



>>Entry Name: Gold

ENTRY UNDER REVIEW

Synonym(s): Aurum (L.). E175

CAS Registry Number: 7440-57-5

Related CAS Registry Numbers(s): 16065-91-1 19498-55-6 20681-14-5

Au

Molecular Formula: Au

Molecular Weight: 196.967

Accurate Mass: 196.966543

Percentage Composition: Au 100.00%

Has no biological role. The most electronegative metal. Abundance: 0.004 ppm (earth's crust), 4×10^{-6} pm (sea water). Has fcc struct.

Source/Synthesis: Occurs as native Au or as tellurides. Extracted with Hg or by the cyanide process, and pptd. with Zn

Use/Importance: Excellent electrical and thermal conductor. Main uses in dentistry, jewellery, electronics and aerospace industries, and as bullion

Physical Description: Soft, yellow, malleable, ductile metal. Forms red, blue or violet colloidal suspensions. Physical props. depend on mechanical treatment

Melting Point: Mp 1064°

Boiling Point: Bp 2808°

Other Data: Stable in dry air at r.t.; and to H₂O, acids (except HNO₃/HCl) and alkalis. Sol. in aq. CN⁽⁻⁾. Unreactive to O₂, S, Se but reacts with Te

Hazard & Toxicity: Non toxic

Aldrich: 34929-1

Fluka: 50763

Sigma: G1652

>>Variant: Gold 191

CAS Registry Number: 16394-57-3

Source/Synthesis: Prod. from Ir (α ,4n), ⁹²Pt (d,3n), or by proton bombardment of Pt

Other Data: $I = +3/2$; $\mu = +0.137 \mu_N$. Decays by orbital electron capture or $\beta^{(+)}$ emission to ¹⁹¹Pt. There is also an isomer ^{191m}Au, $t_{1/2}$ 920 ms

>>Variant: Gold 192

CAS Registry Number: 15756-45-3

Source/Synthesis: Prod. from Ir (α ,3n), or by proton bombardment of Pt. Daughter of ¹⁹²Hg

Other Data: $I = -1$; $\mu = -0.011 \mu_N$. Decays by orbital electron capture or $\beta^{(+)}$ emission to ¹⁹²Pt

>>Variant: Gold 193

CAS Registry Number: 13982-20-2

Source/Synthesis: Prod. from Ir (α ,2n), also by deuteron or proton bombardment of Pt. Daughter of ¹⁹³Hg (3.8 h)

Other Data: $I = +3/2$; $\mu = +0.140 \mu_N$. Decays by orbital electron capture or $\beta^{(+)}$ emission to ¹⁹³Pt

>>Variant: Gold 194

CAS Registry Number: 15756-89-5

Source/Synthesis: Prod. from Ir (α ,3n), ⁴Pt (d,2n), also by deuteron or proton bombardment of Pt

Other Data: $I = -1$; $\mu = +0.075 \mu_N$. Decays by orbital electron capture (97%) or $\beta^{(+)}$ emission (3%) to ¹⁹⁴Pt. There are also two isomers ^{194m2}Au, $t_{1/2}$ 420 ms and ^{194m1}Au, $t_{1/2}$ 600 ms

>>Variant: Gold 195

CAS Registry Number: 14320-93-5

Source/Synthesis: Prod. from Ir (α ,2n), Pt (p,n), or deuteron bombardment of Pt

Other Data: $I = +3/2$; $\mu = +0.148 \mu_N$. Decays by orbital electron capture to ¹⁹⁵Pt