

TIMET 6-4 Titanium Alloy (Ti-6Al-4V; ASTM Grade 5) Sheet

Category : Metal , Nonferrous Metal , Titanium Alloy , Alpha/Beta Titanium Alloy

Material Notes:

Medium To High Strength General-Purpose Alloy. Tensile property data below is typical of sheet; more specific form/thickness entries are also available in MatWeb. Industry Specifications: USA Aerospace: AMS 4911, 4928, 4932, 4935, 4954, 4965, 4967. Germany Engineering: 3.7165. Germany Aerospace: 3.7164. France: T-A6V. UK Aerospace Specifications BS TA. 10,11, 12, 13, 28, 56 DTD 5363. Features: A versatile medium strength alloy, the "workhorse" TIMETAL 6-4 exhibits good tensile properties at room temperature, creep resistance up to 325°C and excellent fatigue strength. It is often used in less critical applications up to 400°C. TIMETAL 6-4 is the alloy most commonly used in wrought and cast forms. Palladium or ruthenium can be added for increased corrosion resistance. Most properties are affected by the microstructure, which is determined by the thermomechanical history. It is highly resistant to general corrosion in sea water. This alloy is available in most common product forms including billet, bar, wire, plate, and sheet. Data provided by TIMET.

Order this product through the following link:

http://www.lookpolymers.com/polymer_TIMET-6-4-Titanium-Alloy-Ti-6Al-4V-ASTM-Grade-5-Sheet.php

Physical Properties	Metric	English	Comments
Density	4.42 g/cc	0.160 lb/in ³	Typical

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	1035 MPa	150100 psi	Typical
Tensile Strength, Yield	980 MPa @Strain 0.200 %	142000 psi @Strain 0.200 %	Typical
Elongation at Break	12 %	12 %	Typical
Modulus of Elasticity	105 - 120 GPa	15200 - 17400 ksi	Typical
Poissons Ratio	0.31	0.31	
Fatigue Strength	570 - 620 MPa	82700 - 89900 psi	Limit; test specifics not reported
Shear Modulus	41.0 - 45.0 GPa	5950 - 6530 ksi	
Bend Radius, Minimum	5.0 t @Thickness 2.00 mm	5.0 t @Thickness 0.0787 in	Typical; sheet

Thermal Properties	Metric	English	Comments
CTE, linear	9.00 μm/m-°C	5.00 μin/in-°F	
	@Temperature 0.000 - 100 °C	@Temperature 32.0 - 212 °F	
	9.40 μm/m-°C	5.22 μin/in-°F	

Thermal Properties	@Temperature 20.0 - Metric 423 °C	@Temperature 68.0 - English 191 °F	Comments
	9.70 $\mu\text{m}/\text{m}\cdot^{\circ}\text{C}$	5.39 $\mu\text{in}/\text{in}\cdot^{\circ}\text{F}$	
	@Temperature 20.0 - 650 °C	@Temperature 68.0 - 1200 °F	
Specific Heat Capacity	0.586 J/g-°C	0.140 BTU/lb-°F	
Thermal Conductivity	6.60 W/m-K	45.8 BTU-in/hr-ft ² -°F	
Melting Point	1674 °C	3045 °F	
Liquidus	>= 1636 °C	>= 2977 °F	
Maximum Service Temperature, Air	350 °C	662 °F	Reasonable mechanical properties retained
Beta Transus	995 °C	1820 °F	

Component Elements Properties	Metric	English	Comments
Aluminum, Al	5.5 - 6.75 %	5.5 - 6.75 %	
Carbon, C	<= 0.080 %	<= 0.080 %	
Hydrogen, H	<= 0.015 %	<= 0.015 %	
Iron, Fe	<= 0.40 %	<= 0.40 %	
Nitrogen, N	<= 0.050 %	<= 0.050 %	
Oxygen, O	<= 0.20 %	<= 0.20 %	
Titanium, Ti	87.6 - 91 %	87.6 - 91 %	Calculated as remainder
Vanadium, V	3.5 - 4.5 %	3.5 - 4.5 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.000168 ohm-cm	0.000168 ohm-cm	
Magnetic Permeability	1.00005	1.00005	at 20 oersteds

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