

1. Chemical Product and Company Identification

Product name : Argon (compressed argon gas)
 Supplier : Leland Limited, Inc.
 2614 South Clinton Ave.
 South Plainfield, NJ 07080
 1-908-668-1008 (9-5 EST)
 Emergency calls : 1-800-424-9300 (Domestic)
 (CHEMTREC) 1-703-527-3887 (International)

2. Hazards Identification

EMERGENCY OVERVIEW
CAUTION! High-pressure gas.
Can cause rapid suffocation.
May cause dizziness and drowsiness.
Self-contained breathing apparatus may
be required by rescue workers.
Odor: None

Threshold Limit Value : Simple asphyxiant. No occupational exposure limits have been established for this material.

Effects of a Single (acute) Overexposure : **Inhalation** - Asphyxiant. Effects are due to lack of oxygen. Moderate concentrations may cause headache, drowsiness, dizziness, 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 : Argon is an asphyxiant. Lack of oxygen can kill.

Medical Conditions Aggravated by Overexposure : The toxicology and the physical and chemical properties of argon suggest that overexposure is unlikely to aggravate existing medical conditions.

Significant Laboratory Data with Possible Relevance to Human Health Hazard Evaluation : None known.

Carcinogenicity : Argon is not listed by NTP, OSHA, or IARC.

3. Composition, Information on Ingredients

Argon is non-toxic, non-flammable and heavier than air.

Single or Mixed : Single
 Chemical Name : Argon
 Content (vol%) : 99.0 or more
 Chemical Formula : Ar
 CAS Number : 7440-37-1

OSHA PEL : Non currently established
ACGIH TLV-TWA : Simple asphyxiant

4. First Aid Measures

No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Inhalation : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel.
Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Skin Contact : Argon is harmless at atmospheric pressure. Flush with water.
Frostbite : Try to warm up the frozen tissues and seek medical attention.
Eye Contact : Argon is harmless at atmospheric pressure.
Direct spray may cause irritation. In case of irritation, check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

Swallowing : Not applicable

Protective Measures before starting First Aid : In an Argon leak, Oxygen concentration may be low. Before attempting first aid, ventilate the area thoroughly or wear a respirator.

Notes to Physician : There is no specific antidote. This product is inert. Treatment of overexposure should be directed at the control of symptoms and the clinical condition.

5. Fire Fighting Measures

Flammability of the Product : Non-flammable

Extinguishing Media : Argon cannot catch fire. Use extinguishing media for surrounding fire. If possible, cool cylinders with water.

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. Self-contained breathing apparatus may be required by rescue workers. On-site fire brigades must comply with OSHA 29 CFR 1910.156.

Unusual Fire and Explosion Hazards : Argon cannot catch fire. Heat of fire can build pressure in cylinder and cause it to rupture. *Recommended storage temperature: 0 °C to +40 °C.*

Hazardous Combustion products : None known.

6. Accidental Release Measures

- Steps to be taken if Material is Released or Spilled : **CAUTION! High-pressure gas.** Argon is an asphyxiant. Lack of oxygen can kill. Evacuate all personnel from danger area. Use self-contained breathing apparatus where needed. Shut off flow if without risk.
 Ventilate area or move cylinder to a well-ventilated area. Test for sufficient oxygen, especially in confined spaces, before allowing reentry.
- Protectors : If necessary, wear a respirator.
 If oxygen concentration is low, do not enter the area unprotected.
- Environmental Affects : Argon gas does not adversely affect the environment.
- Waste Disposal Method : 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 disposal authority for assistance.

7. Handling and Storage

- Handling : Protection of argon gas users
Suffocation
 Where large amounts of argon gas are used, ensure sufficient ventilation.
Handling of argon gas cylinders
 Handle argon gas cylinders carefully.
 Before using argon gas, confirm the name of the gas by checking the mark or the other items on the cylinder.
 Feed gas via a pressure regulator, not directly.
 Use only specialized pressure regulators for argon.
 Before connecting a pressure regulator, check the thread type.
 Before using a gas cylinder, check the pressure regulator, hoses, pipes, joints, etc., for leakage.
 Do not refill cylinders.
 Do not modify or erase marks or other items on cylinders. Do not peel off labels on cylinders.
 Do not use gas cylinders in electric circuits.
 Do not use burners or the like to directly heat the cylinder.
 Avoid compressed argon gas discharge.
Others
 Do not use argon gas in place of compressed air.
Fire or Explosion Prevention
 Argon is Non Flammable. No special measures are needed.
Dust Prevention
 No special measures are needed.
- Storage : Chemical substances that should not be mixed with argon: None
Storage Conditions
 Keep argon away from fire and spark sources.
 Do not store cylinders near electric lines or grounding.
 Store cylinders in a dry and well ventilated area.
 Keep cylinders away from corrosive fluid.

Keep cylinders away from direct sunlight at an ambient temperature of 0 to 40 °C (32 to 104 °F).
Do not expose cylinders to rough handling or falling.
Control oxygen concentration in storage areas at 18 vol% or more.

