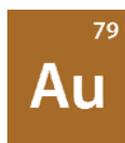


## Stable Isotopes of Gold

Isotope	Z(p)	N(n)	Atomic Mass	Natural Abundance	Nuclear Spin
Au-197	79	118	196.966551	100.00%	3/2+



Gold has been valued since the earliest recorded times in history. Egyptians developed gold smelting around 3600 BC; their inscriptions dating back to 2600 BC specifically describe gold. One of the most iconic pieces of gold artwork known is Tutankhamun's funeral mask, which was made about 1223 BC. Gold is also mentioned several times throughout the Old Testament. Its name derives from the Anglo-Saxon word *gold*, and its symbol, *Au*, comes from the Latin word *aurum*, meaning "gold."

A yellow, ductile metal with face-centered cubic crystals, gold is also relatively soft and does not corrode in air, but it is tarnished by sulfur. It is chemically nonreactive and nontoxic but is attacked by chlorine and cyanide solutions in the presence of oxygen. It is insoluble in almost all single acids or hydroxide solutions, and it dissolves in *aqua regia*. It is relatively inert in comparison to the other two coinage metals, copper and silver. It is also chemically more inert than most other metals in the periodic table. It does not combine with oxygen, sulfur or selenium, even at elevated temperatures; however, it does react with tellurium in its molten state, forming gold telluride. Gold reacts with chlorine, bromine and iodine at elevated temperatures, forming the corresponding halides. Gold is not attacked by most mineral acids, including cold or hot sulfuric acid, phosphoric acid, hydrochloric or nitric acids.

The most important uses of gold are in jewelry and as a monetary standard. The metal has been in use for jewelry, ornaments and decorative items throughout history. Gold bullion and coins have been used as a medium of exchange all over the world. Other uses include electroplating or gold plating of electronic components — such as diodes, heat shields, plugs and printed circuits — for infrared reflectivity and corrosion resistance. Still other uses are in dentistry, photography, and brazing alloys. Certain salts of gold are used in medical treatment.

## Properties of Gold

<b>Name</b>	Gold
<b>Symbol</b>	Au
<b>Atomic number</b>	79
<b>Atomic weight</b>	196.9665
<b>Standard state</b>	Solid at 298 °K
<b>CAS Registry ID</b>	7440-57-5
<b>Group in periodic table</b>	11
<b>Group name</b>	Coinage metal

## Properties of Gold (continued)

<b>Period in periodic table</b>	6
<b>Block in periodic table</b>	d-block
<b>Color</b>	Gold
<b>Classification</b>	Metallic
<b>Melting point</b>	1064 °C
<b>Boiling point</b>	3080 °C
<b>Vaporization point</b>	2856 °C
<b>Thermal conductivity</b>	318 W/(m·K) at 298.2 °K
<b>Electrical resistivity</b>	2.214 $\mu\Omega\cdot\text{cm}$ at 20 °C
<b>Electronegativity</b>	2.4
<b>Specific heat</b>	0.13 kJ/kg K
<b>Heat of vaporization</b>	81.80 kJ·mol <sup>-1</sup> at 3080 °C
<b>Heat of fusion</b>	3.03 kJ·mol <sup>-1</sup>
<b>Density of liquid</b>	17.31 g/cm <sup>3</sup> at 1064 °C
<b>Density of solid</b>	19.30 g/cm <sup>3</sup>
<b>Electron configuration</b>	[Xe]4f <sup>14</sup> 5d <sup>10</sup> 6s <sup>1</sup>
<b>Oxidation states</b>	+1, +3; +3 is common and more stable