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Ti
Titanium
47.867

Key Properties

| | |
|-------------------|--------------------------------------|
| Atomic Mass | 47.867 |
| Category | Transition Metals |
| State at 20°C | solid |
| Melting Point | 1670°C |
| Boiling Point | 3287°C |
| Density | 4.506 |
| Electron Config | [Ar] 3d ² 4s ² |
| Electronegativity | 1.54 |
| Year Discovered | 1791 |
| Discovered By | William Gregor |

Did You Know?

- 1 It is named after the Titans of Greek mythology because of its immense strength.
- 2 Titanium is as strong as some steels but is 45% lighter, giving it the highest strength-to-density ratio of any metallic element.
- 3 It is highly resistant to corrosion from seawater, making it ideal for use in submarines and ships.
- 4 Titanium dioxide is a brilliant white pigment used in paints, plastics, paper, and sunscreen.
- 5 Because it is non-toxic and biocompatible, titanium is widely used for surgical implants like hip replacements and dental implants.

APPEARANCE

A strong, lustrous, corrosion-resistant, silvery-white metal.

SUPERHERO PERSONA

"The Titan, a hero as strong as steel but only half the weight, nearly indestructible."

EVERYDAY CONNECTION

High-performance golf clubs or medical implants like hip replacements.

POP CULTURE

The metal used to build the T-800 endoskeleton in 'The Terminator' franchise.

Titanium: Hard, Lightweight and Corrosion-Resistant Metal

Titanium is a shiny, silver-gray metal that is as strong as steel but weighs much less. It's also famous for its resistance to rust and corrosion, even in seawater. These qualities make it a superstar material in everything from rockets to sunscreen.

Why Is Titanium So Useful?

Titanium's strength, lightness, and durability make it one of the most versatile metals:

High-Performance Alloys: Mixed with aluminum, molybdenum, or iron, titanium forms light but strong alloys used in aircraft, spacecraft, and missiles. You'll also find them in golf clubs, laptops, and bicycles.

Corrosion Resistance: Because it doesn't rust easily, titanium is perfect for ships, submarines, and desalination plants.

Medical Implants: Titanium bonds well with bone, so it's used for hip replacements, dental implants, and surgical tools.

Pigments & Sunscreen: The biggest use of titanium is as titanium dioxide (TiO₂), a bright white pigment used in paints, plastics, and paper. It also blocks harmful UV rays, making it a key ingredient in sunscreens.

Natural Abundance & History

Titanium is the ninth most abundant element on Earth and is found in minerals like ilmenite and rutile.

1791 – Discovery: English clergyman William Gregor first identified titanium oxide in black sand from Cornwall.

1795 – Naming: German chemist Martin Heinrich Klaproth confirmed the discovery and named the element titanium, after the mighty Titans of Greek mythology.

1910 – Pure Metal: Pure titanium was finally produced by M. A. Hunter, who reduced titanium tetrachloride with sodium.

Biological Role

Titanium has no biological role and is non-toxic. However, fine titanium dioxide dust can be harmful if inhaled and is considered a suspected carcinogen.