



Waspaloy®, UNS N07001

Shaped, Flat, Square, Round, Fine Wire, Plated and Un-plated
Specifications: AMS 5544, AMS 5706, AMS 5707, AMS 5708, AMS 5828

Waspaloy® Wire Description

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Waspaloy® is an age hardenable nickel-base alloy with excellent high temperature strength and good resistance to oxidation at temperatures up to 1600°F. The alloy's high-temperature strength is derived from its solid solution strengthening elements, molybdenum, cobalt and chromium, and its age hardening elements of aluminum and titanium. Waspaloy® has higher stability and strength ranges than those available for alloy 718. It can be heat treated in three-steps: solution treatment, stabilization and age-hardening

Applications

Gas turbine seals
Rings
Fasteners
Shafts

Chemistry: Typical

Nickel: Balance
Chromium: 18.00-21.00
Cobalt: 12.00-15.00
Titanium: 2.75-3.25
Aluminum: 1.20-1.60
Boron: 0.003-0.01

Carbon: 0.020-0.10

Zirconium: 0.02-0.08

Iron: 3.00 max

Manganese: 0.10 max

Silicon: 0.15 max

Phosphorus: 0.015 max

Sulfur: 0.015 max

Physical Properties

Density, 0.296 lbs/in³, 8.20 g/cm³

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): 7.6 (13.9)

70-1000°F (20-600°C): 7.8(14.3)

70-1200°F (20-700°C): 8.1(14.8)

70-1400°F (20-800°C): 8.4(15.4)

70-1600°F (20-900°C): 8.9(16.4)

70-1800°F (20-1000°C): 9.7(17.8)

Thermal Conductivity: BTU-in/ft-°F (W/m-°K):

At 70°F (21°C): 79(11)

At 800°F (427°C): 113(16)

At 1200°F (649°C): 138(20)

At 1500°F (816°C): 160(23)

At 1800°F (982°C): 182(26)

Modulus of Elasticity, KSI(MPa)

30.9 x 10³(213 x 10³) in tension

Melting Range: 2425-2475°F (1330-1357°C)

Mechanical Properties at Room Temperature

Properties: Annealed

Mechanical properties are size and process dependent. Contact Ulbrich Wire with requests.

Properties: Tempered

Mechanical properties are size and process dependent. Contact Ulbrich Wire with requests

Heat Treated Capabilities:

Heat treated properties are size and process dependent. Contact Ulbrich Wire with requests

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

Cold Forming

Waspaloy® can be cold-formed in the annealed condition, and may also be hot-formed at temperatures of 1900°F or above.

Welding

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

*Waspaloy® is a registered trademark of United Technologies Corp

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