



ASM Aerospace Specification Metals Inc.



Contact Us

TIMETAL® 50A CP Titanium (ASTM Grade 2)

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

Key Words: UNS R50400

Component	Wt. %
C	Max 0.08
Fe	Max 0.3
H	Max 0.015
N	Max 0.03
O	Max 0.25
Ti	Min 98.9

Material Notes:

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

Commercially Pure Titanium.

Industry Specifications: USA Aerospace: AMS 4902, 4941. Germany Engineering: 3.7035. Germany Aerospace: 3.7034. France: T-40. UK Aerospace Specifications BS TA. 2, 3, 4, 5.

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 50A is equivalent to ASTM Grade 2. It is the "workhorse" for industrial applications, having a guaranteed minimum 0.2% yield strength and good ductility and formability. It is used extensively for sea water piping, reactor vessels and heat exchangers throughout the CPI, Petrochemical, Oil and Gas and Naval/Marine markets. This alloy is also ASME approved, has good impact properties at low temperatures, and has excellent resistance to erosion and corrosion by seawater and marine atmospheres. It 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	<u>4.51 g/cc</u>	0.163 lb/in ³	Typical

Mechanical Properties

Tensile Strength, Ultimate	485 MPa	70300 psi	Typical
Tensile Strength, Yield	345 MPa	50000 psi	Typical 0.2% Proof Stress
Elongation at Break	28 %	28 %	Typical
Reduction of Area	57 %	57 %	Typical
Modulus of Elasticity	105 - 120 GPa	15200 - 17400 ksi	Typical
Fatigue Strength	154 MPa	22300 psi	Notched, Kt=3; limit at 10 ⁷ cycles; rotating bend
Fatigue Strength	232 MPa	33600 psi	Smooth, Kt=1; limit at 10 ⁷ cycles; rotating bend

Electrical Properties

Electrical Resistivity	5.3e-005 ohm-cm	5.3e-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	21.79 W/m-K	151 BTU-in/hr-ft ² -°F	
Maximum Service Temperature, Air	425 °C	797 °F	Continuous
Maximum Service Temperature, Air	540 °C	1000 °F	Intermittant
Beta Transus	915 °C	1680 °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 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.