California Metal & Supply Inc.

IS09001 & AS9100 Certified Company, Founded 1984
Titanium, Inconel, Nickel, Aluminum, A286, Stainless

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DATA SHEET: 6Al-4V Titanium

6-4 Titanium Alloy (Ti-6Al-4V) is the most commonly used alloy. Alloy 6AL-4V is used extensively in Aerospace, Medical, Marine, and Chemical Processing. It is significantly stronger than commercially pure titanium while having the same stiffness and thermal properties. Among its many advantages, it is heat treatable. 6AL-4V has an excellent combination of strength, corrosion resistance, weld and fabricability. In consequence, its uses are numerous such as for military aircraft or turbines.

Specifications: UNS R56400, Werkstoff 3.7164, Werkstoff 3.7165, EN 3.7164, EN 3.7165

Chemical Composition, %

	Al	V	C	N	O	H	Fe	Y	Others, Each	Others, Total	Ti
MIN	5.5	3.5	--	--	--	--	--	--	--	--	--
MAX	6.75	4.5	0.08	0.05	0.2	0.0125	0.3	0.005	0.1	0.4	Balance

Physical Properties

Density: 0.160 lb/inch3 | Melting Range: 2929 - 3020 Degrees F | Beta Transus: 1825 + or - 25 Degrees F

Temperature, Degrees F	70	200	400	600
Coefficient of Thermal Expansion, in/in Degrees Fx 10-6	-	5.3	5.4	5.5
Thermal Conductivity, Btu • Ft/Ft² • Hr Degrees FSTA	4.0	4.3	5.2	6.1
Modulus of Elasticity, psi X 106 STA	16.7	16.0	15.0	14.0

Mechanical Properties | Specified, AMS 4911, Annealed Sheet & Plate

	Anneal 1300 Degrees F, Air Cool	Anneal 1300 Degrees F, Solution anneal 1750 Degrees F, Age 1000 Degrees F
Ultimate Tensile Strength, ksi	138-155	150-172
0.2% Yield Strength, ksi	128-147	137-156
Elongation, %	15-20	15-17
Reduction of Area, %	38-51	41-46

Typical Tensile Strength and Fracture Toughness, Various Heat Treatments for Flat-rolled Products (MCIC-HB-02 1985 reprint)

	0.2% Yield Strength, ksi	Fracture Toughness K_{1C}, ksi √in
Annealed (Continuously Rolled Sheet)	132 142 (transversea)	128 140 (transversea)
Beta Annealed (plate)	131	134
Beta STA 1250 Degrees Fb	128	150
Beta STA 1000 Degrees Fb	143	120
STA 1250 Degrees Fc	137	105
STA 1000 Degrees Fc	159	80

(a) Directional variations
(b) Beta heat treated followed by solution treating and overaging 1250 Degrees F, or aging 1000 Degrees F
(c) Solution treating and overaging 1250 Degrees F, or aging 1000 Degrees F