Zirconium $_{40}Zr^{91.22}$

Atomic number	40
Density in g/cm³	6.508
Atomic radius in pm	206
Atomic weight	91.224
Melting point in °C	1852
Boiling point in °C	4377

Zirconium was discovered in 1789 byM.H.Klaproth at the University of Berlin, Germany. First isolated 1824 by J.J. Berzeluis at Stockholm, Sweden.

[Arabic, zargun = gold colour]
French: zirconium
German: zirconium
Italian: zirconio
Spanish: circonio

Description: Zirconium is a hard, lustrous, silvery metal which is very resistant towards corrosion due to an oxid layer on the surface. However, it will burn in air if ignited. Zirconium is unaffected by acids (exept HF) and alkalis. It is used in alloys, coloured glazes, and nuclear reactors. Its oxides are used in foundry crucibles, bricks, ceramics and abrasives.

ZIRCONIUM SINGLE CRYSTAL PROPERTIES

State:	single crystal (max. gain size ~3-4mm)
Crystal structure:	hexagonal
Production method:	Floating zone
Standard size:	diameter 3-4mm thickness 1mm
Orientation:	(0001)
Orientation accuracy:	<2°, <1°, <0.4° or <0.1°
Polishing:	as cut, one or two sides polished
Roughness of surface:	<0.03µm
Purity:	99.99% ex Hf
Typical analysis (ppm):	C 3 H < 1 O 9 N < 5 Cu 1.60 Fe 1.80 Ni < 1 Pb 0.30 Si 0.30 Ga, Hf and Ta are below the detection limit
Density:	6.49 g/cm3
Melting point:	1851.85 °C / 2125 °K
Boiling point:	4376.85 °C / 4650 °K
Molar volume:	14.02 cm3

Thermal conductivity:	22.7 [300 K] Wm-1K-1
Coefficient of linear thermal expansion:	5.78 x 10-6 K-1
Electrical resistivity:	42.1x 10-8 [293 K] Wm
Mass magnetic susceptibility:	+1.68 x 10-8(s) kg-1m3
Young's modulus:	98 GPa
Rigidity modulus:	35 GPa
Bulk modulus:	89.8 GPa
Poisson's ratio:	0.38
Radii:	Zr4+ 87; Zr2+ 109; atomic 160; covalent 145
Electronegativity:	1.33 (Pauling); 1.22 (Allred); 3.64 eV (absolute)
Effective nuclear charge:	3.15 (Slater); 6.45 (Clementi); 9.20 (Froese-Fischer)
Number of Isotopes (incl. nuclear isomers):	25
Issotope mass range:	82 -> 101
Crystal structure, (cell dimentions / pm), space group	hexagonal
X-ray diffraction: mass absorption coefficients:	CuKα 143 (μ/r) / cm2g-1 MoKα 15.9 (μ/r) / cm2g-1
Neutron scattering length:	0.716 b/10-12 cm
Thermal neutron capture cross-section:	0.184 sa / barns