

## Isotopes of potassium available from ISOFLEX

Isotope	Z(p)	N(n)	Atomic Mass	Natural Abundance	Enrichment Level	Chemical Form
K-39	19	20	38.9637069	93.26%	>99.90%	Chloride
K-40	19	21	39.9639985	0.01%	5.00-16.95%	Chloride
K-41	19	22	40.9618260	6.73%	>95.00%	Chloride



Potassium was discovered in 1807 by Sir Humphry Davy. Its name originates with the English word *potash* (“pot ashes”) and the Arabic word *qali* (meaning “alkali”). The origin of the symbol *K* is the Latin word *kalium* (“alkali”). It is an essential element needed for plant growth. Potassium deficiency has also been associated with several common animal ailments. It is in extracellular fluid in animals, at lower concentrations than sodium.

A soft, silvery metal, potassium has a body-centered cubic structure that rapidly oxidizes in moist air and imparts a crimson-red color to flame. It is soluble in liquid ammonia, aniline, mercury and sodium. It reacts violently with water and acids, reacts with alcohol, and dissolves in liquid ammonia and mercury. It also reacts with oxygen or air, forming three oxides: potassium monoxide, potassium peroxide and potassium superoxide. Reactions with halogens, fluorine, chlorine and bromine occur with explosive violence. Violent reactions can occur with many metal halides as well.

Potassium products have applications in the bleaching of textiles and straw, in the tanning of leather, and in the food industry — potassium is the main ingredient in baking powder, it improves dough strength and rise height, and it is a preservative in wine- and beer-making. Potassium nitrate is used in gunpowder and fertilizer. Potassium cyanide is used in mining and in organic synthesis. Potassium carbonate is used in glass, soap, fluorescent lamps, textile dyes and pigments. Potassium chlorate is added to matches and explosives. Potassium bromide was formerly used as a sedative and in photography.

## Properties of Potassium

<b>Name</b>	Potassium
<b>Symbol</b>	K
<b>Atomic number</b>	19
<b>Atomic weight</b>	39.098
<b>Standard state</b>	Solid at 298 °K
<b>CAS Registry ID</b>	7440-09-7

## Properties of Potassium (continued)

<b>Group in periodic table</b>	1
<b>Group name</b>	Alkali metal
<b>Period in periodic table</b>	4
<b>Block in periodic table</b>	s-block
<b>Color</b>	Silvery white
<b>Classification</b>	Metallic
<b>Melting point</b>	63.25 °C
<b>Boiling point</b>	760 °C
<b>Thermal conductivity</b>	102.50 W/(m·K) at 298.2 °K
<b>Electrical resistivity</b>	6.10 $\mu\Omega\cdot\text{cm}$ at 0 °C
<b>Electronegativity</b>	0.8
<b>Specific heat</b>	0.75 kJ/kg K
<b>Heat of vaporization</b>	76.90 kJ·mol <sup>-1</sup> at 760 °C
<b>Heat of fusion</b>	2.33 kJ·mol <sup>-1</sup>
<b>Density of liquid</b>	0.819 g/cm <sup>3</sup> at 100 °C and 0.771 g/cm <sup>3</sup> at 300 °C
<b>Density of solid</b>	0.862 g/cm <sup>3</sup> at 20 °C
<b>Electron configuration</b>	[Ar]4s <sup>1</sup>
<b>Atomic radius</b>	2.35 Å
<b>Oxidation state</b>	+1
<b>Ionization potential</b>	4.341 eV