



ASM Aerospace Specification Metals Inc.

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Titanium Ti-6Al-2Sn-4Zr-2Mo-0.1Si; Duplex Annealed

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

Key Words: Ti-6242Si; Ti-6242S; UNS R54620

Component Wt. %

Al	6
Mo	2
Si	0.08
Sn	2
Ti	86
Zr	4

Material Notes:

Information provided by Allvac and the references.

Applications: High-temp jet engines. Blades, discs, spacers, seals. High performance automotive valves.

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

Mechanical Properties

Hardness, Brinell	318	318	Estimated from Rockwell C.
Hardness, Knoop	346	346	Estimated from Rockwell C.
Hardness, Rockwell C	34	34	
Hardness, Vickers	333	333	Estimated from Rockwell C.
Tensile Strength, Ultimate	<u>1110 MPa</u>	161000 psi	
Tensile Strength, Yield	<u>1050 MPa</u>	152000 psi	
Elongation at Break	<u>13 %</u>	13 %	
Reduction of Area	<u>30 %</u>	30 %	
Compressive Modulus	<u>118 GPa</u>	17100 ksi	

Notched Tensile Strength	<u>1025 MPa</u>	149000 psi	$K_t > 17$; Average of longitudinal and transverse.
Ultimate Bearing Strength	<u>1800 MPa</u>	261000 psi	$e/D = 2.0$; varies with thickness; this value is at about 2.4 mm.
Bearing Yield Strength	<u>1450 MPa</u>	210000 psi	$e/D = 2.0$
Poisson's Ratio	0.325	0.325	
Charpy Impact	<u>36 J</u>	26.6 ft-lb	V-Notch, oxygen content about 0.1%. Value drops with increasing O content.
Fatigue Strength	<u>225 MPa</u>	32600 psi	10,000,000 Cycles; $K_t = 3$
Fatigue Strength	<u>320 MPa</u>	46400 psi	50,000 Cycles; $K_t = 3$
Fatigue Strength	<u>610 MPa</u>	88500 psi	10,000,000 Cycles; $A=0.67$
Fatigue Strength	<u>750 MPa</u>	109000 psi	500,000 Cycles; $A=0.67$
Shear Modulus	<u>44.5 GPa</u>	6450 ksi	Calculated

Electrical Properties

Electrical Resistivity	<u>0.00019 ohm-cm</u>	0.00019 ohm-cm
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Thermal Properties

CTE, linear 20°C	<u>7.7 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$</u>	4.28 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	0-100°C
CTE, linear 250°C	<u>7.7 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$</u>	4.28 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	at 205°C
CTE, linear 500°C	<u>8.1 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$</u>	4.5 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	Average over the range 315-540°C
Specific Heat Capacity	<u>0.46 J/g$\cdot^\circ\text{C}$</u>	0.11 BTU/lb $\cdot^\circ\text{F}$	
Thermal Conductivity	<u>7 W/m-K</u>	48.6 BTU-in/hr-ft $^2\cdot^\circ\text{F}$	
Melting Point	<u>Max 1705 °C</u>	Max 3100 °F	Liquidus
Liquidus	<u>1705 °C</u>	3100 °F	
Beta Transus	<u>995 °C</u>	1820 °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.