TI CP GRADE 4

CARPENTER TECHNOLOGY

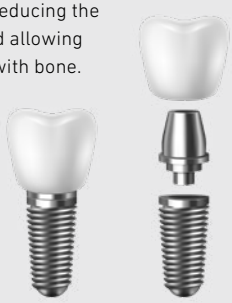
Ti CP Grade 4 (Ti CP4) is the strongest grade of commercially pure titanium available — lightweight with outstanding fatigue resistance and biocompatibility.

With the highest allowable oxygen and iron contents, Ti CP4 **combines the excellent resistance to corrosion and corrosion fatigue of titanium with high strength** that makes it a candidate to compete with steel and nickel alloys. These factors, plus a **clean microstructure and low elastic modulus,** give Ti CP4 exceptional biocompatibility and osseointegration ability. The alloy's superior **mechanical properties can be further enhanced with cold working,** making Ti CP4 ideal for high-performance dental implants—or any application where strength and corrosion resistance are important.

Similar alloys: Ti CP Grades 1–3, Ti 6Al-4V, Ti 6Al-4V ELI

KEY FEATURES OF TI CP GRADE 4

- **Industry-best fatigue resistance:** Ti CP4 has an extremely clean, defect-free microstructure, allowing dental implants to endure repeated stress cycles (such as chewing) without cracking or failing.
- **High corrosion resistance:** The natural formation of an oxide layer on Ti CP4's surface provides excellent corrosion resistance—particularly in the moist, acidic, and often bacteria-rich environment of the mouth — and ensures implant longevity.
- **Superior strength-to-weight ratio:** Ti CP4 provides high strength while remaining lightweight—crucial for an implant to maintain structural integrity while withstanding biting and chewing forces.
- **High biocompatibility:** Ti CP4 is non-toxic and has exceptional biocompatibility, minimizing immune responses, inflammation, and rejection while maximizing long-term dental implant performance.
- **Osseointegration ability:** Ti CP4's elastic modulus is close to that of natural bone, reducing the likelihood of stress shielding and allowing for the implant to bond directly with bone. The surface of the titanium allows for direct contact with bone tissue, leading to a strong, stable anchor for crowns, bridges, dentures, and other dental implants.



Explore Ti CP Grade 4 in depth, along with our full alloy portfolio
CarpenterTechnology.com/Alloy-Finder