



HELIUM

(Air Products and Chemicals, Inc.)

MATERIAL SAFETY DATA SHEET

Atmospheric Gross Leak - VARIAN P/N L6839301
Calibrated Helium Leaks - VARIAN P/N's F8473320, F8473301, F8473302, F8473303, F8473304, K3264301, K3264302
Helium Lecture Bottle Kit - VARIAN P/N L8856301

DISTRIBUTED BY:

VARIAN VACUUM TECHNOLOGIES
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MATERIAL SAFETY DATA SHEET

SECTION 1. PRODUCT IDENTIFICATION

PRODUCT NAME: Helium, compressed
CHEMICAL NAME: Helium
FORMULA: He
SYNONYMS: Helium gas, Gaseous helium, Balloon gas
MANUFACTURER: Air Products and Chemicals, Inc.
7201 Hamilton Boulevard
Allentown, PA 18195-1501
PRODUCT INFORMATION: 1-800-752-1597
MSDS NUMBER: 1008 **REVISION:** 4
REVISION DATE: March 1994 **REVIEW DATE:** August 1997 **

SECTION 2. COMPOSITION / INFORMATION ON INGREDIENTS

Helium is sold as pure product > 99%.

CAS NUMBER: 7440-59-7

EXPOSURE LIMITS:

OSHA: Not established **ACGIH:** Simple asphyxiant **NIOSH:** Not established

SECTION 3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW

Helium is a nontoxic, odorless, colorless, nonflammable gas stored in cylinders at high pressure. It can cause rapid suffocation when concentrations are sufficient to reduce oxygen levels below 19.5%. It is lighter than air and may collect in high points or along ceilings. Self-Contained Breathing Apparatus (SCBA) may be required by rescue workers.

EMERGENCY TELEPHONE NUMBERS

800 - 523 - 9374 Continental U.S., Canada and Puerto Rico
610 - 481 - 7711 other locations

POTENTIAL HEALTH EFFECTS:

INHALATION: Simple asphyxiant. Helium is nontoxic, but may cause suffocation by displacing the oxygen in air. Lack of sufficient oxygen can cause serious injury or death.

EYE CONTACT: No adverse effect.

SKIN CONTACT: No adverse effect.

EXPOSURE INFORMATION:**ROUTE OF ENTRY:** Inhalation**TARGET ORGANS:** None**EFFECT:** Asphyxiation (suffocation)**SYMPTOMS:** Exposure to an oxygen deficient atmosphere (less than 19.5%) may cause dizziness, drowsiness, nausea, vomiting, excess salivation, diminished mental alertness, loss of consciousness and death. Exposure to atmospheres containing 8-10% or less oxygen will bring about unconsciousness without warning and so quickly that the individuals cannot help or protect themselves.**MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:** None**CARCINOGENIC POTENTIAL:** Helium is not listed as a carcinogen or potential carcinogen by NTP, IARC, or OSHA Subpart Z.**WARNING**

The practice of intentionally inhaling helium for a voice altering effect is extremely dangerous and may result in serious injury or death!

SECTION 4. FIRST AID**INHALATION:** Persons suffering from lack of oxygen should be moved to fresh air. If victim is not breathing, administer artificial respiration. If breathing is difficult, administer oxygen. Obtain prompt medical attention.**EYE / SKIN CONTACT:** Not applicable**SECTION 5. FIRE AND EXPLOSION****FLASH POINT:**

Not applicable

AUTOIGNITION:

Nonflammable

FLAMMABLE LIMITS:

Nonflammable

EXTINGUISHING MEDIA: Helium is nonflammable and does not support combustion. Use extinguishing media appropriate for the surrounding fire.**HAZARDOUS COMBUSTION PRODUCTS:** None**SPECIAL FIRE FIGHTING INSTRUCTIONS:** Helium is a simple asphyxiant. If possible, remove helium cylinders from fire area or cool with water. Self contained breathing apparatus may be required for rescue workers.**UNUSUAL FIRE AND EXPLOSION HAZARDS:** Upon exposure to intense heat or flame cylinder will vent rapidly and or rupture violently. Most cylinders are designed to vent contents when exposed to elevated temperatures. Pressure in a container can build up due to heat and it may rupture if pressure relief devices should fail to function.**SECTION 6. ACCIDENTAL RELEASE MEASURES**

Evacuate all personnel from affected area. Increase ventilation to release area and monitor oxygen level. Use appropriate protective equipment (SCBA). If leak is from container or it's valve, call the Air Products' emergency telephone number. If leak is in user's system close cylinder valve and vent pressure before attempting repairs.

SECTION 7. STORAGE AND HANDLING**STORAGE:** Cylinders should be stored upright in a well-ventilated, secure area, protected from the weather. Storage area temperatures should not exceed 125 °F (52 °C) and area should be free of

combustible materials. Storage should be away from heavily traveled areas and emergency exits. Avoid areas where salt or other corrosive materials are present. Valve protection caps and valve outlet seals should remain on cylinders not connected for use. Separate full from empty cylinders. Avoid excessive inventory and storage time. Use a first-in first-out system. Keep good inventory records.

HANDLING: Do not drag, roll, or slide cylinder. Use a suitable handtruck designed for cylinder movement. Never attempt to lift a cylinder by its cap. Secure cylinders at all times while in use. Use a pressure reducing regulator or separate control valve to safely discharge gas from cylinder. Use a check valve to prevent reverse flow into cylinder. Do not overheat cylinder to increase pressure or discharge rate. If user experiences any difficulty operating cylinder valve, discontinue use and contact supplier. Never insert an object (e.g., wrench, screwdriver, pry bar, etc.) into valve cap openings. Doing so may damage valve causing a leak to occur. Use an adjustable strap-wrench to remove over-tight or rusted caps.

