

Component WT%

C Max	Fe Max	H Max	N Max	O Max	Pd	Ti
0.1	0.3	0.015	0.03	0.25	0.2	99

Physical Properties	Metric	English	Comments
Density	4.5 g/cc	0.163 lb/in³	
Mechanical Properties			
Hardness, Brinell	200	200	
Hardness, Knoop	222	222	Estimated from Brinell
Hardness, Rockwell B	98	98	
Hardness, Rockwell C	11	11	Converted from Brinell hardness. Value below normal HRC range, for comparison purposes only.
Hardness, Vickers	209	209	Estimated from Brinell
Tensile Strength, Ultimate	430 MPa	62400 psi	
Tensile Strength, Yield	340 MPa	49300 psi	
Elongation at Break	28 %	28 %	
Modulus of Elasticity	103 GPa	14900 ksi	
Compressive Yield Strength	340 MPa	49300 psi	
Notched Tensile Strength	720 MPa	104000 psi	Kt (stress concentration factor) = 3.0
Ultimate Bearing Strength	930 MPa	135000 psi	e/D = 2
Bearing Yield Strength	660 MPa	95700 psi	e/D = 2
Poisson's Ratio	0.34	0.34	
Charpy Impact	65 J	47.9 ft-lb	V-notch
Fatigue Strength	240 MPa	34800 psi	at 1E+7 cycles. Kt (stress concentration factor) = 2.7
Fatigue Strength	280 MPa	40600 psi	1E+7 cycles, Unnotched
Shear Modulus	39 GPa	5660 ksi	
Shear Strength	380 MPa	55100 psi	Ultimate shear strength
Electrical Properties			
Electrical Resistivity	5.5e-005 ohm-cm	5.5e-005 ohm-cm	
Thermal Properties			
Heat of fusion	325 J/g	140BTU/lb	High purity Ti.
CTE, linear 20°C	8.6 µm/m-°C	4.78 µin/in-°F	20-93°C
CTE, linear 250°C	9.2 µm/m-°C	5.11 µin/in-°F	Unspecified heat treatment. Average over the range 0-315°C
Specific Heat Capacity	0.523 J/g-°C	0.125 BTU/lb-°F	
Thermal Conductivity	16.4 W/m-K	114 BTU-in/hr-ft²-°F	
Melting Point	Max 1665 °C	Max 3030 °F	Liquidus
Liquidus	1665 °C	3030 °F	
Maximum Service Temperature, Air	425°C	797°F	Continuous use
Maximum Service Temperature, Air	540°C	1000°F	Intermittent use
Beta Transus	913°C	1680°F	
Optical Properties			
Emissivity (0-1)	0.3	0.3	High purity Ti at 710°C
Reflection Coefficient, Visible (0-1)	0.56	0.56	High purity Ti; visible light

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.

MATERIAL NOTES:

Titanium grade 11 is identical (0.2% Pd) except for impurity limits. Pd added for corrosion resistance. Sample was annealed 2 hr at 700°C

Subcategory: Metal, Nonferrous Metal; Titanium alloy; Unalloyed/Modified Titanium

Close Analogs: Titanium grades 1,2,3,4,7,11 and 12 are all considered unalloyed and have similar mechanical properties

Key Words: ASTM Grade 7; UNS R52400, C.P. Titanium, C.P. Titanium alloy

Applications: As grade 2, higher performance with low pH and up to 425°C (constant service) and up to 540 degrees for intermittent service.