



>>Entry Name: Silver

Synonym(s): Argentum (L.)

CAS Registry Number: 7440-22-4

Related CAS Registry Numbers(s): 12187-06-3 12595-26-5 14701-21-4 15046-91-0 15116-79-7 19498-54-5

Ag

Molecular Formula: Ag

Molecular Weight: 107.868

Accurate Mass: 106.905092

Percentage Composition: Ag 100.00%

crust), 3×10^{-4} ppm (sea water). Has no biological role. Fcc struct. (A1 type). Known to ancient civilizations

Source/Synthesis: Occurs as natural metal, and as argentite (Ag_2S). Prod. as by-product from manuf. of non-ferrous metals, e.g. Cu, Pb, Zn

Use/Importance: Excellent electrical and thermal conductor. Important compds. used in photography; used also in jewellery, electrical cells. Industrial catalyst

Physical Description: Soft malleable, ductile metal with silver sheen. Tarnishes in air with formation of black sulfide. Phys. props. dependent on mechanical treatment.

Attacked by Cl_2 , S, H_2S , metal cyanides (in air), chromic, nitric and sulfuric acids

Melting Point: Mp 961°

Boiling Point: Bp 2163° (2155°)

Other Data: d^{25} 10.50 g cm^{-3} . Stable to O_2 , and to H_2O , but attacked by S and its compds. and by $\text{Cl}^{(-)}$. Sol. H_2SO_4 , (hot, conc.) and HNO_3 (dil.). Sol. aq. $\text{CN}^{(-)}$ solns. (+ H_2O_2)

Hazard & Toxicity: Toxic to lower organisms, but not mammals. Dust may be pyrophoric

Aldrich: 34878-3

Fluka: 85132

>>Variant: Silver 105

CAS Registry Number: 14928-14-4

Source/Synthesis: Prod. from Rh ($\alpha, 2n$), also by bombardment of Pd with protons or deuterons

Other Data: $I = -\frac{1}{2}$; $\mu = 0.1014 \mu_N$. Decays by orbital electron capture to ^{105}Pd

>>Variant: Silver 106

CAS Registry Number: 14333-39-2

Source/Synthesis: Prod. from Rh (α, n), Ag ($n, 2n$), or ^{107}Ag (d, t)

Other Data: $I = +1$; $\mu = 2.85 \mu_N$. Decays by orbital electron capture or $\beta^{(+)}$ emission to ^{106}Pd (>99%), also by $\beta^{(-)}$ emission to ^{106}Cd (<1%)

>>Variant: Silver 106m

Source/Synthesis: Prod. from Rh (α, n), ^{107}Ag (γ, n), ^{107}Ag ($n, 2n$), ^{107}Ag (d, t), or proton bombardment of Cd

Other Data: $I = +6$; $\mu = 3.71 \mu_N$. Decays by orbital electron capture to ^{106}Pd

>>Variant: Silver 107

CAS Registry Number: 14378-37-1

Use/Importance: Isotope used for nmr spectroscopy

Other Data: $I = -\frac{1}{2}$; $\mu = -0.113570 \mu_N$. Nmr relative sensitivity ($^1\text{H}=1.00$) 6.62×10^{-5} ; receptivity ($^{13}\text{C}=1.00$) 0.195

>>Variant: Silver 108m

CAS Registry Number: 14391-65-2

Source/Synthesis: Prod. from Ag (n, γ)

Other Data: $I = +6$; $\mu = +3.580 \mu_N$. Decays by orbital electron capture to ^{108}Pd , or isomeric transition to ^{108}Ag

>>Variant: Silver 109

CAS Registry Number: 14378-38-2

Use/Importance: Isotope used for nmr spectroscopy

Other Data: $I = -\frac{1}{2}$; $\mu = -0.1306905 \mu_N$. Nmr relative sensitivity ($^1\text{H}=1.00$) 1.01×10^{-4} ; receptivity ($^{13}\text{C}=1.00$) 0.276