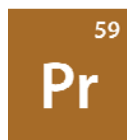


Stable Isotopes of Praseodymium

Isotope	Z(p)	N(n)	Atomic Mass	Natural Abundance	Nuclear Spin
Pr-141	59	82	140.907648	100.00%	5/2+



Praseodymium was discovered in 1885 by Carl F. Auer von Welsbach. It takes its name from the Greek phrase *prasios didymos*, meaning “green twin.”

A lanthanide-series rare earth element, praseodymium is a pale yellow metal which attains a green oxide coating on exposure to air. It exhibits two crystalline modifications: an *alpha form* that has a hexagonal close-packed structure, a density of 6.773 g/cm³ and a molar volume of 20.82 cm³/mol; and a *beta form* that has an open body-centered cubic structure, a density of 6.64 g/cm³ and a molar volume of 21.20 cm³/mol. The alpha form transforms to beta at 792 °C.

Praseodymium is paramagnetic at ambient temperatures. There are several known compounds. Chloride, bromide and iodide salts are all hygroscopic and soluble in water and alcohol. Praseodymium salts containing oxo anions such as sulfate, hydroxide, carbonate, silicates, oxalate, thiosulfate, chromate, molybdate and borate are also known.

Praseodymium is a component of didymium glass used in welders' goggles. Its salts are used as colorants for glasses and enamels: when in glass, they produce an intense yellow color. Praseodymium's oxide is one of the most refractory substances known and is a core material for carbon arcs used in lighting and projection. A Misch metal that contains about 5% praseodymium is used to make cigarette lighters.

Properties of Praseodymium

Name	Praseodymium
Symbol	Pr
Atomic number	59
Atomic weight	140.9077
Standard state	Solid at 298° K
CAS Registry ID	7440-10-0
Group in periodic table	N/A
Group name	Lanthanoid

Properties of Praseodymium (continued)

Period in periodic table	6 (Lanthanoid)
Block in periodic table	f-block
Color	Silvery white, yellowish tinge
Classification	Metallic
Melting point	931 °C
Boiling point	3512 °C
Vaporization point	3510 °C
Thermal conductivity	12.50 W/(m·K) at 298.2 °K
Electrical resistivity	68 $\mu\Omega\cdot\text{cm}$ at 25 °C
Electronegativity	1.1
Heat of vaporization	330 $\text{kJ}\cdot\text{mol}^{-1}$ at 3512 °C
Heat of fusion	6.90 $\text{kJ}\cdot\text{mol}^{-1}$
Density of liquid	6.50 g/cm^3 at 931 °C
Density of solid	6.77 g/cm^3
Electron configuration	$[\text{Xe}]4f^36s^2$
Atomic radius	1.828 Å
First ionization potential	5.46 eV
Oxidation states	+2, +3, +4
Most stable oxidation state	+3