Titanium Grade 1, Annealed

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: UNS R50250; ASTM Grade 1, CP titanium, C.P. titanium alloy

Component	Wt. %
C	Max 0.1
Fe	Max 0.2
H	Max 0.015
N	Max 0.03
O	Max 0.18
Ti	99.5

Material Notes:

Information provided by Allvac and the references.

Applications: Airframe components, cryogenic vessels, heat exchangers, CPI equipment, condenser tubing, pickling baskets. Sample was annealed 2 hr at 700°C.

Physical Properties	Metric	English	Comments
Density	4.51 g/cc	0.163 lb/in³	
Mechanical Properties			
Hardness, Brinell	120	120	
Hardness, Knoop	132	132	Estimated from Brinell.
Hardness, Vickers	122	122	Estimated from Brinell.
Tensile Strength, Ultimate	330 MPa	47900 psi	
Tensile Strength, Yield	240 MPa	34800 psi	
Elongation at Break	30 %	30 %	

Modulus of Elasticity	100 GPa	14500 ksi	in tension.
Compressive Yield Strength	340 MPa	49300 psi	
Poisson's Ratio	0.34	0.34	
Charpy Impact	140 J	103 ft-lb	V-notch
Shear Modulus	38 GPa	5510 ksi	

Electrical Properties

Electrical Resistivity	4.5e-005 ohm-cm	4.5e-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	20-93°C
CTE, linear 250°C	9.2 µm/m-°C	5.11 µin/in-°F	Unspecified heat treatment. Average over the range 0-315ºC
Specific Heat Capacity	0.52 J/g-°C	0.124 BTU/lb-°F	
Thermal Conductivity	16 W/m-K	111 BTU-in/hr-ft²-°F	
Melting Point	Max 1670 °C	Max 3040 °F	Liquidus
Liquidus	1670 °C	3040 °F	
Beta Transus	888 °C	1630 °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.