Titanium Grade 2

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 2; UNS R50400, CP titanium, C.P. titanium alloy

Component	Wt. %
C	Max 0.1
Fe	Max 0.3
H	Max 0.015
N	Max 0.03
O	Max 0.25
Ti	99.2

Material Notes:

Information provided by Allvac and the references.

Applications: Airframe components, cryogenic vessels, heat exchangers, CPI equipment, condenser tubing, pickling baskets.

Physical Properties	Metric	English	Comments
Density	4.51 g/cc	0.163 lb/in³	
Mechanical Properties			
Hardness, Knoop	170	170	
Hardness, Rockwell B	80	80	
Hardness, Vickers	145	145	
Tensile Strength, Ultimate	344 MPa	49900 psi	
Tensile Strength, Yield	275 - 410 MPa	39900 - 59500 psi	
Elongation at Break	20 %	20 %	
Reduction of Area	35 %	35 %	

Modulus of Elasticity	105 GPa	15200 ksi	In Tension
Compressive Modulus	110 GPa	16000 ksi	
Poisson's Ratio	0.37	0.37	
Izod Impact	114 - 171 J	84.1 - 126 ft-lb	
Fatigue Strength	300 MPa	43500 psi	1E+7 cycles, Unnotched
Fatigue Strength	425 MPa	61600 psi	30,000 cycles, Unnotched
Fracture Toughness	66 MPa-m½	60.1 ksi-in½	K(Q); annealed
Shear Modulus	45 GPa	6530 ksi	

Electrical Properties

Electrical Resistivity	5.2e-005 ohm-cm	5.2e-005 ohm-cm	

Thermal Properties

Heat of Fusion	325 J/g	140 BTU/lb	High Purity Ti.
CTE, linear 20°C	8.6 µm/m-°C	4.78 µin/in-°F	0-100ºC
CTE, linear 250°C	9.2 µm/m-°C	5.11 µin/in-°F	Average over the range 0-315ºC
CTE, linear 500°C	9.7 µm/m-°C	5.39 µin/in-°F	0-540ºC; CTE is higher perpendicular to the c-axis
Specific Heat Capacity	0.523 J/g-°C	0.125 BTU/lb-°F	at 540ºC value is 0.67 J/g-ºC
Thermal Conductivity	16.4 W/m-K	114 BTU-in/hr-ft²-°F	annealed
Melting Point	Max 1665 °C	Max 3030 °F	Liquidus
Liquidus	1665 °C	3030 °F	
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 consistant 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.