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Ulbrich Stainless Steels & Special Metals, Inc. • 153 Washington Avenue • North Haven, CT 06473 USA • 800-243-1676 • ULBRICH.com

## TI 6AL-4V (GRADE 5), UNS R56400

### Grade 5 Titanium, Strip\*, Coil\*, Foil\*, Wire, ASTM B265

\* This item is in development in our strip facilities and not currently available in production quantities. Please contact our Technical Services for trials/prototypes.

Ulbrich Shaped Wire manufactures Titanium 6-4 in small to large production quantities.

#### Applications

Tension set rings, bolts, bicycle parts, biomedical implants, high-temperature structural applications in the aircraft industry

#### Description

Ti 6-4 (Grade 5) is significantly stronger than commercially pure titanium while having the same stiffness and thermal properties (excluding thermal conductivity, which is about 60% lower in Grade 5 than in CP Ti). Among its many advantages, it is heat treatable. This grade is an excellent combination of strength, corrosion resistance, weld and fabricability.

#### Chemistry Typical

Titanium: Balance  
Vanadium: 4.0  
Aluminum: 6.0  
Hydrogen: 0.015 max  
Nitrogen: 0.02 max  
Carbon: 0.10 max  
Iron: 0.25 max  
Residual each: 0.10 max., total 0.40 max

#### Physical Properties

Density: 0.16 lbs/in<sup>3</sup>, 4.43 g/cm<sup>3</sup>

Mean Coefficient of Thermal Expansion: in/in/°F (mm/m/°C):  
70 - 212 °F (20 - 100 °C):  $4.78 \times 10^{-6}$  (8.6)

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Thermal Conductivity: BTU-in/h-ft-°F (W/m-°K):  
At 70 °F (21 °C): 46.5 (6.7)

Modulus of Elasticity: ksi (MPa)  
16.5 x 10<sup>3</sup> (113.8 x 10<sup>3</sup>) in tension

Melting Point: 3020 °F (1660 °C)

## Forms

Strip, Foil, Ribbon: Inquire with Ulbrich Stainless Steel  
Wire: Inquire with Ulbrich Shaped Wire

## Mechanical Properties at Room Temperature

### Properties: Annealed (Typical)

Ultimate Tensile Strength: 135 KSI (950 MPa)  
Yield Strength (0.2% offset): 125 KSI (880 MPa)  
Elongation: 15%  
Hardness: Rc 34

### Properties: Tempered

Ti 6-4 (Grade 5) can be cold rolled to various tempers. Contact Ulbrich Technical Service for additional information.

## Additional Properties

### Corrosion Resistance

Refer to NACE (National Associate of Corrosion Engineers) for recommendations.

### Finishes

Strip, Foil, Ribbon: Inquire with Ulbrich Stainless Steel  
Wire: Inquire with Ulbrich Wire

### Heat Treatment

Ti 6-4 (Grade 5) can only be hardened by cold work.

### Welding

For best results refer to: SSINA's "Welding of Stainless Steels and Other Joining Methods".

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