



>>Entry Name: Rubidium

CAS Registry Number: 7440-17-7

Related CAS Registry Numbers(s): 22537-38-8 25681-81-6 56091-74-8

Rb

Molecular Formula: Rb

Molecular Weight: 85.468

Accurate Mass: 84.911794

Percentage Composition: Rb 100.00%

naturally occurring of which one is stable (^{85}Rb), and one long-life radioactive (^{87}Rb). ^{87}Rb is employed in nmr spectroscopy. Abundance 78 ppm (earth's crust) and 0.12 ppm (sea water). Bcc struct.

Source/Synthesis: Synth. from $\text{RbCl} + \text{Ca}$ at 750° ; RbOH or $\text{Rb}_2\text{CO}_3 + \text{Mg}$; or from Rb_2CrO_4 or $\text{Rb}_2\text{Cr}_2\text{O}_7 + \text{Zn}$ at $700\text{-}1000^\circ$

Use/Importance: Working fluid for vapour turbines and for thermoelectric generators using the magnetohydrodynamic principle. Commercially available. Few large scale commercial uses. Some salts used medicinally

Physical Description: Soft silvery-white metal. Tarnishes in air forming rubidium oxides, carbonates and hydroxide. Ignites spontaneously on contact with H_2O

Melting Point: Mp 39.5°

Boiling Point: Bp 688°

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

Other Data: Rubidium and its salts impart a pale violet to red-violet colour to flames

Hazard & Toxicity: Salts non-toxic except in large doses. Fire and explosion hazard. May ignite in air

Aldrich: 38599-9

Fluka: 83950

>>Variant: Rubidium 79

CAS Registry Number: 14809-48-4

Source/Synthesis: Prod. from $\text{Cu}(\text{O}, 2\text{n})$, $\text{Br}({}^3\text{He}, 3\text{n})$, or ${}^{71}\text{Ga}({}^{12}\text{C}, 4\text{n})$, also by proton bombardment of Ta, U, or Th

Other Data: $I = +5/2$; $\mu = +0.3358 \mu_{\text{N}}$. Decays by orbital electron capture or $\beta^{(+)}$ emission to ${}^{79}\text{Kr}$

>>Variant: Rubidium 81

CAS Registry Number: 18268-34-3

Source/Synthesis: Prod. from $\text{Br}(\alpha, 2\text{n})$, ${}^9\text{Br}({}^3\text{He}, \text{n})$, or proton bombardment of Rb

Use/Importance: Used in diagnostic nuclear medicine

Other Data: $I = -3/2$; $\mu = +2.060 \mu_{\text{N}}$. Decays by $\beta^{(+)}$ emission, or orbital electron capture to ${}^{81}\text{Kr}$

>>Variant: Rubidium 82m

CAS Registry Number: 14391-63-0

Source/Synthesis: Prod. from $\text{Br}(\alpha, \text{n})$, $\text{Kr}(\text{d}, 2\text{n})$, or proton bombardment of Rb

Other Data: $I = -5$; $\mu = +1.5 \mu_{\text{N}}$. Decays by orbital electron capture, or $\beta^{(+)}$ emission to ${}^{82}\text{Kr}$

>>Variant: Rubidium 83

CAS Registry Number: 17056-36-9

Source/Synthesis: Prod. from $\text{Br}(\alpha, 2\text{n})$, or by proton irradiation of RbCl targets (commercial production route). Daughter of ${}^{83}\text{Sr}$

Other Data: $I = -5/2$; $\mu = +1.425 \mu_{\text{N}}$. Decays by orbital electron capture to ${}^{83}\text{Kr}$

>>Variant: Rubidium 84

CAS Registry Number: 15765-86-3

Source/Synthesis: Prod. from $\text{Br}(\alpha, \text{n})$, or ${}^{85}\text{Rb}(\gamma, \text{n})$

Use/Importance: Used in diagnostic nuclear medicine

Other Data: $I = -2$; $\mu = -1.32412 \mu_{\text{N}}$. Decays by $\beta^{(+)}$ emission/orbital electron capture (96%) to ${}^{84}\text{Sr}$, or $\beta^{(-)}$ emission (4%) to ${}^{84}\text{Kr}$