



Key Properties

Atomic Mass	238.029
Category	actinide
State at 20°C	solid
Melting Point	1135°C
Boiling Point	4131°C
Density	19.1
Electron Config	[Rn] 5f36d17s2
Electronegativity	1.38
Year Discovered	1789
Discovered By	Martin Heinrich Klaproth

Did You Know?

- 1 It was named after the planet Uranus, which had been discovered just eight years prior to the element's discovery in 1789.
- 2 It is the heaviest element to be found naturally in significant quantities on Earth.
- 3 A single pound of highly enriched uranium can release as much energy as 1.5 million kilograms (3 million pounds) of coal.
- 4 Depleted uranium, which is about 40% less radioactive than natural uranium, is extremely dense and is used for armor-piercing bullets and protective armor on tanks.
- 5 A type of yellow-green glass called Vaseline glass or uranium glass, which glows brightly under a blacklight, contains uranium dioxide.

APPEARANCE

Uranium is a heavy, silvery-white, weakly radioactive metal.

SUPERHERO PERSONA

"The Nuclear Powerhouse, the hero who fuels the world's nuclear reactors but also has a dark, explosive potential."

EVERYDAY CONNECTION

Uranium is found in the fuel rods in a nuclear power plant.

POP CULTURE

Uranium is the key element for both nuclear power and atomic bombs central to Cold War-era fiction.

Uranium (U): The Powerhouse of the Nuclear Age

Uranium is a silvery, radioactive metal that has played a huge role in both energy production and modern history. It's best known as the fuel that powers nuclear power plants and as the material behind the first atomic bombs. Its name comes from the planet Uranus, discovered just a few years before uranium itself.

Why Is Uranium Useful?

Uranium's value lies in its ability to undergo nuclear fission—its atoms can split apart, releasing enormous amounts of energy.

Nuclear Power: Natural uranium is mostly uranium-238, but about 1% is uranium-235, the only naturally occurring isotope that can sustain a chain reaction. Enriched uranium, with more uranium-235, is used as fuel in nuclear reactors to generate electricity.

Military Uses: Uranium powers nuclear submarines and was used in atomic weapons.

Creating New Elements: Uranium is the starting point for making transuranium elements (those heavier than uranium) in nuclear reactors.

Depleted Uranium: After enrichment, the leftover uranium (mostly uranium-238) is less radioactive but extremely dense. It's used in aircraft counterweights, ship ballast, ammunition, and tank armor.

Biological Role & Natural Abundance

Uranium has no biological role and is toxic.

It is found naturally in minerals like pitchblende (uraninite) and occurs all over the world. Each year, about 41,000 tonnes are mined, then refined into a concentrated form called yellowcake. The pure metal can be extracted by reducing uranium compounds with calcium or aluminum.

History of Discovery

1789 – Discovery: German chemist Martin Heinrich Klaproth discovered uranium while studying pitchblende. He realized it was a new element but couldn't isolate the pure metal.

1841 – Pure Metal: French chemist Eugène Peligot was the first to isolate uranium in its metallic form.

1896 – Radioactivity: French physicist Henri Becquerel discovered that uranium emitted invisible rays that could fog a photographic plate even in the dark. This was the first observation of radioactivity, launching the field of nuclear physics.