

TIMET TIMETAL® 6-4 ELI Titanium Alloy (Ti-6Al-4V ELI; ASTM Grade 23) (Annealed);

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

Material Notes:

Medium To High Strength General-Purpose Alloy Minimum tensile property data below are specific to this MatWeb entry; other specific form/thickness entries are also available in MatWeb. Features: A lower strength version of TIMETAL 6-4 with improved toughness, cryogenic ductility, and SCC resistance. Major uses are in the medical implant field, marine structural components, and oil and gas production. This variant is available for fracture critical applications. 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-TIMETAL-6-4-ELI-Titanium-Alloy-Ti-6Al-4V-ELI-ASTM-Grade-23-Annealed.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	>= 828 MPa	>= 120000 psi	Longitudinal
Tensile Strength, Yield	>= 759 MPa @Strain 0.200 %	>= 110000 psi @Strain 0.200 %	Longitudinal
Elongation at Break	>= 10 %	>= 10 %	Longitudinal
Reduction of Area	>= 25 %	>= 25 %	Longitudinal
Modulus of Elasticity	105 - 120 GPa	15200 - 17400 ksi	Typical
Poissons Ratio	0.31	0.31	
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 @Temperature 0.000 - 100 °C	5.00 µin/in-°F @Temperature 32.0 - 212 °F	
	9.40 µm/m-°C @Temperature 20.0 - 425 °C	5.22 µin/in-°F @Temperature 68.0 - 797 °F	

Thermal Properties	9.70 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$ Metric	9.39 $\mu\text{m}/\text{in}\cdot^\circ\text{F}$ English	Comments
	@Temperature 20.0 - 650 °C	@Temperature 68.0 - 1200 °F	
Specific Heat Capacity	0.586 J/g-°C	0.140 BTU/lb-°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	982 °C	1800 °F	

Component Elements Properties	Metric	English	Comments
Aluminum, Al	5.5 - 6.5 %	5.5 - 6.5 %	
Carbon, C	<= 0.080 %	<= 0.080 %	
Hydrogen, H	<= 0.0125 %	<= 0.0125 %	
Iron, Fe	<= 0.25 %	<= 0.25 %	
Nitrogen, N	<= 0.030 %	<= 0.030 %	
Oxygen, O	<= 0.13 %	<= 0.13 %	
Titanium, Ti	88.1 - 91 %	88.1 - 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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