



Haynes® 282® Wire, Alloy 282 Wire, UNS N07208

Shaped, Flat, Square, Round, Fine Wire, Plated and Un-plated
AMS 5951, ASTM B637

Haynes® 282 and Alloy 282 Wire Description

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Alloy 282 is a corrosion and heat resistant gamma-prime strengthened nickel base alloy. Used in applications requiring high strength up to 1600°F (982°C) but not limited to those alone. The alloy has excellent creep strength in the temperature range of 1200-1700°F (649-927°C), surpassing Waspaloy® and approaching R-41.

Applications

Seal rings
Gas turbine components

Chemistry Typical

Nickel: 57.0 Min
Chromium: 19.5
Cobalt: 10.0
Molybdenum: 8.5
Titanium: 2.1
Aluminum: 1.5
Iron: 1.5 max
Manganese: 0.3 max
Silicon: 0.15 max

Carbon: 0.06

Boron: 0.005

Physical Properties

Density: 0.299 lb/in³, 8.27 g/cm³

Electrical Resistivity: $\mu\text{ohm-in}$ ($\mu\text{ohm-cm}$):

At 70°F (21°C): 49.7 (126.2)

At 200°F (100°C): 50.3 (127.8)

At 400°F (200°C): 51.2 (129.9)

At 800°F (400°C): 52.7 (133.4)

At 1000°F (600°C): 53.5 (136.2)

At 1200°F (700°C): 53.4 (135.5)

At 1400°F (800°C): 53.1 (134.5)

At 1600°F (900°C): 52.5 (132.2)

At 1800°F (1000°C): 51.3 (129.9)

Specific Heat: BTU/lb-°F (J/g-K):

At 70°F (21°C): 0.104 (436)

At 200°F (100°C): 0.110 (494)

At 400°F (200°C): 0.118 (544)

At 800°F (400°C): 0.131 (563)

At 1000°F (600°C): 0.136 (581)

At 1200°F (700°C): 0.140 (594)

At 1400°F (800°C): 0.150 (650)

At 1600°F (900°C): 0.158 (668)

At 1800°F (1000°C): 0.161 (676)

Thermal Conductivity: BTU-in/hr-ft²-°F (W/m-°C)

At 70°F (21°C): 72 (10.3)

At 200°F (100°C): 82 (12.0)

At 400°F (200°C): 99 (14.1)

At 800°F (400°C): 132 (18.5)

At 1000°F (600°C): 148 (22.6)

At 1200°F (700°C): 164 (24.8)

At 1400°F (800°C): 177 (26.1)

At 1600°F (900°C): 187 (27.3)

At 1800°F (1000°C): 199 (28.9)

Mean Coefficient of Thermal Expansion: $\mu\text{in/in-}^\circ\text{F}$ ($\mu\text{m/m-}^\circ\text{C}$)

70-800°F (20-500°C): 7.3 (13.5)

70-1000°F (20-600°C): 7.5 (13.7)

70-1200°F (20-700°C): 7.8 (14.2)

70-1400°F (20-800°C): 8.1 (14.9)

70-1600°F (20-900°C): 8.7 (15.9)

70-1800°F (20-1000°C): 9.3 (16.9)

Modulus of Elasticity: KSI (MPa)

31.3×10^3 (216×10^3) in tension

Melting Range: 2370-2510°F (1300-1375°C)

Mechanical Properties at Room Temperature

Properties: Annealed Typical

Ultimate Tensile Strength: 122 KSI (839 MPa)

Yield Strength: 56 KSI (384 MPa)

Elongation: 59%

Hardness: Rb 90

Properties: Cold Worked: Typical

Cold Worked: 10 %

Ultimate Tensile Strength: 132 KSI (909 MPa)

Yield Strength: 88 KSI (605 MPa)

Elongation: 45%

Cold Worked: 30%

Ultimate Tensile Strength: 165 KSI (1141 MPa)

Yield Strength: 139 KSI (963 MPa)

Elongation: 15%

Cold Worked: 50%

Ultimate Tensile Strength: 200 KSI (1382 MPa)

Yield Strength: 174 KSI (1204 MPa)

Elongation: 5%

Properties: Tempered

Alloy 282 can be cold rolled to achieve additional temper properties required by specific customers and/or manufacturing requirements. Contact Ulbrich Wire for details.

Properties: Heat Treated Typical

Solution Anneal: 2100°F (1149°C), Age-Hardening: 1850°F (1010°C) for 2 hours, air cool plus 1400°F (788°C) for 8 hours, air cool.

Ultimate Tensile Strength: 160 KSI (1132 MPa)

Yield Strength: 101 KSI (699 MPa)

Elongation: 30%

Additional Properties

Corrosion Resistance

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

Standard Wire Finishes

Extra Clean: (XC) Extra clean is also referred to as “bright annealed” or “bright annealed and cold rolled”

Grease (round wire only): Drawn in a heavy grease produces an “Ultra bright” finish for decorative applications

Soap (round wire only): Soap is used as a lubricant in the drawing process and is not removed. It acts as a lubricant during customer part forming operation. A soap finish is available in tempered products.

Plated: Many plating options are available.

*Special finishes are available: Contact Ulbrich Wire Sales with special finish and plating requests.

Forms

Continuous Coils

Cut to lengths

Precision cutting

Heat Treatment

Alloy 282 is hardenable by cold working and by heat treatment.

Welding

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

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