

Stable isotopes of rubidium available from ISOFLEX

Isotope	Z(p)	N(n)	Atomic Mass	Natural Abundance	Enrichment Level	Chemical Form
Rb-85	37	48	84.911792	72.16%	≥99.50%	Chloride
Rb-87	37	50	86.909186	27.84%	>98.00%	Chloride
Rb-87	37	50	86.909186	27.84%	>98.00%	Metal

37

Rb

Rubidium was discovered spectroscopically in 1861 by Robert Bunsen and Gustav Kirchhoff. The origin of its name is the Latin word *rubidius*, meaning “dark red” or “deepest red,” referring to the element's bright red spectroscopic lines.

A soft, silvery white solid with body-centered cubic crystals, rubidium is ductile and very light and is easily oxidized in air. The liquid metal vaporizes, producing a blue vapor. It is soluble in acids and alcohol and reacts violently in water to form rubidium hydroxide. Rubidium is also a highly reactive metal, with most of its reactions similar to those of sodium or potassium. The metal ignites spontaneously in air, forming oxides, and is coated rapidly with a gray-blue oxide film. The reaction with dilute mineral acids can proceed with explosive violence, releasing hydrogen. Rubidium combines with hydrogen and nitrogen, forming the hydride RbH and the nitride Rb₃N.

Rubidium metal and its salts have very few commercial applications. They are used in research involving magnetohydrodynamics and thermoionic experiments. Rubidium is also used in photocells and in vacuum tubes. The beta-emitter isotope Rubidium-87 is used to determine the age of some rocks and minerals. Radioisotopes of rubidium have been used as radioactive tracers to trace the flow of blood in the body. Rubidium salts are used in pharmaceuticals as soporifics and sedatives, as well as for treating epilepsy.

Properties of Rubidium

Name	Rubidium
Symbol	Rb
Atomic number	37
Atomic weight	85.468
Standard state	Solid at 298 °K
CAS Registry ID	7440-17-7
Group in periodic table	1
Group name	Alkali metal

Properties of Rubidium (continued)

Period in periodic table	5
Block in periodic table	s-block
Color	Silvery white
Classification	Metallic
Melting point	39.3 °C
Boiling point	686 °C
Vaporization point	689 °C
Thermal conductivity	58.2 W/(m·K) at 298.2 °K
Electrical resistivity	12.5 µΩ·cm at 20 °C
Electronegativity	0.8
Specific heat	0.36 kJ/kg K
Heat of vaporization	72 kJ·mol ⁻¹
Heat of fusion	2.19 kJ·mol ⁻¹
Density of liquid	1.47 g/cm ³ at 39.3 °C
Density of solid	1.53 g/cm ³
Electron configuration	[Kr]5s ¹
Atomic radius	2.43 Å
Ionic radius	Rb ⁺ : 1.48 Å
Atomic volume	55.9 cm ³ /g-atom at 20 °C
Ionization potential	4.177 V
Oxidation state	+1
Mohs hardness scale	0.3