

## Praxair Material Safety Data Sheet

### 1. Chemical Product and Company Identification

<b>Product Name:</b> Air, compressed (MSDS No. P-4560-I)	<b>Trade Names:</b> Air, Medipure <sup>®</sup> Air, Plasma Air (for welding)
<b>Chemical Name:</b> Air, mixture of nitrogen and oxygen (mixture of 19.5-23.5% oxygen, balance nitrogen, or air compressed from the atmosphere)	<b>Synonyms:</b> Compressed air, synthetic air, reconstituted air, medical air, medical air USP
<b>Chemical Family:</b> Not applicable.	<b>Product Grades:</b> Compressor-filled industrial, extra dry, breathing grades; synthetic industrial, breathing, ultra zero, VOC free, CEM zero, VE zero, hydrocarbon free, zero grades, extra dry
<b>Telephone:</b>	<b>Company Name:</b> Praxair, Inc.
<b>Emergencies:</b> 1-800-645-4633*	39 Old Ridgebury Road
<b>CHEMTREC:</b> 1-800-424-9300*	Danbury, CT 06810-5113
<b>Routine:</b> 1-800-PRAXAIR	

\*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. Hazards Identification

#### EMERGENCY OVERVIEW

**CAUTION! High-pressure gas.  
May accelerate combustion.**  
**Compressed air is a colorless, odorless, tasteless gas at normal temperature and pressure.**

**OSHA REGULATORY STATUS:** The components of this mixture are considered hazardous by the OSHA Hazard Communications Standard (29 CFR 1910.1200).

#### POTENTIAL HEALTH EFFECTS:

##### Effects of a Single (Acute) Overexposure

**Inhalation.** No harm expected.

**Skin Contact.** No harm expected.

**Swallowing.** This product is a gas at normal temperature and pressure.

**Eye Contact.** No harm expected.

**Effects of Repeated (Chronic) Overexposure.** None known.

**Other Effects of Overexposure.** None known

**Medical Conditions Aggravated by Overexposure.** None known

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

**POTENTIAL ENVIRONMENTAL EFFECTS:** None known. For further information, see section 12, Ecological Information.

### 3. Composition/Information on Ingredients

See section 16 for important information about mixtures.

COMPONENT	CAS NUMBER	CONCENTRATION
Air:	132259-10-0	- - -
Oxygen	7782-44-7	19.5-23.5%
Nitrogen	7727-37-9_	76.5-80.5%

### 4. First Aid Measures

**INHALATION:** No emergency care anticipated.

**SKIN CONTACT:** Flush with water. If discomfort persists, seek medical attention.

**SWALLOWING:** No emergency care anticipated.

**EYE CONTACT:** Flush eyes thoroughly with water. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. If discomfort persists, seek medical attention.

### 5. Fire Fighting Measures

**FLAMMABLE PROPERTIES:** Oxidizing agent; may accelerate combustion.

**SUITABLE EXTINGUISHING MEDIA:** Air cannot catch fire. Use media appropriate for surrounding fire.

**PRODUCTS OF COMBUSTION:** Not applicable.

**PROTECTION OF FIREFIGHTERS: 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.

**Specific Physical and Chemical Hazards.** 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). Compressed air cylinders are equipped with a pressure relief device. (Exceptions may exist where authorized by DOT.)

**Protective Equipment and Precautions for Firefighters.** Firefighters should wear personal protective equipment and fire-fighting turnout gear as appropriate for surrounding fire.

### 6. Accidental Release Measures

**STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:**

**CAUTION! High-pressure gas.**

**Personal Precautions.** Shut off flow if without risk.

**Environmental Precautions.** 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 HANDLING: May accelerate combustion.** Keep oil and grease away. **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. Close valve after each use; keep closed even when empty. For other precautions in using air, see section 16.

**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.

**RECOMMENDED PUBLICATIONS:** For further information on storage, handling, and use, see Praxair publication P-14-153, *Guidelines for Handling Gas Cylinders and Containers*. Obtain from your local supplier.

