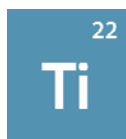


Stable isotopes of titanium available from ISOFLEX

Isotope	Z(p)	N(n)	Atomic Mass	Natural Abundance	Enrichment Level	Chemical Form
Ti-46	22	24	45.952629	8.25%	97.00%	Oxide
Ti-47	22	25	46.951764	7.44%	>95.00%	Oxide
Ti-48	22	26	47.947947	73.72%	>96.00%	Oxide
Ti-49	22	27	48.947871	5.41%	47.60-92.40%	Oxide
Ti-50	22	28	49.944792	5.18%	83.00%	Oxide



Titanium was discovered in 1791 by Reverend William Gregor, who recognized the presence of the element in menachanite, a mineral named after Menaccan in Cornwall, England. It takes its name from the Titans, the sons of Gaia, the Earth goddess in Greek mythology.

A white lustrous metal that is ductile when free of oxygen, titanium is also a low-density, high-strength metal, as strong as steel but 45% lighter. It has two allotropic modifications. The *alpha form* has a close-packed hexagonal crystal structure, a density of 4.54 g/cm³ at 20 °C, and is stable up to 882 °C. It converts very slowly to a body-centered cubic *beta form* at 882 °C. The density of the beta form is 4.40 g/cm³ at an estimated 900 °C.

Titanium metal is highly resistant to corrosion. It is unaffected by atmospheric air, moisture and sea water, allowing many of its industrial applications. The metal burns incandescently in air at about 1200 °C, forming titanium dioxide. The metal also burns on contact with liquid oxygen. It combines with nitrogen at about 800 °C, forming the nitride and producing heat and light. Titanium reacts with all halogens at high temperatures. It is soluble in hot concentrated sulfuric acid, forming sulfate, and with hydrofluoric acid, forming fluoride.

Elemental titanium is found in plants, animals, eggs and milk. Its alloys have wide industrial applications, as they possess high tensile strength, are lightweight, and can withstand extreme temperatures. They are often used in the construction of aircraft and missiles. They have also been used in medical prostheses, orthopedic and dental implants, dental and endodontic instruments and files, dental implants, jewelry and mobile phones.

Properties of Titanium

Name	Titanium
Symbol	Ti
Atomic number	22
Atomic weight	47.867

Properties of Titanium (continued)

Standard state	Solid at 298 °K
CAS Registry ID	7440-32-6
Group in periodic table	4
Group name	None
Period in periodic table	4
Block in periodic table	d-block
Color	Silvery metallic
Classification	Metallic
Melting point	1610 +/- 10 °C
Boiling point	3287 °C
Thermal conductivity	21.90 W/(m·K) at 298.2 °K
Electrical resistivity	42.00 μΩ·cm at 20 °C
Electronegativity	1.5
Specific heat	0.54 kJ/kg K
Heat of vaporization	425.00 kJ·mol ⁻¹
Heat of fusion	18.70 kJ·mol ⁻¹
Density of solid	4.54 g/cm ³
Electron configuration	[Ar]3d ² 4s ²
Atomic radius	1.47 Å
Ionic radius	Ti ³⁺ : 0.67 Å and Ti ⁴⁺ : 0.61 Å (coordination number 6)
Oxidation states	+2, +3, +4