8. Exposure Controls and Personal Protection

- Engineering Controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- Personal Protection
- Eyes : To protect eyes, wear goggles/safety glasses.
- Respiratory Protection : Use air-purifying or air-supplied respirators, as appropriate, where local or general exhaust ventilation is inadequate during a release of gas. Adequate ventilation must keep worker exposure below applicable TLVs and ensure greater than 19.5% oxygen is present. An air-supplied respirator must be used in confined spaces. Respiratory protection must conform to OSHA rules as specified in 29 CFR 1910.134.
- Hands : When handling argon gas cylinders, wear leather gloves.
- Skin and Body : Not needed.
- Other : Protective equipment for cylinder handling, select in accordance with OSHA 29 CFR 1910.132 and 1910.133.

9. Physical and Chemical Properties

- Physical state : Gas at normal temperature and pressure
- Color : Colorless
- Odor : Odorless
- Explosiveness : Non-flammable
- Molecular Weight : 39.95 g/mole
- Boiling/condensation point : -185.7 °C (-302.3 °F)
- Melting/freezing point : -189.2 °C (-308.6 °F)
- Gas Density : 1.78 kg/m³ (@ 0 °C, 0.1013MPa (1 atm))
- Vapor Density : 1.38 (Air=1, 25 °C, 0.1013MPa (1 atm))
- Vapor Pressure : Not applicable @20 °C (68 °F)
- Solubility in water : 3.37 ml in 100 ml of water @ 20 °C (68 °F)

10. Stability and Reactivity

- Stability and Reactivity : This product is stable.
- Hazardous Decomposition Products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.
- Hazardous Polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.
- Conditions to Avoid : None currently known.

11. Toxicological Information

Acute toxicity : No known toxicological effects from this product.
 Inhalation : Inhalation:
 Will not cause acute toxicity.

| Oxygen concentration(vol%) | Effect |
|----------------------------|--|
| Less than 18 | Initial stage of anoxia |
| 16 - 12 | Pulse may be quick and breathing rapid. Concentration is poor. Detailed work becomes impossible. Headaches may occur. |
| 10 - 6 | Loss of consciousness may occur. You are the central nervous system may be damaged. Convulsions, coma, and suffocation may occur followed by loss of heartbeat 6 to 8 minutes later. |
| Less than 6 | If oxygen concentration is extremely low, immediate unconsciousness may occur, causing coma, breathing loss, and convulsions Followed 6 minutes later by death. |

Local Physical Effects on Skin, Eyes, etc. : None
 Sensitization : None
 Chronic or Long-term Toxicity : None

12. Ecological Information

General : No known ecological damage caused by this product.
 Toxicity in Fish : Argon is not specified as a Class 1 or Class 2 specific chemical substance or specified chemical substance in the Law on the Examination and Regulation of Manufacture, etc., of Chemical Substances.
 Distribution Coefficient : Argon is not specified as a Class 1 or Class 2 specific chemical substance or specified chemical substance in the Law on the Examination and Regulation of Manufacture, etc., of Chemical Substances.

13. Disposal Considerations

Discharge of Argon Gas : Gradually release in open air.
 Disposal of Cylinders : If gas remains in cylinders, release gas with proper equipment and dispose of cylinders as incombustible waste.
 For empty cylinders, check for a puncture hole and dispose of as incombustible waste.
 Do not dispose of cylinders without first checking that all gas has been released.

14. Transport Information

DOT / IMO Shipping Name : Argon, compressed
Identification Number : UN 1006
Shipping Label(s) : Nonflammable gas
Hazard Class : 2.2
Placard (When required) : Nonflammable gas
Special Shipping Information : See CFR 49, 172.101, 173.306 for exceptions of labeling.

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 Material Safety Data Sheet (MSDSs) and chemical inventory reporting with identification of EPA hazard categories. The hazard categories for this products are as follows:

IMMEDIATE: No

PRESSURE: Yes

DELAYED: No

REACTIVITY: No

FIRE: No

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

Argon does not require 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.

Argon is not listed as a regulated substance.

TSCA: Toxic Substances Control Act: Argon is listed on the TSCA inventory applicable in some states.

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.

Argon is not listed in Appendix A as a highly Hazardous chemical.

State Regulations : **California:** This product is **not** listed by California under the Safe Drinking Water Toxic Enforcement Act of 1986 (Proposition 65).
Pennsylvania: This product is subject to the Pennsylvania Worker and Community Right-To-Know Act (35 P.S. Sections 7301-7320).

16. Other Information

Hazard Rating Systems

: **NFPA Ratings**

Health = 0
 Flammability = 0
 Reactivity = 0
 Special = SA*

HMIS Ratings

Health = 0
 Flammability = 0
 Reactivity = 0

*(CGA recommends this rating to designate Simple Asphyxiant.)

Notice to reader : This Material Safety Data Sheet (MSDS) is prepared based on the latest materials and data. It may be subject to change when new data is obtained. The MSDS state precautions assuming that the product is used under normal conditions. Uses under special conditions should take these conditions into account to ensure safety. While the MSDS has been prepared as comprehensively as possible, we cannot guarantee its applicability or effectiveness under all possible conditions or applications.