

TITANIUM TECHNICAL FEATURES

Designation	Commercially Pure 2	Alpha-Beta Alloy: Ti-6Al-4V	Alpha-Beta Alloy: Ti-3Al-2.5V
Chemical Composition (%) (Max. values unless range is shown)	0.10C, 0.30Fe, 0.03N, 0.25O, 0.015H (sheet); 0.0125 H (bar); 0.0100H (billet)	0.08C;0.25 Fe,0.25N, 0.02O, 5.50/6.75 Al; 3.5/4.5 V;0.0150 H (sheet); 0.0125 H (bar) 0.01 H (billet)	0.05C, 0.02N; 0.30Fe; 0.120, 2.5/3.5 Al; 2.0/3.0 V; 0.0150H (sheet); 0.0125 H (bar)
Mill Annealed Tensile Properties	Guar. R.T. Min.	Guar. R.T. Min.	Guar. R.T. Min.
Ultimate Strength (psi)	50.000	130.000	90.000
Yield Strength (psi) 0,2 % offset	40.000	1250.000	75.000
Elongation in 2" (%) Sheet> 0.025 thick.	20	10	15
Reduction in Area % Bar	30	25	
Mechanical Properties (Typical)		600° F	600° F
Stress to Rupture / Stress (psi)		98.000	50.000
In Time shown (Hrs)		1.000	100
Stress and Time to / Stress (psi)		70.000	
Produce Elongation / Time (hrs.)		1.000	
Shown (creep) / Creep (%)		0.1	
Charpy V-Notch impact (ft.-Lbs) / Rm. Temp.	25.40	10 – 14	
Bend Radius / Under 0.070° thick	2.0 x Thickness	4.5 x Thickness	
0.070# end over	2.5 x Thickness	5.0 x Thickness	
Welded Bend Radius	2.0 – 3.0 x Thickness	6.0 – 10.0 x Thickness	
Hardness	RB 80	RC 36	
Physical Properties			
Beta Transus (F±25)	1675	1830	1715
Coefficient of Thermal expansion (10-6in/in/F)	32-212	4.8	5.3
	32-600	5.1	5.5
	32-1000	5.4	5.5
	32-1200	5.6	
	32-1500	5.6	6.1
Density (lbs/cu.in)	0.163	0.160	0.162
Melting Point, Approx. (F)	3020	3200	3100
Electrical Resistivity R.T. (Microhms - cm.)	56	171	126
Modulus of Elasticity Tension (106psi)	14.9	16.5	15.0
Modulus of Elasticity Torsion (106psi)	6.5	6.1	
Thermal Conductivity (btu/hr./sqf/F/ft.)	9.5 Rm. Temp.	3.9 Rm. Temp.	

Specific Heat (btu/Lb/F) Rm. Temp.		0.124	0.135	
Weldability		Good	Fair	Good
Annealing / Fuell		1300/30 min. - 2 Hrs. Air Cool	1300-1450 /15 min. - 2 Hrs. Air Cool	1200-1400/1 Hr. Air Cool
Temp. (F) / Stress Relief		1000/1100/30 min. Air Cool	900/1200/1 - 4 Hrs. Air Cool	1000/1200/1 Hr. Air Cool
Forging (Max. material temperature in furnace)	Blocking	1600-1700	1750-1800	1600-1650
Temp. (F)	Finish	1500-1600	1650-1750	1550-1600
Available Mill Products		Bar, Billet, Castings, Extrusions, Plate, Sheet, Strip, Wire, Pipe, Tubing.	Bar, Billet, Castings, Extrusions, Plate, Sheet, Strip, Wire.	Bar, Tubing, Strip.
Typical Applications		For corrosion resistance in the chemical and marine industries and where a higher strength level and ease of formability is desired.	Jet engine components; air frame forgings; sheet; plate; air frame components	Air frame and jet engines, hydraulic and fuel lines
Industry Specifications		AMS 4902	AMS 4911/28/30/31/35	AMS 4943;4944;4945
		ASTM B 265 Gr.2	ASM 4965/67/85/91	ASTM B337 Gr.9
		ASTM B 337 Gr.2	ASTM B265 Gr.5	ASTM B338 Gr.9
		ASTM B 338 Gr.2	ASTM B348 Gr.5	ASTM B381 Gr.9
		ASTM B 348 Gr.2	ASTM B367 Gr.5	
		ASTM B 367 Gr.2	ASTM B381 Gr.5	
		ASTM B 381 Gr.2	ASTM F 467 Gr.5	
		ASTM F 67 Gr.2	ASTM F 468 Gr.5	
		ASTM F 46 Gr.2		
		ASTM F 468 Gr.2		