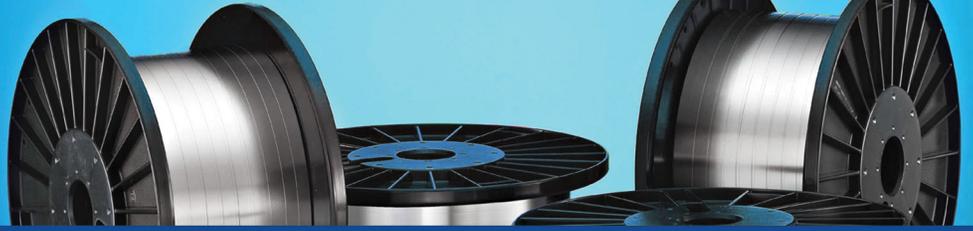




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TI 3-2.5 (GRADE 9), UNS R56320

Strip, Foil, Coil, Wire, ASTM B265 GR9, MIL-T-9046 AB-5

Applications

Honeycombs, bellows, tubing for hydraulic systems, golf club shafts, tennis racquets, bicycle frames

Description

Titanium Alloy 3-2.5 (Grade 9) is a medium strength alloy with good weldability and fabricability for mildly reducing to mildly oxidizing media. It is a compromise between the facility of welding and manufacturing of the pure grades and the high strength of Grade 5. It has great corrosion resistance and can be used extensively in aerospace, chemical processing, medical, marine, automotive.

Chemistry Typical

Titanium: Balance
Vanadium: 2.0-3.0
Aluminum: 2.5-3.5
Hydrogen: .015 max
Nitrogen: 0.03 max
Carbon: 0.10 max
Iron: 0.25 max
Residuals each 0.10 max, total 0.40 max

Physical Properties

Density: 0.162 lbs/in³, 4.51 g/cm³

Thermal Conductivity: Btu/ft-h-°F (W/m-K): At 68 °F (20 °C) 4.8 (8.3)

Mean Coefficient of Thermal Expansion: in/in°F (m/m°C)
70 - 95 °F (21 - 200°C) 3.4×10^{-6} (9.61×10^{-6})

Modulus of Elasticity: KSI (MPa)
 $14.0 - 15.0 \times 10^3$ ($95 - 105 \times 10^3$) in tension

Magnetic Permeability: Nonmagnetic

Melting Point: 3100 °F (1704 °C)

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Forms

Coil – Strip, Foil, Ribbon

Wire – Inquire with Ulbrich Shaped Wire

Mechanical Properties at Room Temperature

Properties: Annealed

Ultimate Tensile Strength: 90 KSI min (620 MPa min)

Yield Strength (0.2% offset): 70 KSI min (483 MPa min)

Elongation:

12% min (longitudinal)

8% min (transverse)

Properties: Tempered

Titanium Alloy 3-2.5 (Grade 9) 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

#1 – Hot rolled annealed and descaled. It is available in strip, foil and ribbon. It is used for applications where a smooth decorative finish is not required.

#2D – Dull finish produced by cold rolling, annealing and descaling. Used for deep drawn parts and those parts that need to retain lubricants in the forming process.

#2B – Smooth finish produced by cold rolling, annealing and descaling. A light cold rolling pass is added after anneal with polished rolls giving it a brighter finish than 2D.

#BA – Bright annealed cold rolled and bright annealed

#CBA – Course bright annealed cold rolled matte finish and bright anneal

#2 – Cold Rolled

#2BA – Smooth finish produced by cold rolling and bright annealing. A light pass using highly polished rolls produces a glossy finish. A 2BA finish may be used for lightly formed applications where a glossy finish is desired in the formed part.

Polished – Various grit finish for specific polish finished requirements.

** Not all finishes are available in all alloys – Contact Ulbrich Sales for more information.*

Wire Finishes

Inquire with Ulbrich Wire.

Heat Treatment

Titanium Alloy 3-2.5 (Grade 9) can be hardened by cold work and aging.

Welding

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

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