

**Key Properties**

Atomic Mass	[237]
Category	actinide
State at 20°C	solid
Melting Point	644°C
Boiling Point	3902°C
Density	20.45
Electron Config	[Rn] 5f46d17s2
Electronegativity	1.36
Year Discovered	1940
Discovered By	Edwin McMillan & Philip H. Abelson

**Did You Know?**

- 1 It was the first transuranic element (element heavier than uranium) to be synthesized.
- 2 It was named after the planet Neptune, following the planetary naming scheme started with uranium (Uranus).
- 3 Although it is primarily produced synthetically, trace amounts of neptunium are actually found in nature in uranium ores.
- 4 It has been considered for use in devices that can detect high-energy neutrons.
- 5 At least 25 radioactive isotopes of neptunium have been identified.

**APPEARANCE**

Neptunium is a silvery, radioactive, metallic element.

**SUPERHERO PERSONA**

*"The World Beyond, the first hero to be created beyond the natural elements, following its planetary namesake."*

**EVERYDAY CONNECTION**

Neptunium has no everyday connection; it is a byproduct of nuclear reactors.

**POP CULTURE**

Neptunium was the first synthetic transuranium element to be discovered.

**Neptunium: The First Transuranium Element**

Neptunium is a radioactive metal and the very first element discovered that is heavier than uranium—earning it the title of the first transuranium element. Like uranium, its name follows the planets: after Uranus (uranium) comes Neptune (neptunium). It has no major everyday uses but is important in nuclear science.

**A Man-Made Element**

Although tiny traces of neptunium exist naturally in uranium ores, it is mostly produced artificially. Today, it is obtained as a by-product in nuclear reactors, where it's extracted from spent uranium fuel rods.

The most common isotope, neptunium-237, is used in neutron detectors and for research into nuclear reactions.

**Biological Role of Neptunium**

Neptunium has no role in living organisms. Like other radioactive elements, it is toxic and dangerous to handle.

**History of Discovery**

The story of neptunium's discovery is both a missed opportunity and a scientific breakthrough:

1934: Italian physicist Enrico Fermi bombarded uranium with neutrons, hoping to create a new element. Instead, he had unknowingly triggered nuclear fission—but didn't recognize it at the time.

1940: At the University of California, Berkeley, Edwin McMillan and Philip Abelson correctly identified a brand-new element when they bombarded uranium with slow neutrons. They detected unfamiliar radiation and concluded they had synthesized neptunium—the first element beyond uranium.