

TIMET 6-4 Titanium Alloy (Ti-6Al-4V; ASTM Grade 5) Rod

Category : Metal , Nonferrous Metal , Titanium Alloy , Alpha/Beta Titanium Alloy

Material Notes:

Medium To High Strength General-Purpose Alloy. Tensile property data below is typical of rod; more specific form/thickness entries are also available in MatWeb. Industry Specifications: USA Aerospace: AMS 4911, 4928, 4932, 4935, 4954, 4965, 4967. Germany Engineering: 3.7165. Germany Aerospace: 3.7164. France: T-A6V. UK Aerospace Specifications BS TA. 10,11, 12, 13, 28, 56 DTD 5363. Features: A versatile medium strength alloy, the "workhorse" TIMETAL 6-4 exhibits good tensile properties at room temperature, creep resistance up to 325°C and excellent fatigue strength. It is often used in less critical applications up to 400°C. TIMETAL 6-4 is the alloy most commonly used in wrought and cast forms. Palladium or ruthenium can be added for increased corrosion resistance. Most properties are affected by the microstructure, which is determined by the thermomechanical history. It is highly resistant to general corrosion in sea water. This alloy is available in most common product forms including billet, bar, wire, plate, and sheet. Data provided by TIMET.

Order this product through the following link:

http://www.lookpolymers.com/polymer_TIMET-6-4-Titanium-Alloy-Ti-6Al-4V-ASTM-Grade-5-Rod.php

| Physical Properties | Metric | English | Comments |
|---------------------|-----------|--------------------------|----------|
| Density | 4.42 g/cc | 0.160 lb/in ³ | Typical |

| Mechanical Properties | Metric | English | Comments |
|----------------------------|----------------------------|-------------------------------|----------|
| Tensile Strength, Ultimate | 985 MPa | 143000 psi | Typical |
| Tensile Strength, Yield | 885 MPa @Strain 0.200 % | 128000 psi @Strain 0.200 % | Typical |
| Elongation at Break | 15 % | 15 % | Typical |
| Modulus of Elasticity | 105 - 120 GPa | 15200 - 17400 ksi | Typical |
| Poissons Ratio | 0.31 | 0.31 | |
| Shear Modulus | 41.0 - 45.0 GPa | 5950 - 6530 ksi | |

| Thermal Properties | Metric | English | Comments |
|--------------------|-----------------------------|-----------------------------|----------|
| CTE, linear | 9.00 µm/m-°C | 5.00 µin/in-°F | |
| | @Temperature 0.000 - 100 °C | @Temperature 32.0 - 212 °F | |
| | 9.40 µm/m-°C | 5.22 µin/in-°F | |
| | @Temperature 20.0 - 425 °C | @Temperature 68.0 - 797 °F | |
| | 9.70 µm/m-°C | 5.39 µin/in-°F | |
| | @Temperature 20.0 - 650 °C | @Temperature 68.0 - 1200 °F | |

| Thermal Properties | Metric | English | Comments |
|----------------------------------|--------------|-----------------------|---|
| Specific Heat Capacity | 0.586 J/g-°C | 0.140 BTU/lb-°F | |
| Thermal Conductivity | 6.60 W/m-K | 45.8 BTU-in/hr-ft²-°F | |
| Melting Point | 1674 °C | 3045 °F | |
| Liquidus | >= 1636 °C | >= 2977 °F | |
| Maximum Service Temperature, Air | 350 °C | 662 °F | Reasonable mechanical properties retained |
| Beta Transus | 995 °C | 1820 °F | |

| Component Elements Properties | Metric | English | Comments |
|-------------------------------|--------------|--------------|-------------------------|
| Aluminum, Al | 5.5 - 6.75 % | 5.5 - 6.75 % | |
| Carbon, C | <= 0.080 % | <= 0.080 % | |
| Hydrogen, H | <= 0.015 % | <= 0.015 % | |
| Iron, Fe | <= 0.40 % | <= 0.40 % | |
| Nitrogen, N | <= 0.050 % | <= 0.050 % | |
| Oxygen, O | <= 0.20 % | <= 0.20 % | |
| Titanium, Ti | 87.6 - 91 % | 87.6 - 91 % | Calculated as remainder |
| Vanadium, V | 3.5 - 4.5 % | 3.5 - 4.5 % | |

| Electrical Properties | Metric | English | Comments |
|------------------------|-----------------|-----------------|----------------|
| Electrical Resistivity | 0.000168 ohm-cm | 0.000168 ohm-cm | |
| Magnetic Permeability | 1.00005 | 1.00005 | at 20 oersteds |

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