



>>Entry Name: Lithium

CAS Registry Number: 7439-93-2

Related CAS Registry Numbers(s): 12596-46-2 12596-47-3 12596-49-5 14336-95-9 14452-59-6 14808-04-9 17341-24-1 20504-52-3 39383-18-1 39383-19-2 57363-78-7

Li

Molecular Formula: Li

Molecular Weight: 6.941

Accurate Mass: 7.016003

Percentage Composition: Li 100.00%

Arfvedson (Stockholm) and isol. in 1821 by W.T. Brande. Abundance: 18 ppm (earth's crust), 0.2 ppm (sea water). Has no biological role. α -Form (bcc) transforms into β -form (hcp) at -195° . A ccp form is obtainable by cold working at low temp.

Source/Synthesis: Occurs in ferromagnesian minerals in which it replaces Mg. Most important mineral is spodumene (Li-Al-silicate) but also petalite and lepidolite. Metal obt. by electrolysis of fused LiCl, or by thermal dec. of LiN_3

Use/Importance: Anode material in high density batteries. Tritium breeder in fusion reactor concepts. Heat transfer medium. Starting material for organolithium compds. Used in alloys, particularly with Al. Scavenger for O and S. Commercially available in several solid forms and dispersed in mineral oil. ^6Li is also commercially available

Physical Description: Silvery white, malleable, lustrous metal which tarnishes in air, turning black owing to formation of Li_3N , Li_2O , LiOH and Li_2CO_3 . Reacts vigorously with H_2O but not quite as violently as the heavier alkali metals

Melting Point: Mp 180.5°

Boiling Point: Bp 1340° (1326°)

Solubility: Sol. NH_3 (l) $\rightarrow$ blue-black soln.

Other Data: Lithium salts give a crimson colour to a flame

Hazard & Toxicity: Finely divided metal may ignite spontaneously. Vig. reaction with H_2O . Must be stored under O_2 -free, dry oil

Aldrich: 37239-0

Fluka: 62371

>>Variant: Lithium 5

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

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

>>Variant: Lithium 6

CAS Registry Number: 14258-72-1

Other Data: $I = +1$; $\mu = +0.8220467 \mu_{\text{N}}$. Nmr relative sensitivity ($^1\text{H}=1.00$) 8.5×10^{-3} ; receptivity ($^{13}\text{C}=1.00$) 3.58

>>Variant: Lithium 7

CAS Registry Number: 13982-05-3

Use/Importance: Preferred isotope for nmr spectroscopy

Other Data: $I = -3/2$; $\mu = +3.256424 \mu_{\text{N}}$. Nmr relative sensitivity ($^1\text{H}=1.00$) 0.29; receptivity ($^{13}\text{C}=1.00$) 1540

>>Variant: Lithium 8

CAS Registry Number: 13981-63-0

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

Other Data: $I = +2$; $\mu = +1.6536 \mu_{\text{N}}$. Decays by $\beta^{(-)}$ emission to ^8Be , or by α emission

>>Variant: Lithium 9

CAS Registry Number: 14809-39-3

Source/Synthesis: Prod. from Be (n,p), Be (d,2p), ^{10}Be (^{11}B , ^{12}C), ^3H (^7Li ,p), or by proton bombardment of Ir

Other Data: $I = -3/2$; $\mu = +3.439 \mu_{\text{N}}$. Decays by $\beta^{(-)}$ emission to ^9Be , also by α emission and neutron emission

>>Variant: Lithium 11