Haynes® 230 (Alloy), UNS N06230

Shaped, Flat, Square, Round, Fine Wire, Plated and Un-plated ASTM B435, ASTM B564, ASTM B572, ASTM B619, ASTM B 622, ASTM B626, AMS 5878, AMS 5891

Alloy 230 Description

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Alloy 230 is a nickel-chromium-tungsten-molybdenum alloy which combines excellent high temperature strength, oxidation resistance (up to 2100°F), nitriding resistance and long term stability. It is particularly effective for very long-term applications at temperatures of 1200°F (649°C) or more and is capable of outlasting stainless steels and nickel alloys by as much as 100 to 1 depending upon the temperature.Alloy 230 is a solid-solution-strengthened material which combines excellent high-temperature strength with good fabricability at room temperature.

Applications

Resistance heater components
Heat treating baskets and trays
Wire annealing fixtures
Chemical process components

Chemistry Typical

Nickel: 47.00-65.00
Iron: 3.00 max
Chromium: 20.00 – 24.00
Cobalt: 5.00 max
Molybdenum: 1.00 – 3.00

Tungsten: 13.00 – 15.00
Carbon: 0.05-0.15
Manganese: 0.30-1.00
Silicon: 0.25-0.75
Aluminum: 0.20-0.50
Lanthanum: 0.005-0.05
Phosphorus: 0.03 max
Sulfur: 0.015 max
Boron: 0.015 max
Titanium: 0.10 max
Copper: 0.50 max

Physical Properties

Density: 0.327 lbs/in^3, 9.05 g/cm^3

Specific Heat: BTU/lb/°F (J/kg•K):
At 70°F (21°C): .0095 (397)

Mean Coefficient of Thermal Expansion: in/in/°F (mm/m/°C):
70- 212°F (20- 100°C): 7.0 x 10^{-6} (12.7)

Thermal Conductivity: BTU-in/h-ft-°F (W/m-°K):
70°F (21°C): 62 (8.9)

Modulus of Elasticity: KSI (MPa)
30.6 x 10^3 (210 x 10^3) in tension

Melting Range: 2375-2500F (1300-1374°C)

Mechanical Properties at Room Temperature

Properties: Annealed
Ultimate Tensile Strength: 110 KSI min (760 MPa min)
Yield Strength (0.2% offset): 45 KSI min (310 MPa min)
Elongation: 40% min

Properties Tempered

Alloy 230 can be cold rolled to achieve the temper properties required by specific customers and/or manufacturing requirements. Contact Ulbrich Wire for details.

Additional Properties

Corrosion Resistance

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

Standard Wire Finishes

Extra Clean: 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 230 cannot be hardened heat treating

Welding

For best results refer to: SSINA’s “Welding of Stainless Steels and Other Joining Methods”

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