

L-4802-D  
December 1992

# MATERIAL SAFETY DATA SHEET

An explanation of the terms used herein may be found in OSHA 29 CFR 1910.1200, available from OSHA regional or area offices.  
(Essentially similar to US Department of Labor Form OMS No. 1218-0072)  
Do Not Duplicate This Form. Request an Original.



## PRODUCT IDENTIFICATION

PRODUCT	Helium		
CHEMICAL NAME	Helium	SYNONYMS	Helium-4
FORMULA	He	CHEMICAL FAMILY	Rare Gas
		MOLECULAR WEIGHT	4.003
TRADE NAME	Helium		

## HAZARD INFORMATION

For mixtures of this product request the respective component Material Safety Data sheets. See Section IX.

MATERIAL (CAS NO.)	Wt (%)	1992-1993 ACGIH TLV-TWA (OSHA-PEL)
Helium (7440-59-7)	100	Simple asphyxiant (None currently established)

## PHYSICAL DATA

BOILING POINT, 760 mm. Hg	-268.9°C (-452°F)	FREEZING POINT	-272°C (-457°F @ 25 Atm)
SPECIFIC GRAVITY (H <sub>2</sub> O = 1)	Gas	VAPOR PRESSURE AT 20°C.	Gas
VAPOR DENSITY (air = 1)	0.138 @ 21°C (70°F)	SOLUBILITY IN WATER, % by wt.	Negligible
PERCENT VOLATILES BY VOLUME	100	EVAPORATION RATE (Butyl acetate = 1)	Not applicable

APPEARANCE AND ODOR Colorless gas at normal temperature and pressure; odorless

## EMERGENCY PHONE NUMBER

IN CASE OF EMERGENCIES involving this material, further information is available at all times:

Call CHEMTREC 800-424-9300 only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals. For routine information contact your supplier.

This product is subject to the Pennsylvania Worker and Community Right-To-Know Act (35 P.S. Sections 7301-7320).

Praxair requests the users of this product to study this Material Safety Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product a user should (1) notify its employees, agents and contractors of the information on this MSDS and any product hazards and safety information, (2) furnish this same information to each of its customers for the product, and (3) request such customers to notify their employees and customers for the product of the same product hazards and safety information.

PRAXAIR, INC.

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**IV. HEALTH-RELATED DATA**

**THRESHOLD LIMIT VALUE:** Simple asphyxiant—ACGIH 1992-1993. ACGIH 92-93 recommends a TLV-TWA of 0.5 mg/m<sup>3</sup> for welding fumes not otherwise classified (NOC) that may be generated during welding with this product.

**EFFECTS OF A SINGLE (ACUTE) OVEREXPOSURE:**

**SWALLOWING**—An unlikely route of exposure. This product is a gas at normal temperature and pressure.

**SKIN ABSORPTION**—No evidence of adverse effects from available information.

**INHALATION**—Asphyxiant. Moderate concentrations may cause headache, drowsiness, dizziness, excitation, excess salivation, vomiting and unconsciousness.

**SKIN CONTACT**—No evidence of adverse effects from available information.

**EYE CONTACT**—No evidence of adverse effects from available information.

**EFFECTS OF REPEATED (CHRONIC) OVEREXPOSURE:** No evidence of adverse effects from available information.

**OTHER EFFECTS OF OVEREXPOSURE:** None currently known. This product is an asphyxiant. Lack of oxygen can cause death.

**MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:** A knowledge of the available toxicology information and of the physical and chemical properties of the material suggest that overexposure is unlikely to aggravate existing medical conditions.

**SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION:** None currently known.

**EMERGENCY AND FIRST AID PROCEDURES:**

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

**SKIN**—Wash with soap and water.

**INHALATION**—Remove to fresh air. Give artificial respiration if not breathing. Give oxygen if breathing is difficult. Call a physician.

**EYES**—Flush with water.

**NOTE 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.

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**V. FIRE AND EXPLOSION HAZARD DATA**

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

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

**SPECIAL FIRE FIGHTING PROCEDURES:** Evacuate all personnel from danger area. Immediately deluge containers with water spray from maximum distance until cool, then move containers away from fire area if without risk.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** Helium (high pressure gas) cannot catch fire. Container may rupture due to heat of fire. No part of a container should be subjected to a temperature higher than 52°C (approximately 125°F). Most containers are provided with a pressure relief device designed to vent contents when they are exposed to elevated temperature.

