

TIMET 6-4 Titanium Alloy (Ti-6Al-4V; ASTM Grade 5), >0.500-1.000 in, STD, Per Mil-T-9047G

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 >0.500-1.000 in, STD, Per Mil-T-9047G; other 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-5-0500-1000-in-STD-Per-Mil-T-9047G.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	>= 1103 MPa	>= 160000 psi	
Tensile Strength, Yield	>= 1034 MPa @Strain 0.200 %	>= 150000 psi @Strain 0.200 %	
Elongation at Break	>= 10 %	>= 10 %	
Reduction of Area	>= 20 %	>= 20 %	
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	

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	
	@Temperature 20.0 -	@Temperature 68.0 -	

Thermal Properties	425 °C Metric	797 °F English	Comments
	9.70 $\mu\text{m}/\text{m}\cdot\text{°C}$	5.39 $\mu\text{in}/\text{in}\cdot\text{°F}$	
	@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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