



ASM Aerospace Specification Metals Inc.



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TIMETAL® 10-2-3 Titanium Alloy (Ti-10V-2Fe-3Al), Aged Billet/Bar per ASTM 4984

Subcategory: Beta Titanium Alloy; Metal; Nonferrous Metal; Titanium Alloy

Component	Wt. %
Al	2.6 - 3.4
C	Max 0.05
Fe	1.6 - 2.2
H	Max 0.015
N	Max 0.05
O	Max 0.13
Ti	83 - 86.8
V	9 - 11

Material Notes:

Titanium content above is calculated as the remainder and may not reflect the actual range.

High-Strength Forging Alloy.

Industry Specifications: USA Aerospace: AMS 4984.

Features: A readily forgeable alloy that offers excellent combinations of strength, ductility, fracture toughness and high cycle fatigue strength. Typically used for critical aircraft structures, such as landing gear.

Typical heat treatment for this alloy: Solution heat treat: 28-56°C below beta transus for a minimum for 30 mins, then water quench. Aging heat treatment: 482-593°C for 8 hrs, air cool.

Data provided by TIMET.

Physical Properties	Metric	English	Comments
Density	<u>4.65 g/cc</u>	0.168 lb/in ³	Typical
Mechanical Properties			
Tensile Strength, Ultimate	<u>1260 MPa</u>	183000 psi	Typical
Tensile Strength, Yield	<u>1170 MPa</u>	170000 psi	Typical 0.2% Proof Stress

Elongation at Break	<u>10 %</u>	10 %	Typical
Modulus of Elasticity	<u>107 GPa</u>	15500 ksi	Typical
Compressive Yield Strength	<u>Min 1145 MPa</u>	Min 166000 psi	
Ultimate Bearing Strength	<u>Min 1613 MPa</u>	Min 234000 psi	e/D = 1.5
Ultimate Bearing Strength	<u>Min 1958 MPa</u>	Min 284000 psi	e/D = 2.0
Bearing Yield Strength	<u>Min 1565 MPa</u>	Min 227000 psi	e/D = 1.5
Bearing Yield Strength	<u>Min 1800 MPa</u>	Min 261000 psi	e/D = 2.0
Poisson's Ratio	0.32	0.32	
Fatigue Strength	<u>490 MPa</u>	71100 psi	Notched (Kt = 3); Stress Ratio = 0.1; Axial Loading; 10 ⁷ cycles
Fatigue Strength	<u>910 MPa</u>	132000 psi	Smooth (Kt = 1); Stress Ratio = 0.1; Axial Loading; 10 ⁷ cycles
Fatigue Strength	<u>945 MPa</u>	137000 psi	Limit; test specifics not reported
Fracture Toughness	<u>Min 44 MPa-m^{1/2}</u>	Min 40 ksi-in ^{1/2}	ST then Aged 8 hrs
Shear Modulus	<u>42.1 GPa</u>	6110 ksi	
Shear Strength	<u>Min 669 MPa</u>	Min 97000 psi	

Thermal Properties

CTE, linear 20°C	<u>9.7 μm/m-°C</u>	5.39 μin/in-°F
Beta Transus	<u>800 °C</u>	1470 °F

Some of the values displayed above may have been converted from their original units and/or rounded in order to display the information in a consistent format. Users requiring more precise data for scientific or engineering calculations can click on the property value to see the original value as well as raw conversions to equivalent units. We advise that you only use the original value or one of its raw conversions in your calculations to minimize rounding error.