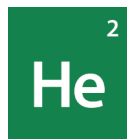


Stable isotopes of helium available from ISOFLEX

Isotope	Z(p)	N(n)	Atomic Mass	Natural Abundance	Enrichment Level	Chemical Form
He-3	2	1	3.016029309	0.000134%	≥99.80%	Gas



The first evidence of helium was observed in 1868 by French astronomer Pierre-Jules-César Janssen during a solar eclipse in Guntur, India. Later that same year, English astronomer Norman Lockyer observed a similar yellow line in the solar spectrum. He and English chemist Edward Frankland named the element with the Greek word *helios*, meaning "sun." Scottish chemist Sir William Ramsay isolated helium on Earth for the first time in 1895.

Helium is the second most abundant element in the universe (although rare on Earth). It is a colorless, odorless gas that is also very slightly soluble in water, while being insoluble in ethanol. It is inert and monatomic in all standard conditions. Due to the small size of helium atoms, its diffusion rate through solids is three times that of air and around 65% that of hydrogen. No stable chemical compounds are known.

Helium-3 is used as a circulating medium in laboratory refrigerators to maintain constant temperatures below 3° K. Helium is also used as a lifting gas in buoyant airships and in most types of balloons, such as weather-, toy-, kite-type- and advertising balloons. Its lifting power is just slightly less than that of hydrogen. In nuclear physics, helium ions or alpha particles serve as projectiles in bombarding heavy nuclei to produce energy or to obtain artificial radioisotopes. Liquid helium is used in magnetic resonance imaging (MRI) equipment for the diagnosis of cancer and other soft-tissue diseases.

Properties of Helium

Name	Helium
Symbol	He
Atomic number	2
Atomic weight	4.0026
Standard state	Gas
CAS Registry ID	7440-59-7
Group in periodic table	2
Group name	Noble gas

Properties of Helium (continued)

Period in periodic table	1
Block in periodic table	s-block
Color	Colorless
Classification	Noble gas
Melting point	-272.2 °C
Boiling point	-268.93 °C
Thermal conductivity	0.1513 W/(m·K)
Heat of vaporization	0.083 kJ·mol ⁻¹
Heat of fusion	0.02 kJ·mol ⁻¹
Density of gas	0.1785 g/L at 0 °C and 1 atm
Density of liquid	No data available
Electron configuration	1s ²
Atomic radius	0.33 Å
Oxidation state	0
Critical temperature	-267.96 °C
Critical pressure	2.24 atm
Critical volume	57 cm ³ /mol
Refractive index	1.000036 at 0 °C and 1 atm
Solubility in water	0.0285 mg/L (calculated) at 25 °C or 0.174 mL/L at NTP