

Platinum ${}_{78}\text{Pt}^{195.08}$

Known to pre-Columbian South Americans and taken to Europe about 1750.

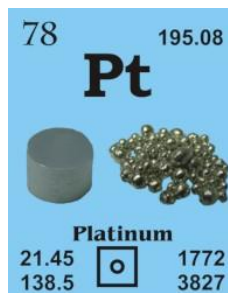
[Spanish: platina = silver]

French: platine

German: platin

Italian: platino

Spanish: platino



Atomic number	78
Density in g/cm ³	21.45
Atomic radius in pm	177
Atomic weight	195.08
Melting point in °C	1772
Boiling point in °C	3827

Description: Platinum is a lustrous, silvery-white, malleable and ductile metal. It is unaffected by air and water, and will only dissolve in aqua regia (HCl/HNO₃) and molten alkalis. Platinum is used in jewelry, anti-cancer drugs, catalysts and catalytic converters.

METAL SINGLE CRYSTAL PROPERTIES

State:	single crystal
Crystal structure:	fcc
Production method:	Czochralski
Standard size:	diameter 10-12mm thickness 1-2mm
Orientation:	(100), (110) and (111)
Orientation accuracy:	<2°, <1°, <0.5° or <0.1°
Polishing:	as cut, one or two sides polished
Roughness of surface:	<0.03µm
Purity:	99.99%
Typical analysis (ppm):	Au < 5 Os < 15 Ag < 3 Pd < 2 Cu < 2 Rh < 3 Fe < 3 Ru < 2 Ir < 10 Si < 10 Pt balance
Density:	21.4 g/cm ³
Melting point:	1771.85 °C / 2045 °K
Boiling point:	3826.85 ±100 °C / 4100±100 °K
Molar volume:	9.10 cm ³
Thermal conductivity:	71.6 [300 K] Wm ⁻¹ K ⁻¹
Coefficient of linear thermal expansion:	9.0 x 10 ⁻⁶ K ⁻¹
Electrical resistivity:	10.6x 10 ⁻⁸ [293 K] Wm
Mass magnetic susceptibility:	+1.301 x 10 ⁻⁸ (s) kg ⁻¹ m ³
Young's modulus:	170 GPa
Rigidity modulus:	60.9 GPa

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Bulk modulus:	276 GPa
Poisson's ratio:	0.39
Radii:	Pt4+ 70; Pt2+ 85; atomic 138; covalent 129
Electronegativity:	2.28 (Pauling); 1.44 (Allred); 5.6 eV (absolute)
Effective nuclear charge:	4.05 (Slater); 10.75 (Clementi); 15.65 (Froese-Fischer)
Number of Isotopes (incl. nuclear isomers):	36
Isotope mass range:	172 -> 201
Crystal structure, (cell dimensions / pm), space group	fcc
X-ray diffraction: mass absorption coefficients:	CuK α 200 (μ/r) / cm ² g ⁻¹ MoK α 113 (μ/r) / cm ² g ⁻¹
Neutron scattering length:	0.960 b/10 ⁻¹² cm
Thermal neutron capture cross-section:	10.3 sa / barns

