



## Material Safety Data Sheet

### Section 1- Product and Company Identification

Synonyms: Helium

Chemical Name: Helium

Formula: He

TDG (Canada) CLASSIFICATION: 2.2

WHMIS CLASSIFICATION: A

Supplier Name: Miragas Co. Ltd.

Address of Supplier: Zhucun Industrial Park, Pengpo, Yichuan, Luoyang, Henan 471311, China

Telephone Number: +86 379-69581176

Emergency Telephone Number: +86 379-69581179

Fax: +86 379-69581180

Email address: [Bureau@miragases.com](mailto:Bureau@miragases.com)

### Section 2- Composition/information on ingredients

COMPOSITION: 99.999 %

PEL-OSHA<sup>1</sup>: Simple Asphyxiant

CAS NUMBER: 7440-59-7

TLV-ACGIH<sup>2</sup>: Simple Asphyxiant

RTECS #: MH6520000

LD<sub>50</sub> or LC<sub>50</sub> Route/Species: Not Available

Formula: He

<sup>1</sup> As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993).

<sup>2</sup> As stated in the ACGIH 1994-95 Threshold Limit Values for Chemical Substances and Physical Agents.

### Section 3- Hazards Identification

#### EMERGENCY OVERVIEW

Simple Asphyxiant - This product does not contain oxygen and may cause asphyxia if released in a confined area. Maintain oxygen levels above 19.5%. Contact with product may cause frostbite or freeze burns in exposed tissues. Nonflammable.

#### ROUTE OF ENTRY:

Skin Contact	Skin Absorption	Eye Contact	Inhalation	Ingestion
Yes	No	Yes	Yes	No

#### HEALTH EFFECTS:

Exposure Limits No	Irritant No	Sensitization No
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Teratogen No	Reproductive Hazard No	Mutagen No
Synergistic Effects None Reported		

## Carcinogenicity:

NTP:No      IARC: No      OSHA: No

## EYE EFFECTS:

Contact with evaporating liquid may cause tissue freezing.

## SKIN EFFECTS:

Contact with rapidly evaporating liquid can cause cryogenic "burns" or frostbite. Frostbite effects are a change in color of the skin to gray or white, possibly followed by blistering.

## INGESTION EFFECTS:

Ingestion is unlikely. Contact with product may cause tissue freezing.

## INHALATION EFFECTS:

Product is a non-toxic simple asphyxiant. Effects of oxygen deficiency resulting from simple asphyxiants may include: rapid breathing, diminished mental alertness, impaired muscular coordination, faulty judgement, depression of all sensations, emotional instability, and fatigue. As asphyxiation progresses, nausea, vomiting, prostration, and loss of consciousness may result, eventually leading to convulsions, coma, and death.

Oxygen deficiency during pregnancy has produced developmental abnormalities in humans and experimental animals.

## NFPA HAZARD CODES

Health: 3

Flammability: 0

Reactivity: 0

## HMIS HAZARD CODES

Health: 3

Flammability: 0

Reactivity: 0

## RATINGS SYSTEM

0 = No Hazard

1 = Slight Hazard

2 = Moderate Hazard

3 = Serious Hazard

4 = Severe Hazard

## Section 4- First Aid Measures

## EYES:

Never introduce ointment or oil into the eyes without medical advice! In case of freezing or cryogenic "burns" caused by rapidly evaporating liquid, **DO NOT WASH THE EYES WITH HOT OR EVEN TEPID WATER!** Remove victim from the source of contamination. Open eyelids wide to allow liquid to evaporate. If pain is present, refer the victim to an ophthalmologist for treatment and follow up. If the victim cannot tolerate light, protect the eyes with a light bandage.

## SKIN:

For dermal contact or frostbite: Remove contaminated clothing and flush affected areas with lukewarm water. **DO NOT USE HOT WATER.** A physician should see the patient promptly if contact with the product has resulted in blistering of the dermal surface or in deep tissue freezing.

**INGESTION:**

A physician should see the patient promptly if contact with the product has resulted in blistering of the dermal surface or in deep tissue freezing.

**INHALATION:**

**PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS.** Victims should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, and if breathing has stopped, administer artificial resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive.

Section 5- Fire-Fighting Measures
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Conditions of Flammability: Nonflammable		
Flash point: None	Method: Not Applicable	Autoignition Temperature: None
LEL(%): None	UEL(%):None	
Hazardous combustion products: None		
Sensitivity to mechanical shock: None		
Sensitivity to static discharge: None		

**FIRE AND EXPLOSION HAZARDS:**

None. Nonflammable.

**EXTINGUISHING MEDIA:**

None required. Use as appropriate for surrounding materials.

Section 6- Accidental Release
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Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with inert gas prior to attempting repairs. If leak is in container or container valve, contact the appropriate emergency telephone number listed in Section 1 or call your closest Miragas location.

