



## SAFETY DATA SHEET

### SECTION 1 – IDENTIFICATION

**Chemical Name:** Helium

**Chemical Formula:** He

**Chemical Family:** Inert Gas

**Hazard Classification:** Helium, Compressed, Non-Flammable Gas, UN1006,  
Green Label

**Product Use Description:** Analytical Standard and General Laboratory Applications

**Company:** MESA Specialty Gases & Equipment

2427 South Anne Street

Santa Ana, California 92704 USA

**Phone Number for Information:** Infotrac

**Emergency Contact:** 800-535-5053 (Int'l: 352-323-3500)

### SECTION 2 – HAZARD(S) IDENTIFICATION

#### SIGNAL WORD - WARNING

**HAZARD STATEMENTS:** Contains gas under pressure; may explode if heated.  
May cause suffocation by displacing oxygen in the air.

#### PRECAUTIONARY STATEMENTS:

**General:** Use in accordance with Safety Data Sheets.

Do not ingest or inhale. Avoid contact with skin and clothing.

**Prevention:** Keep away from heat, hot surfaces, sparks, open flames,  
and other ignition sources. No smoking.

**Response:** Leaking gas fire: Do not extinguish unless leak can be stopped safely.  
In case of leakage, eliminate all ignition sources.

Do not open valve until prepared to use.

Always use a back flow preventative device in piping.

**Storage:** Protect from sunlight. Store in a well-ventilated place.

**OTHER HAZARDS:** High pressure gas. May cause rapid suffocation.  
May cause dizziness, nausea, drowsiness, vomiting, excess  
salivation, loss of mobility/consciousness.  
May react explosively even in absence of air at elevated pressure  
and/or temperature.  
Self-contained breathing apparatus (SCBA) may be required.



## SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT	CAS NO.	CONCENTRATION
Helium	7440-59-7	99.995%
Maximum impurities including Hydrocarbons, Carbon Monoxide, Carbon Dioxide, Oxygen		<1.0% (50 ppm)

## SECTION 4 – FIRST AID MEASURES

### ROUTE OF EXPOSURE:

Inhalation: Remove person to uncontaminated area. SCBA may be required to prevent asphyxiation of rescue workers. Keep warm and at rest. Lay victim face down with head and chest lower than hips to improve drainage from lungs. If breathing is labored, administer pure oxygen. If breathing has stopped, start artificial respiration. Get immediate medical attention for serious exposure.

Eye contact: N/A

Skin contact: N/A

Ingestion: N/A

Frostbite: In case of frostbite, place the frostbitten part in warm water. **DO NOT USE HOT WATER.** If warm water is not available or is impractical to use, wrap the affected parts gently in blankets. Alternatively, if the fingers or hands are frostbitten, place the affected area in the armpit. Encourage victim to gently exercise the affected part while being warmed. Seek immediate medical attention.

**SYMPTOMS:** High concentrations of this gas can cause an oxygen-deficient environment. Individuals breathing such an atmosphere may experience symptoms which include headaches, ringing in ears, dizziness, drowsiness, unconsciousness, nausea, vomiting, and depression of all the senses. The skin of a victim may have a blue color. Under some circumstances, death may occur. The effects associated with various levels of oxygen are as follows:

### CONCENTRATION SYMPTOMS OF EXPOSURE

12-16% Oxygen: Breathing and pulse rate increased, muscular coordination slightly disturbed.

10-14% Oxygen: Emotional upset, abnormal fatigue, disturbed respiration.

6-10% Oxygen: Nausea and vomiting, collapse or loss of consciousness.

Below 6%: Convulsive movements, possible respiratory collapse, and death.

**OTHER POTENTIAL HEALTH EFFECTS:** Contact with cryogenic liquid or rapidly expanding gases (which are released under high pressure) may cause frostbite. Symptoms of frostbite include change in skin color to white or grayish-yellow. The pain after contact with liquid can quickly subside.



**HEALTH EFFECTS OR RISKS FROM EXPOSURE:** An Explanation in Lay Terms. Overexposure to Helium may cause the following health effects:

**ACUTE:** The most significant hazard associated with this gas is inhalation of oxygen-deficient atmospheres. Symptoms of oxygen deficiency include respiratory difficulty, headache, dizziness, and nausea. At high concentrations, unconsciousness or death may occur. Contact with cryogenic liquid or rapidly expanding gases may cause frostbite.

