaminating the surrounding environment. Keep personnel away. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, state, and local regulations. If necessary, call your local supplier for assistance.

7. Handling and Storage

PRECAUTIONS TO BE TAKEN IN STORAGE: Store and use with adequate ventilation. Firmly secure cylinders upright to keep them from falling or being knocked over. Screw valve protection cap firmly in place by hand. Store only where temperature will not exceed 125°F (52°C). Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods.

PRECAUTIONS TO BE TAKEN IN HANDLING: Protect cylinders from damage. Use a suitable hand truck to move cylinders; do not drag, roll, slide, or drop. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. Never insert an object (e.g., wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Open valve slowly. If valve is hard to open, discontinue use and contact your supplier. For other precautions in using lung diffusion mixtures, see section 16.

For additional information on storage and handling, refer to Compressed Gas Association (CGA) pamphlet P-1, *Safe Handling of Compressed Gases in Containers*, available from the CGA. Refer to section 16 for the address and phone number along with a list of other available publications.

8. Exposure Controls/Personal Protection

VENTILATION/ENGINEERING CONTROLS:

LOCAL EXHAUST–Preferred.

MECHANICAL (general)–Acceptable.

SPECIAL–None

OTHER–None

RESPIRATORY PROTECTION: None required under normal operations. If product handling can result in exposure to carbon monoxide, air-supplied respirators should be used. Respiratory protection must conform to OSHA rules as specified in 29 CFR 1910.134.

SKIN PROTECTION: Wear work gloves when handling cylinders.

EYE PROTECTION: Wear safety glasses when handling cylinders. Select in accordance with OSHA 29 CFR 1910.133.

OTHER PROTECTIVE EQUIPMENT: Metatarsal shoes for cylinder handling. Select in accordance with OSHA 29 CFR 1910.132 and 1910.133. Regardless of protective equipment, never touch live electrical parts.

9. Physical and Chemical Properties

SPECIFIC GRAVITY (Air = 1) at 70°F (21.1°C) and 1 atm**:**	0.912-0.995
SOLUBILITY IN WATER, vol/vol at 32°F (0°C) and 1 atm**:**	Negligible
PERCENT VOLATILES BY VOLUME:	100

APPEARANCE, ODOR, AND STATE: Colorless, odorless gas at normal temperature and pressure.

10. Stability and Reactivity

STABILITY: ☐ **Unstable** ☒ **Stable**

INCOMPATIBILITY (materials to avoid): Flammable and combustible materials

HAZARDOUS DECOMPOSITION PRODUCTS: None known.

HAZARDOUS POLYMERIZATION: ☐ **May Occur** ☒ **Will Not Occur**

CONDITIONS TO AVOID: None known.

11. Toxicological Information

See section 3.

12. Ecological Information

No adverse ecological effects expected. This mixture does not contain any Class I or Class II ozone-depleting chemicals. None of the components of this mixture is listed as a marine pollutant by DOT.

13. Disposal Considerations

WASTE DISPOSAL METHOD: Do not attempt to dispose of residual or unused quantities. Return cylinder to supplier.

14. Transport Information

DOT/IMO SHIPPING NAME:	Compressed gases, n.o.s. (nitrogen, oxygen)				
HAZARD CLASS:	2.2	**IDENTIFICATION NUMBER:**	UN 1956	**PRODUCT RQ:**	Not applicable
SHIPPING LABEL(s):	NONFLAMMABLE GAS				
PLACARD (when required):	NONFLAMMABLE GAS				

SPECIAL SHIPPING INFORMATION: Cylinders should be transported in a secure position, in a well-ventilated vehicle. Cylinders transported in an enclosed, nonventilated compartment of a vehicle can present serious safety hazards.

Shipment of compressed gas cylinders that have been filled without the owner's consent is a violation of federal law [49 CFR 173.301(b)].

15. Regulatory Information

The following selected regulatory requirements may apply to this product. Not all such requirements are identified. Users of this product are solely responsible for compliance with all applicable federal, state, and local regulations.

U.S. FEDERAL REGULATIONS:

EPA (ENVIRONMENTAL PROTECTION AGENCY)

CERCLA: COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT OF 1980 (40 CFR Parts 117 and 302):

Reportable Quantity (RQ): None

SARA: SUPERFUND AMENDMENT AND REAUTHORIZATION ACT:

SECTIONS 302/304: Require emergency planning based on Threshold Planning Quantity (TPQ) and release reporting based on Reportable Quantities (RQ) of extremely hazardous substances (40 CFR Part 355):

Threshold Planning Quantity (TPQ): None
Extremely Hazardous Substances (40 CFR 355): None

SECTIONS 311/312: Require submission of MSDSs and reporting of chemical inventories with identification of EPA hazard categories. The hazard categories for this product are as follows:

IMMEDIATE: No	**PRESSURE:** Yes
DELAYED: No	**REACTIVITY:** No
	FIRE: No

SECTION 313: Requires submission of annual reports of release of toxic chemicals that appear in 40 CFR Part 372.

None of the components of this mixture requires reporting under Section 313.