## 8. Exposure Controls/Personal Protection

**This section covers materials of manufacture only. See sections 11, 15, and 16 for information on by-products generated during use, especially use in welding and cutting.**

COMPONENT	OSHA PEL	ACGIH TLV-TWA (2006)
Oxygen	N.E.*	N.E.*
Nitrogen	N.E.*	Simple asphyxiant

\*N.E.—Not Established.

IDLH = None established.

### ENGINEERING CONTROLS:

**Local Exhaust.** Not applicable.

**Mechanical (General).** Adequate.

**Special.** Not applicable.

**Other.** Not applicable.

### PERSONAL PROTECTIVE EQUIPMENT:

**Skin Protection.** Wear work gloves and metatarsal shoes for cylinder handling. Select shoes in accordance with OSHA 29CFR 1910.132 and 1910.133. For welding, see section 16. Regardless of protective equipment, never touch live electrical parts.

**Eye/Face Protection.** Wear safety glasses when handling cylinders. Select per OSHA 29 CFR 1910.33.

**Respiratory Protection.** Not required.

### 9. Physical and Chemical Properties

<b>APPEARANCE:</b>	Colorless gas
<b>ODOR:</b>	None
<b>ODOR THRESHOLD:</b>	Not applicable.
<b>PHYSICAL STATE:</b>	Gas at normal temperature and pressure
<b>pH:</b>	Not applicable.
<b>FREEZING POINT</b> at 1 atm:	-357.2°F (-216.2°C)
<b>BOILING POINT</b> at 1 atm:	-317.8°F (-194.3°C)
<b>FLASH POINT</b> (test method):	Not applicable.
<b>EVAPORATION RATE</b> (Butyl Acetate = 1):	Not applicable.
<b>FLAMMABILITY:</b>	Nonflammable
<b>FLAMMABLE LIMITS IN AIR</b> , % by volume:	<b>LOWER:</b> Not applicable. <b>UPPER:</b> Not applicable.
<b>VAPOR PRESSURE:</b>	Not applicable.
<b>GAS DENSITY</b> at 70°F (21.1°C) and 1 atm:	0.07493 lb/ft <sup>3</sup> (1.2000 kg/m <sup>3</sup> )
<b>SPECIFIC GRAVITY</b> (Air = 1) at 70°F (21.1°C) and 1 atm:	1.00
<b>SOLUBILITY IN WATER</b> vol/vol at 32°F (0°C) and 1 atm:	0.0292%
<b>PARTITION COEFFICIENT: n-octanol/water:</b>	Not available.
<b>AUTOIGNITION TEMPERATURE:</b>	Not applicable.
<b>DECOMPOSITION TEMPERATURE:</b>	None
<b>PERCENT VOLATILES BY VOLUME:</b>	100
<b>MOLECULAR WEIGHT:</b>	28.975
<b>MOLECULAR FORMULA:</b>	Mixture of N <sub>2</sub> & O <sub>2</sub>

### 10. Stability and Reactivity

**CHEMICAL STABILITY:**     Unstable     Stable

**CONDITIONS TO AVOID:** None known.

**INCOMPATIBLE MATERIALS:** Flammable and combustible materials.

**HAZARDOUS DECOMPOSITION PRODUCTS:** None known.

**POSSIBILITY OF HAZARDOUS REACTIONS:**     May Occur     Will Not Occur

### 11. Toxicological Information

**ACUTE DOSE EFFECTS:** Not applicable. The welding process may generate hazardous fumes and gases. (See section 16.)

**STUDY RESULTS:** None known.

### 12. Ecological Information

**ECOTOXICITY:** No adverse ecological effects expected.

**OTHER ADVERSE EFFECTS:** Air does not contain any Class I or Class II ozone-depleting chemicals.

### 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:** Air, compressed

HAZARD CLASS:	PACKING GROUP/Zone:	IDENTIFICATION NUMBER:	PRODUCT RQ:
2.2	Not applicable.	UN1002	None

**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)].

**MARINE POLLUTANTS:** Neither component of air is listed as a marine pollutant by DOT.

### 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 (EHS) (40 CFR Part 355):

**TPQ:** None

**EHS RQ (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

**DELAYED:** No

**PRESSURE:** Yes

**REACTIVITY:** No

**FIRE:** No

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

Neither component of air is subject to 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.

