

Material Safety Data Sheet

1. Chemical Product and Company Identification

Product Name: Air, compressed (MSDS No. P-4560-G)		Trade Name: Air, Plasma Air (for welding)
Chemical Name: Air, mixture of nitrogen and oxygen		Synonyms: Compressed air, synthetic air, reconstituted air, medical air, air USP
Formula: Mixture of N ₂ and O ₂		Chemical Family: Not applicable
Telephone:	Emergencies: 1-800-645-4633* PERS: 1-800-633-8253*	Company Name: Alliance Gas Products 2001-F Peralta Street Oakland, CA 94607

* Call emergency numbers 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product. For routine information, contact your supplier.

2. Composition/Information on Ingredients

This section covers materials of manufacture only. See sections 3, 10, 11, 15, and 16 for information on by-products generated during use, especially use in welding and cutting.

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

INGREDIENT	CAS NUMBER	CONCENTRATION	OSHA PEL	ACGIH TLV-TWA
Air:	132259-10-0	---	None currently established	None currently established
Oxygen	7782-44-7	19.5-23.5%	None currently established	None currently established
Nitrogen	7727-37-9	76.5-80.5%	None currently established	Simple asphyxiant

3. Hazards Identification

EMERGENCY OVERVIEW

CAUTION! High-pressure gas.

Odor: None

THRESHOLD LIMIT VALUE: TLV-TWA, simple asphyxiant (nitrogen component, ACGIH, 1998). ACGIH recommends a TLV-TWA of 5 mg/m³ for welding fumes not otherwise classified (NOC) that may be generated during welding with this product. TLV-TWAs should be used as a guide in the control of health hazards and not as fine lines between safe and dangerous concentrations.

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.**SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION:** None known.**CARCINOGENICITY:** None of the components of this product 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.**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). Compressed air cylinders 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 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 air, 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—Not applicable

MECHANICAL (general)—Adequate

SPECIAL—Not applicable

OTHER—Not applicable

RESPIRATORY PROTECTION: Not required

SKIN PROTECTION: Wear work gloves for cylinder handling.

EYE PROTECTION: Wear safety glasses when handling cylinders. Select as per OSHA 29 CFR 1910.33.

OTHER PROTECTIVE EQUIPMENT: Metatarsal shoes for cylinder handling. Select in accordance with OSHA 29CFR 1910.132 and 1910.133. For welding, see section 16. Regardless of protective equipment, never touch live electrical parts.

9. Physical and Chemical Properties

MOLECULAR WEIGHT (formula weight):	28.975
SPECIFIC GRAVITY (Air = 1) at 70°F (21.1°C) and 1 atm:	1.00
GAS DENSITY at 70°F (21.1°C) and 1 atm:	0.07493 lb/ft ³ (1.2000 kg/m ³)
SOLUBILITY IN WATER, vol/vol at 32°F (0°C) and 1 atm:	0.0292
PERCENT VOLATILES BY VOLUME:	100
EVAPORATION RATE (Butyl Acetate = 1):	High
BOILING POINT at 1 atm:	-317.8°F (-194.3°C)
FREEZING POINT at 1 atm:	-357.2°F (-216.2°C)

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

10. Stability and Reactivity

STABILITY:	<input type="checkbox"/> Unstable	<input checked="" type="checkbox"/> Stable
INCOMPATIBILITY (materials to avoid):	Flammable and combustible materials	
HAZARDOUS DECOMPOSITION PRODUCTS:	None known.	
HAZARDOUS POLYMERIZATION:	<input type="checkbox"/> May Occur	<input checked="" type="checkbox"/> Will Not Occur
CONDITIONS TO AVOID:	See section 16.	

11. Toxicological Information

The welding process may generate hazardous fumes and gases. (See sections 3, 15, and 16.)

12. Ecological Information

No adverse ecological effects expected. Air does not contain any Class I or Class II ozone-depleting chemicals. Neither component of air 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:	Air, compressed		
HAZARD CLASS:	2.2	IDENTIFICATION NUMBER:	UN 1002
SHIPPING LABEL(s):	NONFLAMMABLE GAS		
PLACARD (when required):	NONFLAMMABLE GAS		
		PRODUCT RQ:	Not applicable

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.

Neither of the components of air 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.

Neither of the components of air is listed as a regulated substance.

TSCA: TOXIC SUBSTANCES CONTROL ACT: This product is 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 of the components of air is listed in Appendix A as a highly hazardous chemical.

STATE REGULATIONS:

CALIFORNIA: None of the components of this mixture 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: This product is 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. *May accelerate combustion.* Keep oil and grease away. *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, get 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, get 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
 REACTIVITY = 0
 SPECIAL = None

HMIS RATINGS:

HEALTH = 0
 FLAMMABILITY = 0
 REACTIVITY = 0

STANDARD VALVE CONNECTIONS FOR U.S. AND CANADA:**THREADED:**

0-3000psig CGA-346 standard; CGA-590
 limited standard for industrial air
 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 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*
- G-7 *Compressed Air for Human Respiration*
- G-7.1 *Commodity Specification for Air*
- P-1 *Safe Handling of Compressed Gases in Containers*
- V-1 *Compressed Gas Cylinder Valve Inlet and Outlet Connections*
- V-7 *Standard Method of Determining Cylinder Valve Outlet Connections for Industrial Gas Mixtures*
- V-7.1 *Standard Method Of Determining Cylinder Valve Outlet Connections For Medical Gases*
- *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.

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