40 CFR 68: RISK MANAGEMENT PROGRAM FOR CHEMICAL ACCIDENTAL RELEASE PREVENTION: Requires development and implementation of risk management programs at facilities that manufacture, use, store, or otherwise handle regulated substances in quantities that exceed specified thresholds.

None of the components of this mixture is listed as a regulated substance.

TSCA: TOXIC SUBSTANCES CONTROL ACT: The components of this mixture are listed on the TSCA inventory.

OSHA: OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION**:**

29 CFR 1910.119: PROCESS SAFETY MANAGEMENT OF HIGHLY HAZARDOUS CHEMICALS: Requires facilities to develop a process safety management program based on Threshold Quantities (TQ) of highly hazardous chemicals.

None of the components of this mixture is listed in Appendix A as a highly hazardous chemical.

STATE REGULATIONS:

CALIFORNIA: The carbon monoxide component of this product is listed by California under the SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 (Proposition 65).

WARNING: Carbon monoxide is a chemical known to the State of California to cause birth defects or other reproductive harm.

(California Health and Safety Code §25249.5 et seq.)

PENNSYLVANIA: This product is subject to the PENNSYLVANIA WORKER AND COMMUNITY RIGHT-TO-KNOW ACT (35 P.S. Sections 7301-7320).

16. Other Information

WARNING: For in vitro diagnostic use. Prior to handling this mixture, the physician or clinician must become familiar with the mixture and its hazards.

Be sure to read and understand all labels and instructions supplied with all containers of this product.

OTHER HAZARDOUS CONDITIONS OF HANDLING, STORAGE, AND USE: ***High-pressure gas.*** Use piping and equipment adequately designed to withstand pressures to be encountered. ***May accelerate combustion.*** Store and use away from flammable materials. Keep oil, grease, and combustibles away. Never lubricate valves, regulators, etc., with any combustible substance. ***Store and use with adequate ventilation.*** Close valve after each use; keep closed even when empty. ***Store and use away from flammable material***s. (See section 7.) Never lubricate valves, regulators, etc., with any combustible substance. ***Never work on a pressurized system.*** If there is a leak, close the cylinder valve. Blow the system down in a safe and environmentally sound manner in compliance with all federal, state, and local laws; then repair the leak***. Never allow a compressed gas cylinder to become part of an electrical circuit.*** Electric arcs weaken cylinder metal and can cause catastrophic failure.

NOTE: *Prior to using any plastics, confirm their compatibility with the components of this mixture.*

MIXTURES: When you mix two or more gases or liquefied gases, you can 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 evaluate the end product. Remember, gases and liquids have properties that can cause serious injury or death.

HAZARD RATING SYSTEMS:

NFPA RATINGS:		**HMIS RATINGS:**	
HEALTH	= 0	HEALTH	= 0
FLAMMABILITY	= 0	FLAMMABILITY	= 0
REACTIVITY	= 0	REACTIVITY	= 0
SPECIAL	= None		

STANDARD VALVE CONNECTIONS FOR U.S. AND CANADA:

THREADED:	CGA-500
PIN-INDEXED YOKE:	CGA-973 (medical use only)
ULTRA-HIGH-INTEGRITY CONNECTION:	Not applicable

Use the proper CGA connections. **DO NOT USE ADAPTERS.** Additional limited-standard connections may apply. See CGA pamphlets V-1 and V-7 listed below.

Ask your supplier about free Praxair safety literature as referred to in this MSDS and on the label for this product. Further information about this product can be found in the following pamphlets published by the Compressed Gas Association, Inc. (CGA), 1725 Jefferson Davis Highway, Arlington, VA 22202-4102, Telephone (703) 412-0900.

AV-1	*Safe Handling and Storage of Compressed Gases*
P-1	*Safe Handling of Compressed Gases in Containers*
P-9	*Inert Gases – Neon, Nitrogen, and Helium*
P-14	*Accident Prevention in Oxygen-Rich, Oxygen-Deficient Atmospheres*
SB-2	*Oxygen-Deficient Atmospheres*
V-1	*Compressed Gas Cylinder Valve Inlet and Outlet Connections*
V-7	*Standard Method of Determining Cylinder Valve Outlet Connections for Industrial Gas Mixtures*
—	*Handbook of Compressed Gases, Third Edition*

Praxair asks users of this product to study this MSDS and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this MSDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.

The opinions expressed herein are those of qualified experts within Praxair, Inc. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of use of the product are not within the control of Praxair, Inc., it is the user's obligation to determine the conditions of safe use of the product.

Praxair MSDSs are furnished on sale or delivery by Praxair or the independent distributors and suppliers who package and sell our products. To obtain current Praxair MSDSs for these products, contact your Praxair sales representative or local distributor or supplier. If you have questions regarding Praxair MSDSs, would like the form number and date of the latest MSDS, or would like the names of the Praxair suppliers in your area, phone or write the Praxair Call Center (**Phone:** 1-800-PRAXAIR; **Address:** Praxair Call Center, Praxair, Inc., PO Box 44, Tonawanda, NY 14150-7891).

PRAXAIR

Praxair, Inc.
39 Old Ridgebury Road
Danbury, CT 06810-5113

Printed in USA