Neither component of air is listed as a regulated substance.

**TSCA:** TOXIC SUBSTANCES CONTROL ACT: Both components 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.

Neither component is listed in Appendix A as a highly hazardous chemical.

#### STATE REGULATIONS:

**CALIFORNIA:** Neither component is listed by California under the SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 (Proposition 65).

**WARNING:** The combustion of this gas produces carbon monoxide—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:** Both components are subject to the PENNSYLVANIA WORKER AND COMMUNITY RIGHT-TO-KNOW ACT (35 P.S. Sections 7301-7320).

### 16. Other Information

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. **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 place a compressed gas cylinder where it may become part of an electrical circuit.** When using compressed gases in and around electric welding applications, never ground the cylinders. Grounding exposes the cylinders to damage by the electric welding arc.

**SPECIAL PRECAUTIONS:** *Use in welding and cutting.* Read and understand the manufacturer's instructions and the precautionary label on the product. Ask your welding products supplier for a copy of Praxair's free safety booklet, P-2035, *Precautions and Safe Practices for Gas Welding, Cutting, and Heating*, and for other manufacturers' safety publications. For a detailed treatment, see ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes*, published by the American Welding Society, or see OSHA's Web site at <http://www.osha-slc.gov/SLTC/weldingcuttingbrazing/>.

**Arcs and sparks can ignite combustible materials.** Prevent fires. For more information, see NFPA 51B, *Standard for Fire Prevention During Welding, Cutting, and Other Hotwork*, published by the National Fire Protection Association. **Do not strike an arc on the cylinder.** The defect produced by an arc burn could lead to cylinder rupture.

**Use in Underwater Breathing.** Suitability of this product for use in underwater breathing must be determined by or under supervision of someone experienced in the use of underwater breathing gas mixtures. This person must be familiar with *how* the product is used; the

frequency, duration, and effects of use; the hazards and side effects of use, and the precautions to take to avoid or control them.

**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:

HEALTH = 0  
 FLAMMABILITY = 0  
 INSTABILITY = 0  
 SPECIAL = None

##### HMIS RATINGS:

HEALTH = 0  
 FLAMMABILITY = 0  
 PHYSICAL HAZARD = 3

#### STANDARD VALVE CONNECTIONS FOR U.S. AND CANADA:

**THREADED:**

0-3000 psig	CGA-590
3001-5500 psig	CGA-347
5001-7500 psig	CGA-702

**PIN-INDEXED YOKE:** 0-3000 psig CGA-950

**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, V-7, and V-7.1 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 can be found in the following materials published by the Compressed Gas Association, Inc. (CGA), 4221 Walney Road, 5<sup>th</sup> Floor, Chantilly, VA 20151-2923, Telephone (703) 788-2700, <http://www.cganet.com/Publication.asp>.

AV-1	<i>Safe Handling and Storage of Compressed Gases</i>
G-7	<i>Compressed Air for Human Respiration</i>
G-7.1	<i>Commodity Specification</i>
P-1	<i>Safe Handling of Compressed Gases in Containers</i>
V-1	<i>Compressed Gas Cylinder Valve Inlet and Outlet Connections</i>
V-7	<i>Standard Method of Determining Cylinder Valve Outlet Connections for Industrial Gas Mixtures</i>
V-7.1	<i>Standard Method Of Determining Cylinder Valve Outlet Connections For Medical Gases</i>
—	<i>Handbook of Compressed Gases, Fourth Edition</i>

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 MSDSs for these products, contact your Praxair sales representative or local distributor or supplier, or download from [www.praxair.com](http://www.praxair.com). 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 14151-0044).

*Praxair*, the *Flowing Airstream* design, and *Medipure* are trademarks or registered trademarks of Praxair Technology, Inc. in the United States and/or other countries.



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