

Product: Mixtures of Argon and  
At Least 10% Carbon Dioxide

P-4715-F

Date: May 1999

---

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, the FLOWING AIRSTREAM design, and STARGOLD are trademarks or registered trademarks of Praxair Technology, Inc. in the United States and other countries.



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

Product: Mixtures of Argon and  
At Least 10% Carbon Dioxide

P-4715-F

Date: May 1999

*asphyxiation, and death. Acute overexposure may include signs and symptoms such as watery eyes, nose and throat irritation, headache, dizziness, difficulty breathing, frequent coughing, or chest pains.*

*Chronic: Protracted inhalation of air contaminants may lead to their accumulation in the lungs, a condition that may be seen as dense areas on chest x-rays. The severity of change is proportional to the length of exposure. The changes seen are not necessarily associated with symptoms or signs of reduced lung function or disease. In addition, the changes on x-rays may be caused by non-work-related factors such as smoking, etc.*

#### **PROTECTIVE CLOTHING AND EQUIPMENT FOR WELDING OPERATIONS:**

**PROTECTIVE GLOVES:** Wear welding gloves.

**EYE PROTECTION:** Wear a helmet or use a face shield with a filter lens. Select lens per ANSI Z49.1. Provide protective screens and flash goggles if needed to protect others; select per OSHA 29 CFR 1910.133.

**OTHER PROTECTIVE EQUIPMENT:** Wear hand, head, and body protection. (See ANSI Z49.1.) Worn as needed, these help prevent injury from radiation, sparks, and electrical shock. Minimum protection includes welder's gloves and a face shield. For added protection, consider arm protectors, aprons, hats, shoulder protection, and dark, substantial clothing.

**OTHER HAZARDOUS CONDITIONS OF HANDLING, STORAGE, AND USE:** *High-pressure gas.* Use piping and equipment adequately designed to withstand pressures to be encountered. *Can cause rapid suffocation due to oxygen deficiency.* Store and use with adequate ventilation. Close cylinder valve after each use; keep closed even when empty. *Arcs and sparks can ignite combustible materials.* Prevent fires. For more information on fire prevention in welding and cutting, 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. *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.

**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 = 1  
FLAMMABILITY = 0  
REACTIVITY = 0  
SPECIAL = None

##### **HMIS RATINGS:**

HEALTH = 0  
FLAMMABILITY = 0  
REACTIVITY = 0

Product: Mixtures of Argon and  
At Least 10% Carbon Dioxide

P-4715-F

Date: May 1999

**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:** Yes

**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 component 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.

Neither component of this mixture is listed as a regulated substance.

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

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

### 8. Exposure Controls/Personal Protection

#### VENTILATION/ENGINEERING CONTROLS:

**LOCAL EXHAUST**—Preferred. Use a local exhaust system, if necessary, to prevent oxygen deficiency and to keep hazardous fumes and gases below applicable TLVs in the worker's breathing zone.

**MECHANICAL (general)**—General exhaust ventilation may be acceptable if it can maintain an adequate supply of air and keep hazardous fumes and gases below the applicable TLVs in the worker's breathing zone.

**SPECIAL**—None

**OTHER**—None

**RESPIRATORY PROTECTION:** Use air-purifying or air-supplied respirators, as appropriate, where local or general exhaust ventilation is inadequate. Adequate ventilation must keep worker exposure below applicable TLVs for fumes, gases and other by-products of welding with this mixture. See sections 3, 10, 15, and 16 for details. An air-supplied respirator must be used in confined spaces. Respiratory protection must conform to OSHA rules as specified in 29 CFR 1910.134.

**SKIN PROTECTION:** Wear work gloves for cylinder handling, welding gloves for welding and cutting.

**EYE PROTECTION:** Wear safety glasses when handling cylinders. For welding, see section 16.

**OTHER PROTECTIVE EQUIPMENT:** Metatarsal shoes for cylinder handling. Select in accordance with OSHA 29 CFR 1910.132 and 1910.133. For welding, see section 16. 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: 1.39-1.45

**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):** Alkali metals, alkaline earth metals, metal acetylides, chromium, titanium above 1022°F (550°C), uranium above 1382°F (750°C), magnesium above 1427°F (775°C).

**HAZARDOUS DECOMPOSITION PRODUCTS:** The arc may form gaseous reaction products such as carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc. See section 16. Other decomposition products of normal operation originate from the volatilization, reaction, or oxidation of the material being worked.

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

**CONDITIONS TO AVOID:** None known.

Product: Mixtures of Argon and P-4715-F  
At Least 10% Carbon Dioxide

Date: May 1999

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**—Asphyxiant. Effects are due to lack of oxygen. The carbon dioxide component is also physiologically active, affecting circulation and breathing. Moderate concentrations may cause headache, drowsiness, dizziness, stinging of the nose and throat, excitation, rapid breathing and heart rate, excess salivation, vomiting, and unconsciousness. Lack of oxygen can kill.

**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:** No harm expected.

**OTHER EFFECTS OF OVEREXPOSURE:** Possible damage to retinal ganglion cells and central nervous system.

**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:** A single study has shown an increase in heart defects in rats exposed to 6% carbon dioxide in air for 24 hours at different times during gestation. There is no evidence that carbon dioxide is teratogenic in humans.

**CARCINOGENICITY:** Neither component of this mixture is listed by NTP, OSHA, or IARC.

**4. First Aid Measures**

**INHALATION:** Immediately remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, qualified personnel may give oxygen. Call a physician.

**SKIN CONTACT:** Wash with soap and water. If irritation persists, seek medical attention.

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

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

**NOTES TO PHYSICIAN:** *There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.*

**5. Fire Fighting Measures**

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

**EXTINGUISHING MEDIA:** This mixture cannot catch fire. Use media appropriate for surrounding fire.