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Pd
Palladium
106.42

Key Properties

Atomic Mass	106.42
Category	Transition Metals
State at 20°C	solid
Melting Point	1554.8°C
Boiling Point	2963°C
Density	12.023
Electron Config	[Kr] 4d10
Electronegativity	2.2
Year Discovered	1803
Discovered By	William Hyde Wollaston

Did You Know?

- 1 It has the remarkable ability to absorb up to 900 times its own volume of hydrogen gas at room temperature.
- 2 Along with platinum and rhodium, palladium is a key component in catalytic converters in most gasoline-powered cars.
- 3 It is a popular alternative to platinum in jewelry, especially for creating 'white gold' alloys.
- 4 Palladium was used in the 'cold fusion' experiments of 1989, where its hydrogen-absorbing properties were central to the controversial claims.
- 5 It was named after the asteroid Pallas, which had been discovered just two years earlier.

APPEARANCE

Palladium is a lustrous, silvery-white, rare metal.

SUPERHERO PERSONA

"The Hydrogen Sponge, a hero with the amazing ability to absorb vast amounts of hydrogen gas."

EVERYDAY CONNECTION

Palladium is found in white gold jewelry alloys.

POP CULTURE

Palladium is the key element in the Arc Reactor that powers Iron Man's suit in Iron Man 2.

Palladium: The Catalytic Converter Metal

Palladium is a shiny, silvery-white metal that belongs to the platinum group of metals. It's famous for its ability to resist corrosion and for its unique catalytic powers, which make it one of the most important metals in the fight against pollution.

Why Is Palladium Useful?

Palladium's versatility comes from its catalytic ability, shiny appearance, and resistance to corrosion.

Catalytic Converters: Most palladium is used in car exhaust systems to turn harmful gases like carbon monoxide into safer substances.

Jewelry: Alloyed with gold, it creates white gold, giving jewelry a silvery-white shine.

Electronics: Found in ceramic capacitors inside laptops, mobile phones, and other devices.

Catalyst in Chemistry: Finely divided palladium is a powerful catalyst in chemical reactions such as hydrogenation. Heated palladium also lets hydrogen gas pass through it, making it useful for separating and purifying hydrogen.

Dentistry: Some dental fillings and crowns are made with palladium.

Biological Role & Natural Abundance

Palladium has no biological role and is considered non-toxic.

It can be found in pure form in Brazil, but is more often found in sulfide minerals. Commercially, most palladium is obtained as a by-product of nickel, copper, and zinc refining.

History of Discovery

1803: English chemist William Hyde Wollaston discovered palladium while analyzing residues left after dissolving crude platinum in acid.

At first, he secretly put the new metal on sale under the name palladium, but when others dismissed it as an alloy, he revealed himself and formally described it as a brand-new element.