Helium is compatible with all common materials of construction. Pressure requirements should be considered when selecting materials and designing systems.

SPECIAL REQUIREMENTS: Always store and handle compressed gases in accordance with Compressed Gas Association, Inc. (ph. 703-412-0900) pamphlet CGA P-1, *Safe Handling of Compressed Gases in Containers*. Local regulations may require specific equipment for storage or use.

CAUTION: Compressed gas cylinders shall not be refilled except by qualified producers of compressed gases. Shipment of a cylinder which has not been filled by the owner or with the owner's written consent is a violation of federal law.

SECTION 8. PERSONAL PROTECTION / EXPOSURE CONTROL

ENGINEERING CONTROLS: Provide good ventilation and/or local exhaust to prevent accumulation of high concentrations of gas. Oxygen levels in work area should be monitored to ensure they do not fall below 19.5%.

RESPIRATORY PROTECTION:

GENERAL USE: None required.

EMERGENCY: Use SCBA or positive pressure air line with mask and escape pack in areas where oxygen concentration is less than 19.5%. Air purifying respirators will not provide protection.

OTHER PROTECTIVE EQUIPMENT: Safety shoes are recommended when handling cylinders.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Colorless gas

ODOR: Odorless

MOLECULAR WEIGHT: 4.00

BOILING POINT (1 atm): -452.1 °F (-268.9 °C)

SPECIFIC GRAVITY (Air =1): 0.138

SPECIFIC VOLUME (at 70 °F (21.1 °C) and 1 atm): 96.71 ft³/lb (6.037 m³/kg)

FREEZING POINT/MELTING POINT: None

VAPOR PRESSURE (AT 70°F): Not applicable

GAS DENSITY (at 70 °F (21.1 °C) and 1 atm): 0.0103 lb/ft³ (0.165 kg/m³)

SOLUBILITY IN WATER (Vol./Vol. at 32 °F (0 °C)): 0.0094

SECTION 10. REACTIVITY / STABILITY

CHEMICAL STABILITY: Stable

CONDITIONS TO AVOID: None

INCOMPATIBILITY: None

HAZARDOUS DECOMPOSITION PRODUCTS: None

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

Helium is a simple asphyxiant.

SECTION 12. ECOLOGICAL INFORMATION

Helium is not toxic. No adverse ecological effects are expected. Helium does not contain any Class I or Class II ozone depleting chemicals. Helium is not listed as a marine pollutant by DOT (49 CFR 171).

SECTION 13. DISPOSAL

UNUSED PRODUCT / EMPTY CONTAINER: Return container and unused product to supplier. Do not attempt to dispose of residual or unused quantities.

DISPOSAL: For emergency disposal, secure the cylinder and slowly discharge gas to the atmosphere in a well ventilated area or outdoors.

SECTION 14. TRANSPORTATION

DOT HAZARD CLASS: 2.2

DOT SHIPPING LABEL: Nonflammable Gas

DOT SHIPPING NAME: Helium, Compressed

IDENTIFICATION NUMBER: UN1046

REPORTABLE QUANTITY (RQ): None

SPECIAL SHIPPING INFORMATION: Cylinders should be transported in a secure upright position in a well ventilated truck. Never transport in passenger compartment of a vehicle.

SECTION 15. REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS:

EPA - ENVIRONMENTAL PROTECTION AGENCY

CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980 requires notification to the National Response Center of a release of quantities of hazardous substances equal to or greater than the reportable quantities (RQ) in 40 CFR 302.4.

CERCLA Reportable Quantity: None

SARA TITLE III: SUPERFUND AMENDMENT AND REAUTHORIZATION ACT OF 1986

SECTION 302: Requires emergency planning based on threshold planning quantities (TPQ) and release reporting based on reportable quantities (RQ) of EPA's extremely hazardous substances (40 CFR 355).

Helium is not listed as an Extremely Hazardous Substance.

SECTIONS 311/312: Require submission of material safety data sheets (MSDSs) and chemical inventory reporting with identification of EPA defined hazard classes. The hazard classes for this product are:

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

SECTION 313: Requires submission of annual reports of release of toxic chemicals that appear in 40 CFR 372. This information should be included in all MSDSs that are copied and distributed for this material.

Helium is not listed as a toxic chemical.

40 CFR PART 68: Risk Management for Chemical Accident Release Prevention. Requires the development and implementation of risk management programs at facilities that manufacture, use, store, or otherwise handle regulated substances in quantities that exceed specified thresholds.

Helium is not listed as a regulated substance.

TSCA - TOXIC SUBSTANCE CONTROL ACT : Helium 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.

Helium is not listed as a Highly Hazardous Chemical.

STATE REGULATIONS:

CALIFORNIA:

Proposition 65: This product does NOT contain any listed substances which the State of California requires warning under this statute.

SCAQMD Rule: VOC = Not applicable

SECTION 16. SUPPLEMENTAL INFORMATION

HAZARD RATINGS:

NFPA RATINGS:

HEALTH: 0
FLAMMABILITY: 0
REACTIVITY: 0
SPECIAL: SA*

HMIS RATINGS:

HEALTH: 0
FLAMMABILITY: 0
REACTIVITY: 0

*Compressed Gas Association recommendation to designate simple asphyxiant.

***Documents with Effective Date of March 1994 and August 1997 are identical in content and either may be used.*