Section 7- Handling and Storage
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Use only in well-ventilated areas in accordance with manufacturer's and Miragas instructions. These cylinders must ALWAYS be kept upright. Specialized trucks are needed for their movement. Do not drag, slide or roll cylinders. Stationary customer site vessels should be operated in accordance with the manufacturer's instructions. Do not attempt to repair, adjust or in any other way modify the operation of these vessels. If there is a malfunction or other type of operations problem with the vessel, contact the closest Miragas location immediately for assistance.

Liquid helium is delivered into stationary vacuum jacketed vessels at the customer's location or in portable vacuum-jacketed "liquid" cylinders requiring special handling methods. Consult



manufacturer's instructions.

Due to the extremely cold liquid, uninsulated transfer lines may condense air. The liquefied air may flash of nitrogen, leaving an oxygen enriched liquid. Do not allow the liquefied air to contact oils, greases, or other combustible materials such as asphalt and motor oil.

Vessels for liquid helium are designed specifically for helium service. Vessels and associated structures are not designed to support higher density fluids. Density, liquid at saturation pressure at 2.17 °K (-271 °C) : 0.146 Kg/l.

For additional recommendations, consult Compressed Gas Association Pamphlets P-9, P-9.1, P-12, P-14 and Safety Bulletin SB-2.

Never carry a compressed gas cylinder or a container of a gas in cryogenic liquid form in an enclosed space such as a car trunk, van or station wagon. A leak can result in a fire, explosion, asphyxiation or a toxic exposure.

Section 8- Exposure Controls/Personal Protection
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#### EXPOSURE LIMITS<sup>1</sup>:

INGREDIENT	% VOLUME	PEL-OSHA <sup>2</sup>	TLV-ACGIH <sup>3</sup>	LD <sub>50</sub> or LC <sub>50</sub> Route/Species
Helium Formula: He CAS: 7440-59-7 RTECS#: MH6520000	99.999	Simple Asphyxiant	Simple Asphyxiant	Not Available

<sup>1</sup> Refer to individual state of provincial regulations, as applicable, for limits which may be more stringent than those listed here.

<sup>2</sup> As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)

<sup>3</sup> As stated in the ACGIH 1994-1995 Threshold Limit Values for Chemical Substances and Physical Agents.

#### ENGINEERING CONTROLS:

Local exhaust to prevent accumulation of high concentrations so as to reduce the oxygen level in the air to less than 19.5%.

#### EYE/FACE PROTECTION:

Safety goggles or glasses as appropriate for the job. Faceshield recommended when handling cryogenic liquid material.

#### SKIN PROTECTION:

Protective gloves of material appropriate for the job. Insulated gloves recommended when handling cryogenic liquid material.

#### RESPIRATORY PROTECTION:

Positive pressure air line with full-face mask and escape bottle or self-contained breathing apparatus should be available for emergency use.

**OTHER/GENERAL PROTECTION:**

Safety shoes or other footwear as appropriate for the job.

**Section 9- Physical and Chemical Properties**

PARAMETER	VALUE	UNITS
Physical state (gas, liquid, solid)	: Gas	
Vapor pressure	: Above Critical temp	
Vapor density at STP (Air = 1)	: 0.14 (GAS)	
Evaporation point	: Not Available	
Boiling point	: -452.1	°F
	: -268.9	°C
Freezing point	: Not Available	
	: Not Available	
pH	: Not Applicable	
Specific gravity	: Not Available	
Oil/water partition coefficient	: Not Available	
Solubility (H <sub>2</sub> O)	: Negligible	
Odor threshold	: Not Applicable	
Odor and appearance	: Colorless , odorless gas	

**Section 10- Stability and Reactivity****STABILITY:**

Stable.

**INCOMPATIBLE MATERIALS**

None.

**HAZARDOUS POLYMERIZATION:**

Does not occur.

**Section 11- Toxicological Information**

Oxygen deficiency during pregnancy has produced developmental abnormalities in humans and experimental animals.

No data given in the Registry of Toxic Effects of Chemical Substances (RTECS) or Sax, Dangerous Properties of Industrial Materials, 7th ed.

**Section 12- Ecological Information**

No data given.

**Section 13- Disposal Considerations**

Do not attempt to dispose of residual waste or unused quantities. Return in the shipping container



PROPERLY LABELED, WITH ANY VALVE OUTLET PLUGS OR CAPS SECURED AND VALVE PROTECTION CAP IN PLACE to HYNOTE Gases or authorized distributor for proper disposal.

Section 14- Transport Information

DOT/IMO SHIPPING NAME: Helium

HAZARD CLASS: 2.2

IDENTIFICATION NUMBER: UN 1046

PRODUCT RQ: None

SHIPPING LABEL(s): NONFLAMMABLE GAS

PLACARD (when required): NONFLAMMABLE GAS

Section 15- Regulatory Information

SARA TITLE III - HAZARD CLASSES:

Sudden Release of Pressure Hazard

Section 16- Other Information

Compressed gas cylinders shall not be refilled without the express written permission of the owner. Shipment of a compressed gas cylinder which has not been filled by the owner or with his/her (written) consent is a violation of transportation regulations.

NOTES: Revisions are routinely updated every three years or on necessary.