

Titanium

Grade 5 (Ti6Al4V)

Titanium is a low density, strong, lustrous and corrosion-resistant material with a silvery colouration. It has the highest strength-to-weight ratio of any metal and in its unalloyed condition it is as strong as some grades of steel. It has the added advantage of being 45% lighter than steel and nickel-based alloys whilst retaining a good ductility.

Grade 5 (Ti6Al4V) is the most widely used of all the titanium grades. It is significantly stronger than commercially pure titanium (grades 1-4) while having the same stiffness and thermal properties. Grade 5 is a pure alpha-beta titanium with aluminium (6%) as the alpha stabiliser and vanadium (4%) as the beta stabiliser. It also contains 0.4% (maximum) iron, and 0.2% (maximum) oxygen.



Titanium grade 5 is supplied in the annealed condition as per AMS 4928R or BS2TA11 for ease of machinability. This can be strengthened with a relatively simple heat treatment to offer very high mechanical properties, ensuring the grade is an excellent combination of strength, corrosion resistance and weldability.

Titanium grade 5 has good tensile properties at ambient temperatures and is able to withstand temperatures up to 400°C, making it ideal for applications in the aerospace and marine industries. It has excellent resistance to fatigue and crack propagation. Like most titanium alloys, grade 5 has outstanding corrosion resistance to oxidising acids and offers good resistance to reducing acids and most organic acids at lower concentrations and temperatures.

Common applications for titanium grade 5 include turbine compressor blades, discs and rings, airframe and space capsule components, helicopter rotor hubs, fasteners, hand tools and valves and pumps.



- VERY HIGH STRENGTH
- GOOD CORROSION RESISTANCE
- EXCELLENT STRENGTH TO WEIGHT RATIO
- HIGH STRENGTH AT CRYOGENIC TEMPERATURES
- HIGH HEAT RESISTANCE
- GOOD WELDABILITY

PLEASE CONTACT US FOR AN IMMEDIATE QUOTATION OR TECHNICAL ADVICE

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Technical Data

Nominal Composition (%)

	Ti	Al	V	Fe	O	C	N	H
Grade 5	Rem	5.5-6.75	3.5-4.5	0.4	0.2	0.1	0.05	0.0125

Mechanical Properties (specification minima)

	Grade 5
Ultimate Tensile Strength (N/mm ²)	895
0.2% Proof Strength (N/mm ²)	825
Elongation (%)	10
Hardness (HRC)	36

Typical Physical Properties

	Grade 5
Density (g/cm ³)	4.43
Modulus of Elasticity (N/mm ²)	114,000
Melting Point (°C)	1674
Thermal Conductivity (W/m°C)	6.7
Electrical Resistivity (10 ⁻⁸ Ω/m)	1.8

Round Bar Weight and Stock Sizes

Diameter		Weight		Diameter		Weight		Diameter		Weight	
mm	kg/ft	kg/m	mm	kg/ft	kg/m	mm	kg/ft	kg/m	mm	kg/ft	kg/m
30	0.95	3.11	40	1.68	5.53	50	2.63	8.64			
35	1.29	4.23	45	2.13	7.00	60	3.79	12.43			

NB Weight data for guidance only