**VI. REACTIVITY DATA**

<b>STABILITY</b>		<b>CONDITIONS TO AVOID:</b> (See Section IX).
<b>UNSTABLE</b>	<b>STABLE</b>	
	X	

**INCOMPATIBILITY (materials to avoid):** None currently known. Helium is chemically inert.

**HAZARDOUS DECOMPOSITION PRODUCTS:** None.

<b>HAZARDOUS POLYMERIZATION</b>		<b>CONDITIONS TO AVOID:</b> None currently known.
<b>May Occur</b>	<b>Will not occur</b>	
	X	

**VII. SPILL OR LEAK PROCEDURES**

**STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:** Evacuate all personnel from danger area. Use self-contained breathing apparatus where needed. Shut off leak if without risk. Ventilate area or move leaking assembly to well-ventilated area. Test area, especially confined areas, for sufficient oxygen content prior to permitting re-entry of personnel.

**WASTE DISPOSAL METHOD:** Slowly release into the atmosphere. Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with federal, state and local regulations.

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**VI. SPECIAL PROTECTION INFORMATION**

**RESPIRATORY PROTECTION** (specify type): Use air-purifying or air-supplied respirators, as appropriate, where the local and/or general exhaust ventilation is not adequate to keep worker exposure below the applicable TLV's during welding with this product. Air supplied respirator is required while working in confined spaces. The respiratory protection use must conform with OSHA rules as specified in 29 CFR 1910.134.

**VENTILATION**

**LOCAL EXHAUST**—Use local exhaust system, if necessary, to maintain the concentration of hazardous fumes and gases below the applicable TLVs in the worker's breathing zone.

**MECHANICAL (general)**—Under certain conditions, general exhaust ventilation may be acceptable provided that it is adequate to maintain the concentration of hazardous fumes and gases below the applicable TLVs in the worker's breathing zone.

**SPECIAL**—None

**OTHER**—None

**PROTECTIVE GLOVES:** Preferred for cylinder handling.

**EYE PROTECTION:** Select in accordance with OSHA 29 CFR 1910.133.

**OTHER PROTECTIVE EQUIPMENT:** Metatarsal shoes for cylinder handling. Select in accordance with OSHA 29 CFR 1910.132 and 1910.133.

**VII. SPECIAL PRECAUTIONS**

**WARNING:** High pressure gas. Use piping and equipment adequately designed to withstand pressures to be encountered. Can cause rapid asphyxiation due to oxygen deficiency. Store and use with adequate ventilation. Close valve when not in use and when empty. Do not strike arc on cylinder. Do not ground cylinder or allow to become part of an electrical circuit.

**MIXTURES:** When two or more gases, or liquefied gases are mixed, their hazardous properties may combine to 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 make your safety evaluation of the end product. Remember, gases and liquids have properties which can cause serious injury or death. Be sure to read and understand all labels and other instructions supplied with all containers of this product.

When used in welding and cutting: Read and understand the manufacturer's instructions and the precautionary label on the product. See American Standard Z49.1 "Safety in Welding and Cutting" published by the American Welding Society, PO Box 351040, Miami, Florida 33135 and OSHA Publication 2208 (29CFR1910), US Government Printing Office, Washington, DC 20402 for more detail. For further SAFETY AND HEALTH information, refer to Praxair's free publication, L-52-529.

**NOTE:** Suitability for use as a component in underwater breathing gas mixtures is to be determined by or under the supervision of personnel experienced in the use of underwater breathing gas mixtures and familiar with the effects, methods, frequency and duration of use, hazards, side effects and precautions to be taken. For safety information on general handling of compressed gas cylinders, obtain a copy of pamphlet P-1, "Safe Handling of Compressed Gas in Containers" from the Compressed Gas Association, Inc., 1725 Jefferson Davis Highway, Suite 1004, Arlington, VA 22202.

**OTHER HANDLING AND STORAGE CONDITIONS:** Never work on a pressurized system. If there is a leak, close the cylinder valve, blow down the system by venting to a safe place, then repair the leak.

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 these opinions 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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