



ASM Aerospace Specification Metals Inc.



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## Titanium Ti-8Al-1Mo-1V (Ti-8-1-1) Annealed 8 hr at 790°C (1450°F)

**Subcategory:** Alpha/Near Alpha Titanium Alloy; Metal; Nonferrous Metal; Titanium Alloy

**Key Words:** Ti8Al1Mo1V, UNS R54810; Ti-811

### Component Wt. %

Al	8
Mo	1
Ti	90
V	1

### Material Notes:

Information provided by Allvac and the references.

**Applications:** Fan & compressor blades, discs, spacers, seals, rings. Excellent creep resistance.

Physical Properties	Metric	English	Comments
Density	<u>4.37 g/cc</u>	0.158 lb/in <sup>3</sup>	

### Mechanical Properties

Hardness, Brinell	334	334	Estimated from Rockwell C.
Hardness, Knoop	363	363	Estimated from Rockwell C.
Hardness, Rockwell C	36	36	
Hardness, Vickers	349	349	Estimated from Rockwell C.
Tensile Strength, Ultimate	<u>1000 MPa</u>	145000 psi	
Tensile Strength, Yield	<u>930 MPa</u>	135000 psi	
Elongation at Break	<u>12 %</u>	12 %	
Modulus of Elasticity	<u>121 GPa</u>	17500 ksi	in tension.
Compressive Yield Strength	<u>980 MPa</u>	142000 psi	
Notched Tensile Strength	<u>1100 MPa</u>	160000 psi	K <sub>t</sub> (stress concentration factor) = 6.0
Ultimate Bearing Strength	<u>2000 MPa</u>	290000 psi	e/D = 2

Bearing Yield Strength	<a href="#">1480 MPa</a>	215000 psi	e/D = 2
Poisson's Ratio	0.32	0.32	
Charpy Impact	20 - 30 J	14.8 - 22.1 ft-lb	V-notch
Fatigue Strength	<a href="#">170 MPa</a>	24700 psi	at 1E+7 cycles. $K_t$ (stress concentration factor) = 2.6
Fatigue Strength	<a href="#">340 MPa</a>	49300 psi	1E+7 cycles, Unnotched
Fatigue Strength	<a href="#">725 MPa</a>	105000 psi	50,000 cycles, Unnotched
Shear Modulus	<a href="#">46 GPa</a>	6670 ksi	
Shear Strength	<a href="#">620 MPa</a>	89900 psi	Ultimate shear strength

### Thermal Properties

CTE, linear 20°C	<a href="#">8.5 <math>\mu\text{m}/\text{m}\cdot\text{C}</math></a>	4.72 $\mu\text{in}/\text{in}\cdot\text{F}$	Annealed
CTE, linear 250°C	<a href="#">9.2 <math>\mu\text{m}/\text{m}\cdot\text{C}</math></a>	5.11 $\mu\text{in}/\text{in}\cdot\text{F}$	
Specific Heat Capacity	<a href="#">0.502 J/g<math>\cdot\text{C}</math></a>	0.12 BTU/lb $\cdot\text{F}$	
Thermal Conductivity	<a href="#">6 W/m-K</a>	41.6 BTU-in/hr-ft <sup>2</sup> $\cdot\text{F}$	
Melting Point	<a href="#">Max 1540 °C</a>	Max 2800 °F	Liquidus
Liquidus	<a href="#">1540 °C</a>	2800 °F	
Beta Transus	<a href="#">1038 °C</a>	1900 °F	

### References for this datasheet.

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.