**CHRONIC:** There are currently no known adverse health effects associated with chronic exposure to Helium.

**TARGET ORGANS:** Respiratory system.

### HELIUM GAS

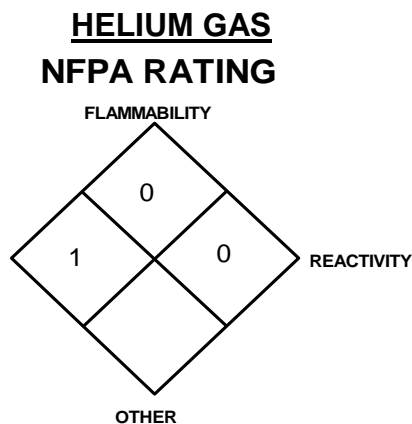
HAZARDOUS MATERIAL INFORMATION SYSTEM			
<b>HEALTH</b>	(BLUE)		1
<b>FLAMMABILITY</b>	(RED)		0
<b>REACTIVITY</b>	(YELLOW)		0
<b>PROTECTIVE EQUIPMENT</b>			<b>B</b>
EYES	RESPIRATORY	HANDS	BODY
	See Section 8		See Section 8
For routine industrial applications			

## SECTION 5 – FIRE FIGHTING MEASURES

**EXTINGUISHING MEDIA:** Non-flammable, inert gas. Use extinguishing media appropriate for surrounding fire.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** Helium does not burn; however, containers, when involved in fire, may rupture or burst in the heat of the fire.

**SPECIAL FIRE FIGHTING PROCEDURES: RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO HELIUM WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. At a minimum, Self-Contained Breathing Apparatus should be worn.** Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Move fire-exposed cylinders if it can be done without risk to firefighters. Otherwise, cool containers with hose stream and protect personnel. Withdraw immediately in case of rising sounds from venting safety device or any discoloration of tanks due to the fire.



## SECTION 6 – ACCIDENTAL RELEASE MEASURES

**PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT, AND EMERGENCY PROCEDURES:** Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Monitor oxygen level. Ventilate the area.

**SPILL AND LEAK RESPONSE:** Uncontrolled releases should be responded to by trained personnel using pre planned procedures. Proper protective equipment should be used. In case of a release, clear the affected area and protect people. Minimum Personal Protective Equipment should be Level B: protective clothing, gloves resistant to tears, and Self-Contained Breathing Apparatus. Allow the gas, which is heavier than air, to dissipate. Monitor the surrounding area for oxygen levels. The atmosphere must have at least 19.5 percent oxygen before personnel can be allowed in the area without Self-Contained Breathing Apparatus. Attempt to close the main source valve prior to entering the area. If this does not stop the release (or if it is not possible to reach the valve), allow the gas to release in-place or remove it to a safe area and allow the gas to be released there.

Minimum Personal Protective Equipment should be Level B: protective clothing, mechanically-resistant gloves and Self-Contained Breathing Apparatus. Locate and seal the source of the leaking gas. Allow the gas to dissipate. Monitor the surrounding area for oxygen levels. The atmosphere must have at least 19.5 percent oxygen before personnel can be allowed in the area without Self-Contained Breathing Apparatus. Attempt to close the main source valve prior to entering the area. If this does not stop the release (or if it is not possible to reach the valve), allow the gas to release in-place or remove it to a safe area and allow the gas to be released there.

Protect cylinders against physical damage. Store in cool, dry, well-ventilated fireproof area, away from flammable materials and corrosive atmospheres. Store away from heat and ignition sources and out of direct sunlight. Do not store near elevators, corridors, or loading docks. Do not allow area where cylinders are stored to exceed 52°C (125°F). Use only storage containers and equipment (pipes, valves, fittings to relieve pressure, etc.) designed for the storage of Liquid Argon. Do not store containers where they can come into contact with moisture. Cylinders should be stored upright and be firmly secured to prevent falling or being knocked over. Cylinders can be stored in the open, but in such cases, should be protected against extremes of weather and from the dampness of the ground to prevent rusting.

**ENVIRONMENTAL PRECAUTIONS:** Prevent spreading of vapors through sewers, ventilation systems, and confined areas. Do not discharge materials into any place where their accumulation could be dangerous.

**METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP:** Stop the flow of gas or remove cylinder to outdoor location if this can be done without risk. Ventilate enclosed areas. Move leaking cylinder to fume hood or safe outdoor area. Use monitoring equipment if hazardous conditions are suspected or likely to occur.

## SECTION 7 – HANDLING AND STORAGE

**PRECAUTIONS FOR SAFE HANDLING:** Only experienced and properly instructed persons should handle compressed gases. Person is to know and understand the properties and hazards of the product before use. Do not remove or deface labels provided by the supplier for the identification of the product.

