



Hastelloy® B-3 (Alloy B-3), UNS N10675

Shaped, Flat, Square, Round, Fine Wire, Plated and Bare Wire

ASTM B333, ASTM B335

Hastelloy® B-3 Alloy Description

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Alloy B-3 has excellent resistance to pitting corrosion and stress-corrosion cracking, plus thermal stability superior to that of alloy B-2. This alloy has also great resistance to knife-line and heat-affected zone attack. The improved thermal stability of alloy B-3 alloy minimizes the problems associated with fabrication of alloy B-2 alloy components. This is due to the reduced tendency to precipitate deleterious inter-metallic phases in B-3 alloy, thereby, affording it greater ductility than B-2 alloy during and following various thermal cycling conditions. Because this alloy contains no significant chromium addition it should NOT be used in oxidizing media or in presence of oxidizing salts, such as ferric or cupric salts. The latter may form when iron or copper is present in a system containing hydrochloric acid. Likewise alloy B-3 does not withstand wet chlorine gas or hypochlorite bleach.

Applications

Furnace and chemical process components

Components used in the production of herbicides, insecticides, ethylene glycol, ethyl benzene

Chemistry Typical

Nickel: 65.0 min

Chromium: 1.00-3.00

Molybdenum: 27.00-32.00

Iron: 1.0-3.0

Cobalt: 3.0 max

Tungsten: 3.0 max

Manganese: 3.0 max

Aluminum: 0.50 max

Titanium: 0.20 max

Silicon: 0.10 max

Carbon: 0.01 max

Copper: 0.20 max

Physical Properties

Density: 0.333 lbs/in³, 9.22 g/cm³

Electrical Resistivity: microhm-in, (microhm-cm):

70°F (21°C): 53.8 (137)

Specific Heat: BTU/lb/°F (J/kg•K):32-212°F (0-100°C): 0.089 (373)

Mean Coefficient of Thermal Expansion: in/in/°F (mm/m/°C):

70-212°F (20-100°C): 5.7×10^{-6} (10.6)

Thermal Conductivity: BTU-in/h-ft-°F (W/m-°K): 70°F (21°C): 78 (11.2)

Modulus of Elasticity: KSI (MPa)

31.4×10^3 (216×10^3) in tension

Melting Range: 2500-2585°F (1370-1418°C)

Mechanical Properties at Room Temperature

Annealed: Typical

Ultimate Tensile Strength: 125 KSI (860 MPa)

Yield Strength: (0.2% offset) 60 KSI (420 MPa)

Elongation: 50%

Properties Tempered

Alloy B-3 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 for 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 B3 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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