

TITANIUM

The corrosion resistance of a noble metal at roughly half the density of steel, with strength retained to elevated temperature. Titanium is indispensable where weight, temperature and corrosion all matter at once — jet-engine fans and compressors, fracture-critical airframe joints, and the most aggressive downhole and subsea service. We stock from commercially-pure grades through the alpha-beta workhorse Ti-6Al-4V to high-strength beta alloys, in wrought and powder form.

Commercially Pure (CP)

Unalloyed titanium grades (1–4) graded by oxygen/iron content. They trade strength for outstanding corrosion resistance and weldability — the choice for ducting, heat exchangers and aggressive chemical, marine and downhole service. Grade 2 is the workhorse.

Grade	Nominal composition (wt %)	UTS / YS / EI (MPa, %)	Key properties & applications
Ti CP Grade 2 <i>CP-Ti Gr 2</i> Day-one	Ti > 99, O 0.25 max, Fe 0.30 max	UTS 344 / YS 275 / EI 20% ρ 4.51 g/cm ³ 200 HB Tmax 425°C	Excellent corrosion resistance & weldability; moderate strength; the standard CP grade Forms: Sheet, Plate, Bar, Rod, Tube, Wire Use: Airframe ducting, heat exchangers, chemical & marine, downhole

Alpha-Beta

A balanced microstructure giving high strength-to-weight, good fatigue and weldability. Ti-6Al-4V (Grade 5) alone accounts for roughly half of all titanium used — the default for engine, airframe, fastener and additive-manufacturing applications. Grade 23 (ELI) adds fracture toughness and cryogenic capability.

Grade	Nominal composition (wt %)	UTS / YS / EI (MPa, %)	Key properties & applications
Ti-6Al-4V (Grade 5) <i>Ti64 / TC4</i> Day-one	Al 6, V 4, bal Ti	UTS 950 / YS 880 / EI 14% ρ 4.43 g/cm ³ 36 HRC Tmax 400°C	The 50%-of-all-Ti workhorse: high strength-to-weight, good fatigue, weldable (site headline grade) Forms: Bar, Rod, Plate, Sheet, Billet, Forging, Wire, Tube, Powder Use: Jet-engine fan/compressor, airframe, fasteners, landing gear, AM
Ti-6Al-4V ELI (Grade 23) <i>Ti64 ELI</i> To-order	Al 6, V 4 (extra-low interstitials: O < 0.13), bal Ti	UTS 860 / YS 795 / EI 15% ρ 4.43 g/cm ³ 35 HRC Tmax 400°C	Extra damage tolerance & fracture toughness; excellent cryogenic performance; medical-grade Forms: Bar, Plate, Sheet, Forging, Wire, Powder Use: Fracture-critical airframe, cryogenic, medical implants

Alpha-Beta (elevated temp)

Near-alpha alloys engineered to retain strength and creep resistance to ~540 °C, for the hotter compressor stages of the gas turbine and hot airframe structure. Ti-6242 is the reference grade.

Grade	Nominal composition (wt %)	UTS / YS / EI (MPa, %)	Key properties & applications
Ti-6Al-2Sn-4Zr-2Mo (Ti-6242) <i>Ti-6242 / Ti-6242S</i> To-order	Al 6, Sn 2, Zr 4, Mo 2, Si 0.1, bal Ti	UTS 1010 / YS 945 / EI 13% ρ 4.54 g/cm ³ 38 HRC Tmax 540°C	Retains strength & creep resistance to ~540 C; premium high-temperature compressor alloy Forms: Bar, Billet, Forging, Plate Use: Jet-engine compressor discs/blades, hot airframe

Beta

Fully heat-treatable beta alloys with very high strength and deep hardenability in thick sections — the landing-gear class of titanium, replacing high-strength steel at lower weight.

Grade	Nominal composition (wt %)	UTS / YS / EI (MPa, %)	Key properties & applications
Ti-5Al-5V-5Mo-3Cr (Ti-5553) <i>Ti-5553</i> To-order	Al 5, V 5, Mo 5, Cr 3, bal Ti	UTS 1250 / YS 1150 / EI 8% ρ 4.65 g/cm ³ 42 HRC Tmax 315°C	Very high strength & deep hardenability in thick sections; landing-gear-class beta alloy Forms: Bar, Billet, Forging Use: Landing gear, high-strength airframe forgings

Forms by industry —

Aerospace: Bar, plate, sheet, forging, wire, tube, powder — engine, airframe, fasteners, AM

Automotive: Bar, wire, forging, tube — valves, con-rods, fasteners, exhaust (motorsport)

Oil & Gas: Bar, tube, plate — downhole, subsea, drill collars, heat exchangers (CP Gr2 & Ti-6Al-4V)