



ASM Aerospace Specification Metals Inc.



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## Titanium Ti-6Al-6V-2Sn (Ti-6-6-2) STA 910°C/540°C

**Subcategory:** Alpha/Beta Titanium Alloy; Metal; Nonferrous Metal; Titanium Alloy.

**Key Words:** Ti-662; Ti-6-6-2; UNS R56620

### Component Wt. %

Al	6
Sn	2
Ti	86
V	6

### Material Notes:

Information provided by Allvac and the references. Solution Treated 910°C 1 hour, Aged 540°C for 6 hours. Alpha-Beta alloy.

**Applications:** Airframes, jet engines, rocket engine cases, nuclear reactor components, ordnance components.

Physical Properties	Metric	English	Comments
Density	<u>4.54 g/cc</u>	0.164 lb/in <sup>3</sup>	

### Mechanical Properties

Hardness, Brinell	411	411	Estimated from Rockwell C.
Hardness, Knoop	450	450	Estimated from Rockwell C.
Hardness, Rockwell C	44	44	
Hardness, Vickers	430	430	Estimated from Rockwell C.
Tensile Strength, Ultimate	<u>1280 MPa</u>	186000 psi	
Tensile Strength, Yield	<u>1210 MPa</u>	175000 psi	
Elongation at Break	<u>10 %</u>	10 %	
Modulus of Elasticity	<u>117 GPa</u>	17000 ksi	in tension.
Compressive Yield Strength	<u>1280 MPa</u>	186000 psi	
Notched Tensile Strength	<u>690 MPa</u>	100000 psi	K <sub>t</sub> (stress concentration factor) = 17
Ultimate Bearing Strength	<u>2240 MPa</u>	325000 psi	e/D = 2

Bearing Yield Strength	<u>1790 MPa</u>	260000 psi	e/D = 2
Poisson's Ratio	0.32	0.32	
Charpy Impact	<u>9.5 J</u>	7.01 ft-lb	V-notch
Fatigue Strength	<u>210 MPa</u>	30500 psi	at 1E+7 cycles. K <sub>t</sub> (stress concentration factor) = 4.0
Fatigue Strength	<u>690 MPa</u>	100000 psi	1E+7 cycles
Fracture Toughness	<u>24 MPa-m<sup>1/2</sup></u>	21.8 ksi-in <sup>1/2</sup>	K <sub>IC</sub>
Shear Modulus	<u>45 GPa</u>	6530 ksi	
Shear Strength	<u>760 MPa</u>	110000 psi	Ultimate shear strength

### Electrical Properties

Electrical Resistivity	<u>0.000157 ohm-cm</u>	0.000157 ohm-cm
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### Thermal Properties

CTE, linear 20°C	<u>8.6 μm/m-°C</u>	4.78 μin/in-°F	20-100°C
CTE, linear 250°C	<u>9.4 μm/m-°C</u>	5.22 μin/in-°F	Average over the range 20-315°C
Specific Heat Capacity	<u>0.67 J/g-°C</u>	0.16 BTU/lb-°F	
Thermal Conductivity	<u>6.6 W/m-K</u>	45.8 BTU-in/hr-ft <sup>2</sup> -°F	
Melting Point	1627 - 1649 °C	2960 - 3000 °F	
Solidus	<u>1627 °C</u>	2960 °F	
Liquidus	<u>1649 °C</u>	3000 °F	
Maximum Service Temperature, Air	<u>315 °C</u>	599 °F	Subject to Tensile Embrittlement
Beta Transus	<u>945 °C</u>	1730 °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.