Protect cylinders against physical damage. Store in cool, dry, well-ventilated, fireproof area, away from flammable materials and corrosive atmospheres. Store away from heat and ignition sources and out of direct sunlight. Do not store near elevators, corridors or loading docks. Do not allow area where cylinders are stored to exceed 52°C (125°F). Isolate from incompatible materials such as magnesium (see Section 10, Stability and Reactivity for more information), which can react violently. Use only storage containers and equipment (pipes, valves, fittings to relieve pressure, etc.) designed for the storage of Liquid Nitrogen. Do not store containers where they can come into contact with moisture. Cylinders should be stored upright and be firmly secured to prevent falling or being knocked over. Cylinders can be stored in the open, but in such cases, should be protected against extremes of weather and from the dampness of the ground to prevent rusting. Keep Dewar flasks covered with loose fitting cap. This prevents air or moisture from entering the container, yet allows pressure to escape. Use only the stopper or plug supplied with the container. Ensure that ice does not form in the neck of flasks. If the neck of Dewar flask is blocked by ice or “frozen” air, follow manufacturer’s instruction for removing it. Ice can also cause pressure release valves to fail. Never tamper with pressure relief devices. The following rules are applicable to situations in which cylinders are being used:

**Before Use:** Move cylinders with a suitable hand-truck. Do not drag, slide or roll cylinders. Do not drop cylinders or permit them to strike each other. Secure cylinders firmly. Leave the valve protection cap in-place (if provided), until cylinder is ready for use.

**During Use:** Use designated CGA fittings and other support equipment. Do not use adapters. Do not heat cylinder by any means to increase the discharge rate of the product from the cylinder. Use check valve or trap in discharge line to prevent hazardous backflow into the cylinder. Do not use oils or grease on gas-handling fittings or equipment.

**After Use:** Close main cylinder valve. Replace valve protection cap (if provided). Mark empty cylinders “EMPTY”.

**NOTE:** Use only DOT or ASME code containers. Earth-ground and bond all lines and equipment associated with this product. Close valve after each use and when empty. Cylinders must not be recharged except by or with the consent of owner. For additional information refer to the Compressed Gas Association Pamphlet P-1, Safe Handling of Compressed Gases in Containers. For cryogenic liquids, refer to CGA P-12, Safe Handling of Cryogenic Liquids. Also see CGA P-9, the Inert Gases, Argon, Nitrogen, and Helium; CGA P-14, Accident Prevention in Oxygen Rich and Oxygen Deficient Atmospheres; CGA Safety Bulletin SB-2, Oxygen Deficient Atmospheres.

**CONDITIONS FOR SAFE STORAGE:** Cylinders should be secured with mounting brackets away from heavily traveled areas. Use oldest cylinders in stock first to prevent full cylinders from being stored for excessive periods of time. Full and empty cylinders should be segregated. Keep cylinder in dry, cool, well ventilated area away from heat, flame, sparks or corrosive chemicals. Cylinders should be moved by suitable hand trucks. Close valve after each use and when empty. Cylinder valve guards or caps should be in place. Cylinder temperature should not exceed 52°C (125°F). Store containers in location free from fire risk and away from any sources of heat and ignition. Keep cylinder away from combustible material. Use equipment rated for cylinder pressure.

## SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

COMPONENT	OSHA PEL	ACGIH TLV
Nitrogen	None	None
<p><b>APPROPRIATE ENGINEERING CONTROLS:</b> Use with adequate ventilation to maintain oxygen level above 19.5% in the work area. Local exhaust ventilation is preferred, because it prevents Helium dispersion into the work place by eliminating it at its source. If appropriate, install automatic monitoring equipment to detect the level of oxygen.</p>		
<p><b>INDIVIDUAL PROTECTIVE MEASURES:</b> Safety glasses, work gloves, and safety shoes should be worn when handling high pressure cylinders or hazardous materials.</p> <p><b>RESPIRATORY PROTECTION:</b> Maintain oxygen level above 19.5% in the workplace. Use supplied air respiratory protection if oxygen level is below 19.5% or during emergency response to a release of Helium. If respiratory protection is required, follow the requirements of the Federal OSHA Respiratory Protection Standard (29 CFR 1910.134) or equivalent State standards.</p> <p><b>EYE PROTECTION:</b> Splash goggles, face shields, or safety glasses. Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with sideshields.</p> <p><b>HAND PROTECTION:</b> Wear gloves resistant to tears when handling cylinders of Helium. Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.</p> <p><b>BODY PROTECTION:</b> Use body protection appropriate for task.</p>		

## SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Colorless	Upper/lower flammability/explosive limits: No data available
Odor: Odorless	Vapor Pressure: N/A
Odor threshold: No data available	Vapor Density (Air=1): 0.165 kg/m <sup>3</sup> (0.0103 lb/ft <sup>3</sup> )
pH: N/A	Relative Density (Water=1): Varies
Melting point/range: N/A	Solubility (in water): 0.0094
Boiling point/range: -268.9°C (-452.1°F)	Partition coefficient (n-octanol/water): N/A
Flash Point: N/A	Auto-ignition temperature: No data available
Evaporation Rate (Butyl Acetate=1): N/A	Decomposition temperature: No data available
Flammability (solid, gas): No data available	Viscosity: N/A

## SECTION 10 – STABILITY AND REACTIVITY DATA

<p><b>Reactivity:</b> Refer to possibility of hazardous reactions and/or incompatible materials sections</p>	<p><b>Conditions to avoid:</b> Contact with incompatible materials. Cylinders exposed to high temperatures or direct flame can rupture or burst.</p>
<p><b>Chemical Stability:</b> Normally stable, inert gas.</p>	<p><b>Incompatible materials:</b> None. Argon is an inert gas.</p>
<p><b>Possibility of hazardous reactions:</b> No data available</p>	<p><b>Hazardous Decomposition or Byproducts:</b> None</p>

## SECTION 11 – TOXICOLOGICAL INFORMATION

### LIKELY ROUTES OF EXPOSURE:

Inhalation: May cause suffocation by displacing oxygen in the air.  
Ingestion: Ingestion is not considered a potential route of exposure.  
Skin: Contact with rapidly expanding gas may cause burns or frostbite.  
Eyes: Contact with rapidly expanding gas may cause burns or frostbite.

### SYMPTOMS/EFFECTS FROM EXPOSURE:

High concentrations of this gas can cause an oxygen-deficient environment. Individuals breathing such an atmosphere may experience symptoms which include headaches, ringing in ears, dizziness, drowsiness, unconsciousness, nausea, vomiting, and depression of all the senses. The skin of a victim may have a blue color. Under some circumstances, death may occur. The effects associated with various levels of oxygen are as follows:

#### CONCENTRATION SYMPTOMS OF EXPOSURE

12-16% Oxygen: Breathing and pulse rate increased, muscular coordination slightly disturbed.  
10-14% Oxygen: Emotional upset, abnormal fatigue, disturbed respiration.  
6-10% Oxygen: Nausea and vomiting, collapse or loss of consciousness.  
Below 6%: Convulsive movements, possible respiratory collapse, and death.

OTHER POTENTIAL HEALTH EFFECTS: Contact with cryogenic liquid or rapidly expanding gases (which are released under high pressure) may cause frostbite. Symptoms of frostbite include change in skin color to white or grayish-yellow. The pain after contact with liquid can quickly subside.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms. Overexposure to Argon may cause the following health effects:

ACUTE: The most significant hazard associated with this gas is inhalation of oxygen-deficient atmospheres. Symptoms of oxygen deficiency include respiratory difficulty, headache, dizziness, and nausea. At high concentrations, unconsciousness or death may occur. Contact with cryogenic liquid or rapidly expanding gases may cause frostbite.

CHRONIC: There are currently no known adverse health effects associated with chronic exposure to Argon.

TARGET ORGANS: Respiratory system.

### ACUTE/CHRONIC TOXICITY:

SUSPECTED CANCER AGENT: Helium is not found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, IARC, and therefore is neither considered to be nor suspected to be a cancer-causing agent by these agencies.  
IRRITANCY OF PRODUCT: Helium is not an irritant. However, contact with rapidly expanding gases can cause frostbite and damage to exposed skin and eyes.  
SENSITIZATION OF PRODUCT: Helium is not a sensitizer after prolonged or repeated exposures.  
REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of Helium on the human reproductive system.

Mutagenicity: Helium is not expected to cause mutagenic effects in humans.  
Embryotoxicity: Helium is not expected to cause embryotoxic effects in humans.  
Teratogenicity: Helium is not expected to cause teratogenic effects in humans.  
Reproductive Toxicity: Helium is not expected to cause adverse reproductive effects in humans.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing respiratory conditions may be aggravated by overexposure to Helium.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate overexposure.

BIOLOGICAL EXPOSURE INDICES (BEIs): Currently, Biological Exposure Indices (BEIs) are not applicable for this compound.

**CARCINOGENICITY:** No data available.

## SECTION 12 – ECOLOGICAL INFORMATION

**Ecotoxicity (aquatic and terrestrial):** Any adverse effect on animals would be related to oxygen-deficient environments. No adverse effect is anticipated to occur to plant life, except for frost produced in the presence of rapidly expanding gases. No evidence is currently available on Helium's effects on aquatic life.

