TIMETAL® 35A CP Titanium (ASTM Grade 1)

Subcategory: Metal; Nonferrous Metal; Titanium Alloy; Unalloyed/Modified Titanium

Key Words: UNS R50250

Component	Wt. %
C	Max 0.08
Fe	Max 0.2
H	Max 0.015
N	Max 0.03
O	Max 0.18
Ti	Min 99.1

Material Notes:

Titanium content above is calculated as the remainder and may not reflect the actual range.

Commercially Pure Titanium.

Industry Specifications: Germany Engineering: 3.7025. Germany Aerospace: 3.7024. France: T-35. UK Aerospace Specification: BS TA. 1.

Features: The mechanical properties of CP titanium are influenced by small additions of oxygen and iron. By careful control of these additions, the various grades of commercially pure titanium are produced to give properties suited to different applications. TIMETAL 35A contains the lowest oxygen and iron levels, producing the most formable grade of material. It has the highest purity, lowest strength, and best room-temperature ductility and formability of the four ASTM commercially pure grades. 35A should be used where maximum formability is required such as in explosive bonding and plate type heat exchangers. It exhibits excellent corrosion resistance in highly oxidizing to mildly reducing environments, including chlorides. It has good impact properties at low temperatures. In addition, TIMETAL 35A can be easily welded, machined, cold worked, hot worked, and cast. It is nonmagnetic.

Typical heat treatment for this alloy: Anneal at 700°C for 1 hour and air cool. Stress Relieve at 500°C for 30 mins and air cool.

Data provided by TIMET.

Physical Properties	Metric	English	Comments
Density	4.51 g/cc	0.163 lb/in³	Typical

Mechanical Properties

Tensile Strength, Ultimate	345 MPa	50000 psi	Typical
Tensile Strength, Yield	220 MPa	31900 psi	Typical 0.2% Proof Stress
Tensile Strength, Yield	220 MPa	31900 psi	Typical 0.2% Proof Stress
Elongation at Break	35 %	35 %	Typical
Reduction of Area	70 %	70 %	Typical
Modulus of Elasticity	105 - 120 GPa	15200 - 17400 ksi	Typical
Fatigue Strength	123 MPa	17800 psi	Notched, Kt=3; limit at 10^7 cycles; rotating bend
Fatigue Strength	193 MPa	28000 psi	Smooth, Kt=1; limit at 10^7 cycles; rotating bend

Electrical Properties

Electrical Resistivity	4.5e-005 ohm-cm	4.5e-005 ohm-cm	

Thermal Properties

CTE, linear 20°C	8.6 µm/m-°C	4.78 µin/in-°F	20-100°C
CTE, linear 250°C	9.5 µm/m-°C	5.28 µin/in-°F	20-300°C
CTE, linear 500°C	9.7 µm/m-°C	5.39 µin/in-°F	20-500°C
Thermal Conductivity	21.97 W/m-K	152 BTU-in/hr-ft²-°F	
Maximum Service Temperature, Air	425 °C	797 °F	Continuous
Maximum Service Temperature, Air	540 °C	1000 °F	Intermittant
Beta Transus	890 °C	1630 °F	

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.