

Gold ${}_{79}\text{Au}^{196.967}$

Known to ancient civilizations.

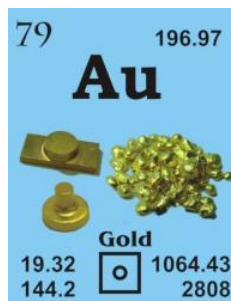
[Anglo-Saxon: gold; Latin: aurum]

French: or

German: gold

Italian: aro

Spanish: aro



Atomic number	79
Density in g/cm ³	19.32
Atomic radius in pm	174
Atomic weight	196.97
Melting point in °C	1064.43
Boiling point in °C	2808

Description: Gold is a soft metal with a characteristic shiny yellow colour. It has the highest malleability and ductility of any element, and can be beaten into a film only microns thick. Gold is unaffected by air, water, acids (except aqua regia, HNO₃-HCl) and alkalis. It is used as bullion, in jewellery, electronics and glass, to colour it and as a heat reflector.

GOLD SINGLE CRYSTAL PROPERTIES

State:	Single crystal
Crystal structure:	fcc
Production method:	Czochralski
Standard size:	diameter 10-20mm thickness 1-2mm
Orientation:	(100), (110) and (111)
Orientation accuracy:	<2°, <1°, <0.4° or <0.1°
Polishing:	as cut, one or two sides polished
Roughness of surface:	<0.03 µm
Purity:	99.999%
	Ag 4.20
	Al 0.20
	Ca 0.30
	Cd < 0.1
	Cl 0.16
	Co 0.03
	Cu 1.30
	Fe 0.73
	K 0.40
	Mg 0.02
	Mn 0.04
	Mo 0.06
	Na 0.10
	Ni 0.05
	Pd 0.25
	Rh 0.10

Typical analysis (ppm):



	S 0.13
	Si 0.51
	Ti 0.01
	V 0.02
	Zn 0.05
	Au balance
Crystal structure:	(cell dimensions/pm), space group, f.c.c. ($a=407.833$), Fm3m
X-ray diffractions mass absorption coefficients:	CuK α 208 ($\mu/\text{cm}^2\text{g}^{-1}$) MoK α 115 ($\mu/\text{cm}^2\text{g}^{-1}$)
Neutron scattering length:	0.763 b/10 ⁻¹² cm
Thermal neutron capture cross-section:	98.7 μa / barns
Density:	19.3 kg/m ⁻³
Melting point:	1064.43 °C / 1337.58 °K
Boiling point:	2806.85 °C / 3080 °K
Molar volume:	10.19 cm ³
Thermal conductivity:	317[300 K] Wm ⁻¹ K ⁻¹
Coefficient of linear thermal expansion:	14.16 x 10 ⁻⁶ K ⁻¹
Electrical resistivity:	2.35 x 10 ⁻⁸ [293 K] Ωm
Mass magnetic susceptibility:	-1.78 x 10 ⁻⁹ (s) kg ⁻¹ m ³
Young's modulus:	78.5 GPa
Rigidity modulus:	26.0 GPa
Bulk modulus:	171 GPa
Poisson's ratio:	0.42
Radi:	Au ³⁺ 91; Au ⁺ 137; atomic 144; covalent 134
Electronegativity:	2.54 (Pauling); 1.42 (Allred); 5.77 eV (absolute)
Effective nuclear charge:	4.20 (Slater); 10.94 (Clementi); 15.94 (Froese-Fischer)
Number of Isotopes (incl. nuclear isomers):	39
Isotope mass range:	176- > 204