**Persistence and degradability:** Helium occurs naturally in the atmosphere. The gas will be dissipated rapidly in well-ventilated areas.

**Bioaccumulative potential:** No data available

**Mobility in soil:** No data available

**Other Effects:** The mixture does not contain any class I or Class II ozone depleting chemicals.

## SECTION 13 – DISPOSAL CONSIDERATIONS

**Disposal:** Waste disposal must be in accordance with appropriate National, Federal, State, and local regulations. Do not dispose or discharge into the environment. Do not discharge into enclosed environment. Contact supplier if additional guidance is required.

## SECTION 14 – TRANSPORTATION INFORMATION

**DOT Classification:**

Proper Shipping Name: Helium, compressed  
Class: 2.2  
UN/ID No.: UN1046  
Label: Non-Flammable Gas, Green Label

**IATA Classification:**

Proper Shipping Name: Helium, compressed  
Class: 2.2  
UN/ID No.: UN1046  
Label: Non-Flammable Gas, Green Label

**Environment hazard:** Helium occurs naturally in the atmosphere. The gas will be dissipated rapidly in well-ventilated areas.

**Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code: N/A)**

**SPECIAL PRECAUTIONS FOR USER:** Avoid transport on vehicles where the load space is not separated from driver's compartment. Ensure that transporter is aware of the potential hazards of the load and knows what to do in event of an emergency. Contact supplier for complete transportation information.

## SECTION 15 – REGULATORY INFORMATION

U.S. SARA REPORTING REQUIREMENTS: Helium is not subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act.

U.S. SARA THRESHOLD PLANNING QUANTITY: Not applicable.

U.S. CERCLA REPORTABLE QUANTITY (RQ): Not applicable.

CANADIAN DSL/NDL INVENTORY STATUS: Helium is on the DSL Inventory.

U.S. TSCA INVENTORY STATUS: Helium is on the TSCA Inventory.

OTHER U.S. FEDERAL REGULATIONS: Not applicable.

U.S. STATE REGULATORY INFORMATION: Helium is covered under specific State regulations, as denoted below:  
Alaska - Designated Toxic and Hazardous Substances: Helium. California - Permissible Exposure Limits for Chemical Contaminants: Helium. Florida - Substance List: Helium. Illinois - Toxic Substance List: Helium. Kansas - Section 302/313 List: No. Massachusetts - Substance List: Helium. Michigan - Critical Materials Register: No. Minnesota - List of Hazardous Substances: Helium. Missouri - Employer Information/Toxic Substance List: Helium. New Jersey - Right to Know Hazardous Substance List: Helium. North Dakota - List of Hazardous Chemicals, Reportable Quantities: No. Pennsylvania - Hazardous Substance List: Helium.  
Rhode Island - Hazardous Substance List: Helium. Texas - Hazardous Substance List: No.  
West Virginia - Hazardous Substance List: No. Wisconsin - Toxic and Hazardous Substances: No.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): Helium is not on the California Proposition 65 lists.

LABELING (For Compressed Gas):

WARNING: CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED. MAY CAUSE RAPID SUFFOCATION BY DISPLACING OXYGEN IN THE AIR. MAY INCREASE RESPIRATION AND HEART RATE. May cause dizziness, nausea, drowsiness, vomiting, excess salivation, and loss of mobility/consciousness. May cause frostbite. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources—No smoking. Use and store in well-ventilated areas. Leaking gas fire: Do not extinguish unless leak can be stopped safely. In case of leakage, eliminate all ignition sources. Do not open valve until prepared to use. Always use a backflow preventative device in piping. Use only with equipment rated for cylinder pressure. Close valve after each use and when empty. Cylinder temperature should not exceed 52°C (125°F). Use in accordance with Safety Data Sheet. FIRST AID: IF INHALED, remove to fresh air. If breathing is difficult, give Oxygen. Call a physician. IN CASE OF FROSTBITE, obtain immediate medical attention. DO NOT REMOVE THIS LABEL.



## SECTION 16 – OTHER INFORMATION

Information contained in this data sheet is offered without charge for use by technically qualified personnel at their discretion and risk. All statements, technical information and recommendations contained herein are based on tests and data which we believe to be reliable. But the accuracy and completeness thereof, is not guaranteed and no warranty of any kind, either expressed or implied, is made with respect thereto. Since MESA Specialty Gases and Equipment Division of MESA International Technologies, Inc. shall have no control over the use of the product described herein, we assume no liability for loss or damage incurred from the proper or improper use of such product.

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### DISCLAIMER

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