Helium Material Safety Data Sheet

ISSUE DATE 01 March 2016		TRADE NAME AND SYNONYMS Helium , or Liquid Helium	CHEMICAL NAME AND SYNONYMS Helium
REVISIONS V1-02.2016		FORMULA He MW : 4.003	CHEMICAL FAMILY Inert Gas CAS #7440-59-7

HEALTH HAZARD DATA

EXPOSURE LIMITS

OSHA : None established. ACGIH : Simple Asphyxiant. Helium is not listed as a carcinogen by NTP , IARC or OSHA.

SYMPTOMS IF INGESTED , CONTACTED WITH SKIN , OR VAPOR INHALED

Helium is odorless and nontoxic , but may produce suffocation by diluting the concentration of oxygen in air below levels necessary to support life. PERSONNEL , INCLUDING RESCUR WORKERS , SHOULD NOT ENTER AREAS WHERE THE OXYGEN CONCENTRATION IS BELOW 19.5% , UNLESS PROVIDED WITH A SELF-CONTAINED BREATHING APPARATUS OR AIRLINE RESPIRATOR. Exposure to oxygen-deficient atmospheres may produce dizziness , nausea , vomiting , loss of consciousness and death. Death may result from errors in judgement , confusion , or loss of consciousness which prevents seif-rescue .At low oxygen concentrations unconsciousness and death may occur in seconds without warning. Extensive tissue damage or burns can result from exposure to liquid helium or cold helium vapors.

TOXICOLOGICAL PROPERTIES

Helium is nontoxic but can act as a simple asphyxiant by displacing the amount of oxygen in air necessary to support life.

RECOMMENDED FIRST AND TREATMENT

Persons suffering from lack of Oxygen should be moved to areas with normal atmosphere. SELF-CONTAINED BREATHING APPARATUS MAY BE REQUIRED TO PREVENT ASPHYXIATION OF RESCUE WORKERS. Assisted respiration and supplemental oxygen should be given if the victim is not breathing. If cryogenic liquid or cold boil-off gas contacts a worker's skin or eyes , frozen tissues should be flooded or soaked with tepid water (105 - 115F; 41-46C). DO NOT USE HOT WATER. Cryogenic burns which result in blistering or deeper tissue freezing should be seen promptly by a physician.

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method Used) N/A	AUTO IGNITION TEMP N/A	FLAMMABLE LIMITS Non-flammable	LEL N/A	UEL N/A
EXTINGUISHING MEDIA N/A		ELECTRICAL CLASSIFICATION GROUP N/A		

SPECIAL FIRE FIGHTING PROCEDURES

N/A

UNUSUAL FIRE AND EXPLOSION HAZARDS

Cylinders exposed to high heat or flame may vent rapidly or explode

PHYSICAL DATA

BOILING POINT (°F) @ 1 atm - 452.1F (-268.9 C)		FREEZING POINT (°F) @ 367 psia - 458.0F (-272.0C)	
VAPOR PRESSURE (psia) N/A		SOLUBILITY IN WATER @ 68F (20C) , 1 atm 0.861% by volume	
VAPOR DENSITY (lb/cu ft) @ 32F (0 C) , 1 atm 0.01114	SPECIFIC GRAVITY (AIR = 1) @ 32F (0C) , 1 atm 0.138	LIQUID DENSITY (lb/uc ft) @ boiling point , 1 atm 7.798	SPECIFIC GRAVITY (H2O=1) @ boiling point , 1 atm 0.125

APPEARANCE AND ODOR

Helium is colorless and odorless in both gaseous state and liquid states.

REACTIVITY DATA

STABILITY Inert	UNSTABLE STABLE	 X	CONDITIONS TO AVOID None
INCOMPATIBILITY (Materials to avoid) None			HAZARDOUS DECOMPOSITION PRODUCTS None
HAZARDOUS POLYMERIZATION	MAY OCCUR WILL NOT OCCUR	 X	CONDITIONS TO AVOID None

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Avoid contact of skin with liquid helium or its cold boil-off gas. Flush liquid spill with water to disperse. Ventilate enclosed areas to prevent formation of oxygen-deficient atmosphere caused by the evaporation of liquid helium or the release of gaseous helium.

WASTE DISPOSAL METHOD

Allow liquid helium to evaporate in a well ventilated location remote from work areas. Vent helium gas slowly to a well ventilated outdoor location remote from work areas. Do not attempt to dispose residual helium in compressed gas cylinders. Cylinder valve tightly closed and valve caps in place.

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify Type)

Use self-contained breathing apparatus in oxygen-deficient atmosphere. Caution! Air purifying respirators will not function. Their use may result in asphyxiation.

VENTILATION Natural or mechanical where gas or vapors are present	LOCAL EXHAUST As necessary	SPECIAL Only as necessary
	MECHANICAL (General) As necessary	OTHER Vents should be situated to avoid higher than normal concentration of helium in work areas.

PROTECTIVE GLOVES

Loose-fitting gloves of impermeable material , such as leather are recommended when handling liquid. Leather work gloves are recommended when handling compressed gas cylinders.

EYE PROTECTION

Safety glasses are recommended when handling high-pressure cylinders. Use a chemical goggles or a face shield with safety glasses when handling liquid.

OTHER PROTECTIVE EQUIPMENT

None

SPECIAL PRECAUTIONS *

SPECIAL LABELLING INFORMATION

DOT Shipping Name : Helium or Helium , Compressed ; (Liquid) Helium , refrigerated liquid.
DOT Hazard Class : Non-flammable Gas DOT Shipping label : Non-flammable Gas.
I.D. number : UN 1046 (Helium , or Helium , Compressed) ; UN 1963 (Liquid Helium)

SPECIAL HANDLING RECOMMENDATIONS

Prevent contact of liquid helium or cold boil-off gas with exposed skin. Prevent entrapment of liquid in closed systems. Use only in well ventilated areas. Compressed gas cylinders contain helium at extremely high pressure and should be handled with care. Use a pressure reducing regulator when connecting to lower pressure piping systems. Secure cylinders when in use. Never use direct flame to heat a compressed gas cylinder. Use a check valve to prevent back-flow into storage container. Avoid dragging , rolling , or sliding cylinders , even for a short distance. Use a suitable hand truck.

SPECIAL STORAGE RECOMMENDATIONS

Store liquid containers and cylinders in well-ventilated areas. Keep cylinders away sources of heat. Storage should not be in heavy traffic areas to prevent knocking over or damage from passing or falling objects. Valve caps should remain on cylinders not connected for use. Segregate full and empty cylinders. Storage areas should be free of combustible material. Avoid exposure to areas where salt or other corrosive chemicals are present.

OTHER RECOMMENDATIONS OR PRECAUTIONS

Liquid Helium in exposed piping can actually cause air to condense and liquified. The nitrogen in this liquid can evaporate more rapidly leaving an oxygen enriched liquid behind. Utilize oxygen-compatible insulating materials and minimize exposed piping surface areas. Use only metals and materials compatible with extremely low temperatures. Avoid use of carbon steel and other metals which become brittle at low temperatures. Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. If oxygen-deficient atmospheres are suspected or can occur , use oxygen monitoring equipment to test for oxygen-deficient atmospheres.