



>>Entry Name: Helium, ¹¹Cl

ENTRY UNDER REVIEW

CAS Registry Number: 7440-59-7

Related CAS Registry Numbers(s): 12184-98-4 12184-99-5 12596-21-3 12631-81-1 14234-48-1 14452-58-5 15644-29-8

He

Molecular Formula: He

Molecular Weight: 4.003

Accurate Mass: 4.0026

Percentage Composition: He 100.00%

known of which 2 are natural, ³He, ⁴He. Second most abundant element in the cosmos, 0.003 ppm (earth's crust); 5 ppm (v/v) in atm. At 2K, He(I) transforms into He(II) which is a superfluid. With increasing pressure: α -He (hcp) $\rightarrow$ β -He (fcc) $\rightarrow$ γ -He (bcc)

Use/Importance: Used in cryogenic studies near 0K, filling balloons, and as an inert atm., with 20% oxygen as a diving atm. Metallurgical uses; carrier gas for g.l. and g.s. chromatography. Commercially available from oil wells (USA)

Physical Description: Colourless, odourless, tasteless, monatomic, non-toxic gas

Melting Point: Mp -272.2° (under pressure)

Boiling Point: Bp -269°

Solubility: Sol. $8.61 \text{ cm}^3 \text{ kg}^{-1}$ in H₂O

Other Data: Forms no normal chemical compds.

Aldrich: 29534-5

>>Variant: Helium 3

Other Data: $I = \frac{1}{2}$; $\mu = -2.127624 \mu_N$. Nmr relative sensitivity (¹H=1.00) 0.44; receptivity (¹³C=1.00) 0.00326

>>Variant: Helium 4

Other Data: $I = +0$

>>Variant: Helium 5

CAS Registry Number: 30010-33-4

Source/Synthesis: Prod. from H (d, γ), H (t,n), H (t,p), also from the isotopes: ⁴He, ⁶Li, ⁷Li, ⁹Be, ¹⁰Be (d, ⁷Be)

Other Data: $I = -3/2$. Decays by α emission and neutron emission

>>Variant: Helium 6

CAS Registry Number: 24824-22-4

Extra CAS Registry Numbers(s): 13982-27-9

Source/Synthesis: Prod. from Be (n, α), or Li (γ ,p)

Other Data: $I = +0$. Decays by $\beta^{(-)}$ emission to ⁶Li

>>Variant: Helium 8

CAS Registry Number: 13982-03-1

Source/Synthesis: Prod. from B (γ ,3p), proton bombardment of C or O, also thermal neutron-induced nuclear fission

Other Data: $I = +0$. Decays by $\beta^{(-)}$ emission to ⁸Li, or neutron emission to α -particles

References: