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Pr
Praseodymium
140.908

Key Properties

Atomic Mass	140.908
Category	Lanthanides
State at 20°C	solid
Melting Point	931°C
Boiling Point	3520°C
Density	6.77
Electron Config	[Xe] 4f36s2
Electronegativity	1.13
Year Discovered	1885
Discovered By	Carl Auer von Welsbach

Did You Know?

- 1 Its name is a combination of the Greek words 'prasios', meaning 'leek-green', and 'didymos', meaning 'twin', because it produces a green line in its spectrum and was difficult to separate from its 'twin' element, neodymium.
- 2 Glass containing praseodymium, known as didymium glass, has a distinctive yellow-green color and is used in welders' and glassblowers' goggles because it blocks the yellow light and infrared radiation from hot flames.
- 3 When alloyed with magnesium, it creates a high-strength metal used in aircraft engines.
- 4 The permanent magnets used in the direct-drive generators of some wind turbines contain praseodymium to improve their performance.
- 5 It gives cubic zirconia crystals a peridot-green color.

APPEARANCE

Praseodymium is a soft, silvery, malleable metal.

SUPERHERO PERSONA

"The Welder's Friend, a hero who protects eyes from dangerous light with special yellow-green glass."

EVERYDAY CONNECTION

Praseodymium is found in the glass in a welder's or glassblower's safety goggles.

POP CULTURE

Praseodymium's unique spectral properties make it useful for specialty lasers.

Praseodymium: The Colorful "Green Twin"

Praseodymium is a soft, silvery metal that belongs to the lanthanide family of rare earths. Its name comes from the Greek words prasios didymos, meaning "green twin"—a reference to the green color of its salts and its close link with its "twin" element, neodymium.

Why Is Praseodymium Useful?

Praseodymium has several important uses thanks to its special properties.

Alloys: Mixed with magnesium, praseodymium forms a strong, lightweight alloy used in aircraft engines. It's also part of mischmetal, an alloy used to make the flints in cigarette lighters.

Magnets: It is an important component in alloys for making permanent magnets.

Glass & Ceramics: Praseodymium salts produce a bright, clean yellow color in glass, enamels, and glazes. It is also a key ingredient in didymium glass, used for safety goggles by glassmakers and welders because it blocks out harsh yellow and infrared light.

Lighting: Together with other lanthanides, praseodymium is used in carbon arc lamps, which were once common in studio lighting and cinema projectors.

Natural Abundance & History

Praseodymium isn't found as a pure metal in nature. Instead, it occurs in minerals such as monazite and bastnaesite, alongside other rare earths. It's extracted using ion-exchange and solvent-extraction methods, and pure praseodymium metal is made by reducing its chloride with calcium.

1841: Swedish chemist Carl Mosander discovered what he thought was a single new element, which he called didymium.

1885: Austrian chemist Carl Auer von Welsbach proved that didymium was actually two different elements. He separated them and named them neodymium ("new twin") and praseodymium ("green twin").

1931: The first pure sample of praseodymium metal was finally produced.

Biological Role

Praseodymium has no known role in living organisms. It is considered to have low toxicity compared to many other rare earths.