


## 003 – LITHIUM – Li

Fact File	
<b>Appearance</b>	Silvery-white metal
<b>Standard Atomic Weight, <math>A_r</math></b>	[6.938, 6.997] amu
<b>Conventional Standard Atomic Weight, <math>A_r</math></b>	6.94 amu
<b>Atomic/Proton Number, <math>Z</math></b>	3
<b>Group</b>	Group 1
<b>Period</b>	Period 2
<b>Block</b>	s-block
<b>Electron Configuration/Ground Shells</b>	[He] $2s^1$
<b>Electrons Per Shell</b>	2, 1
<b>Core Electrons</b>	2
<b>Valence Electrons</b>	1
<b>Phase/State of Matter at STP</b>	Solid
<b>Melting/Liquefaction Point</b>	453.69 K
<b>Boiling Point</b>	1615 K
<b>Density at STP</b>	0.534 g/L
<b>Ionic Charge(s)</b>	1+
<b>Emission Spectrum</b>	
<b>Natural Occurrence</b>	Primordial
<b>Discovered By</b>	Johan August Arfwedson, 1817
<b>Named By</b>	Jöns Jakob Berzelius, 1817

### Discovery

Petalite ( $\text{LiAlSi}_4\text{O}_{10}$ ) was discovered in 1800 by José Bonifácio de Andrada e Silva in a mine on the island of Utö, Sweden; and in 1817 Johan August Arfwedson, working alongside Baron Jöns Jacob Berzelius, detected the presence of a new element while analysing petalite ore.


### Name Origins

Baron Jöns Jacob Berzelius gave the lithium-based alkaline compound similar to those of sodium and potassium that he and Johan August Arfwedson created when studying Petalite ( $\text{LiAlSi}_4\text{O}_{10}$ ) the name "*lithion/lithina*", from the Greek word  $\lambda\iota\theta\omicron\varsigma$  (transliterated as *lithos*, meaning "stone"), to reflect its discovery in a solid mineral, as opposed to potassium, which had been discovered in plant ashes, and sodium, which was known partly for its high abundance in animal blood. He named the metal inside the material "lithium".

### Isotopes

Lithium has two naturally occurring isotopes;  $^6\text{Li}$  (7.59%) and  $^7\text{Li}$  (92.41%).  $^3\text{Li}$  to  $^5\text{Li}$  and  $^8\text{Li}$  to  $^{13}\text{Li}$  have also been synthesised in laboratory conditions. In addition,  $^6\text{Li}$  and  $^{10}\text{Li}$  can be excited ( $^6\text{mLi}$ : 3562.88 keV,  $^{10\text{m}1}\text{Li}$ : 200 keV,  $^{10\text{m}2}\text{Li}$ : 480 keV).

## Hazards

GHS pictograms	 GHS02, GHS05
GHS Signal word	Danger
GHS hazard statements	H260, H314
GHS precautionary statements	P223, P231+P232, P280, P305+P35+P338, P370+P378, P422
NFPA 704 (fire diamond)	