



ASM Aerospace Specification Metals Inc.

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## Titanium Ti-5Al-2.5Sn

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

**Key Words:** UNS R54520; Ti-5-2.5

### Component Wt. %

Al	5
Fe	Max 0.5
O	Max 0.2
Sn	2.5
Ti	92.5

Physical Properties	Metric	English	Comments
Density	<u>4.48 g/cc</u>	0.162 lb/in <sup>3</sup>	

### Mechanical Properties

Hardness, Brinell	320	320	
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>861 MPa</u>	125000 psi	
Tensile Strength, Yield	<u>827 MPa</u>	120000 psi	
Elongation at Break	<u>15 %</u>	15 %	
Modulus of Elasticity	110 - 125 GPa	16000 - 18100 ksi	
Compressive Yield Strength	<u>830 MPa</u>	120000 psi	
Notched Tensile Strength	<u>1240 MPa</u>	180000 psi	K <sub>t</sub> (stress concentration factor) = 6.5
Ultimate Bearing Strength	<u>1760 MPa</u>	255000 psi	e/D = 2
Bearing Yield Strength	<u>1340 MPa</u>	194000 psi	e/D = 2
Poisson's Ratio	0.31	0.31	Typical for alpha titanium alloy.
Charpy Impact	<u>24 J</u>	17.7 ft-lb	V-notch

Fatigue Strength	<a href="#">290 MPa</a>	42100 psi	at 1E+7 cycles. K <sub>t</sub> (stress concentration factor) = 2.4
Fatigue Strength	<a href="#">380 MPa</a>	55100 psi	1E+7 cycles, Unnotched
Fatigue Strength	<a href="#">390 MPa</a>	56600 psi	at 1E+5 cycles. K <sub>t</sub> (stress concentration factor) = 2.4
Fatigue Strength	<a href="#">440 MPa</a>	63800 psi	Unnotched, 1,000,000 Cycles
Fatigue Strength	<a href="#">530 MPa</a>	76900 psi	1E+5 cycles, Unnotched
Fracture Toughness	<a href="#">33 MPa-m<sup>1/2</sup></a>	30 ksi-in <sup>1/2</sup>	K(ISCC)
Fracture Toughness	<a href="#">96 MPa-m<sup>1/2</sup></a>	87.4 ksi-in <sup>1/2</sup>	K(IC)
Shear Modulus	<a href="#">48 GPa</a>	6960 ksi	
Shear Strength	<a href="#">520 MPa</a>	75400 psi	Ultimate shear strength

### Electrical Properties

Electrical Resistivity	<a href="#">0.00016 ohm-cm</a>	0.00016 ohm-cm
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### Thermal Properties

CTE, linear 20°C	<a href="#">9.4 µm/m-°C</a>	5.22 µin/in-°F	0-100°C
CTE, linear 250°C	<a href="#">9.5 µm/m-°C</a>	5.28 µin/in-°F	Average over the range 0-315°C; unspecified heat treatment.
CTE, linear 500°C	<a href="#">9.7 µm/m-°C</a>	5.39 µin/in-°F	Average over the range 0-650°C
Specific Heat Capacity	<a href="#">0.53 J/g-°C</a>	0.127 BTU/lb-°F	0.674 J/g-°C at 315°C
Thermal Conductivity	<a href="#">7.8 W/m-K</a>	54.1 BTU-in/hr-ft <sup>2</sup> -°F	10.9 W/m-°C at 315°C
Melting Point	<a href="#">Max 1590 °C</a>	Max 2890 °F	Liquidus
Liquidus	<a href="#">1590 °C</a>	2890 °F	
Beta Transus	1040 - 1090 °C	1900 - 1990 °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.