

# HELIUM (He)

Synonyms : Helium 4



## Gas Description

Helium is an extremely light gas and is therefore very volatile. It is colourless, odourless, non-flammable and completely inert. It cannot sustain life and has a gas density of STP 0.169 kg/m<sup>3</sup>. Helium is abundant in the Sun's atmosphere (hence its name from helios), and is found at trace level in the Earth's atmosphere. Helium can be supplied in cylinders or liquified gas vessel.

### Typical applications :

Shielding gas for welding  
Purging, pressurization and leak detection  
Carrier gas in chromatography  
Mixed with hydrocarbons as quenching gas in nuclear counters  
Mixed with oxygen for diving or for patients with pulmonary edema  
Balloon filling

### Transport Regulations :

UN Number : 1046  
Shipping Name : HELIUM, COMPRESSED  
Class : 2.2 : Non-Flammable Gas / Non-Toxic  
CAS Number : 7440-59-7  
Hazchem : 2[T]

[Click here](#) for MSDS  
[Click here](#) for more information

## Physical Properties

Chemical symbol : He  
Molecular weight : 4.003  
Specific gravity (Air=1) : 0.138  
Specific volume (m<sup>3</sup>/kg) : 6.00  
Critical temperature : -268°C  
Boiling point : -269°C

Melting Point : -272.2°C  
Critical pressure (bar) : 2.29  
Major hazards : High Pressure, Suffocation  
Toxicity : Simple Asphyxiant  
Flammability Range : Non-Flammable  
Odour : None

[Click here](#) for more information

## Application

### INDUSTRY

### APPLICATION

Laboratories and Analysis

The most commonly gas used as carrier in gas chromatography.

Space and Aeronautics

The oxygen tank of the Ariane 5 launch vehicle is pressureized by a liquid helium subsystem.

Other

Balloon inflation, leak detection.  
Liquid Helium is used for cooling of superconducting magnets.  
Used as a blanket gas to exclude air from certain fabrication processes (optic fibres).  
Helium is used as a heat transfer material.

[Click here](#) for more information

## Typical Specification Comparison Table

Grade	Purity	Typical Impurities (ppm molar)					
		H <sub>2</sub> O	O <sub>2</sub>	THC	H <sub>2</sub>	CO	CO <sub>2</sub>
<b>Alphagaz 2</b>	99.9995%	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5
<b>Alphagaz 1</b>	99.999%	<3	<2	<0.5			
<b>Alphagaz HP</b>	99.995%	<10	<5	<1	<50		

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## Helium : **Alphagaz 2**

Min Purity 99.9995%

<u>Gas</u>		<u>Cylinder information</u>			
Typical impurities (ppm molar)		Cylinder Size	Valve Connection	Pressure (kPa)	Contents (m <sup>3</sup> )
H <sub>2</sub> O	< 0.5ppm	G	AS 2473 T 10	20,000	8.8
O <sub>2</sub>	< 0.5ppm				
THC	< 0.2ppm				
H <sub>2</sub>	< 0.1ppm				
CO	< 0.5ppm				
CO <sub>2</sub>	< 0.5ppm				

### Recommended Equipment

Dual stage chrome plated brass body regulator with a stainless steel diaphragm.  
For further information [Contact](#) the specialty gases representative in your region.

## Helium : **Alphagaz 1**

Min Purity 99.999%

<u>Gas</u>		<u>Cylinder information</u>			
Typical impurities (ppm molar)		Cylinder Size	Valve Connection	Pressure (kPa)	Contents (m <sup>3</sup> )
H <sub>2</sub> O	< 3ppm	G	AS 2473 T 10	20,000	8.8
O <sub>2</sub>	< 2ppm				
THC	< 0.5ppm				

### Recommended Equipment

Dual stage chrome plated brass body regulator with a stainless steel diaphragm.  
For further information [Contact](#) the specialty gases representative in your region.

## Helium : **Alphagaz HP**

Min Purity 99.995%

<u>Gas</u>		<u>Cylinder information</u>			
Typical impurities (ppm molar)		Cylinder Size	Valve Connection	Pressure (kPa)	Contents (m <sup>3</sup> )
H <sub>2</sub> O	< 20ppm	G	AS 2473 T 10	16,600	7.2
O <sub>2</sub>	< 5ppm				
THC	< 50ppm				
H <sub>2</sub>	< 1ppm				

### Recommended Equipment

Dual stage chrome plated brass body regulator with a stainless steel diaphragm.  
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