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HASTELLOY® B-2, UNS N10665

Strip, Coil, Foil and Wire, ASTM B333

Applications

Hastelloy® B-2 is used for most chemical process applications in the welded condition, gasoline refining.

Description

Hastelloy® B-2 is a nickel-base wrought alloy with excellent resistance to hydrochloric acid at all concentrations and temperatures. Therefore, it has great resistance to stress-corrosion cracking and pitting. It also withstands hydrogen chloride, sulfuric, acetic and phosphoric acids.

Chemistry Typical

Nickel: Balance
Molybdenum: 26.00-30.00
Iron: 2.00 max
Chromium: 1.00 max
Cobalt: 1.00 max
Manganese: 1.00 max
Silicon: 0.10 max
Phosphorus: 0.040 max
Sulfur: 0.030 max
Carbon: 0.02 max

Physical Properties

Density: 0.333 lb/in³, 9.22 g/cm³

Electrical Resistivity: ohm-cm
At 212 °F (100 °C): 0.000138

Specific Heat: BTU/lb-°F (J/g-°C)
At 212 °F (100 °C): 0.0930 (0.389)

Hastelloy® B-2 is a registered trademark of Haynes International, Inc.

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

At 32 °F (0 °C): 77.0 (11.1)

At 212 °F (100 °C): 84.7 (12.2)

At 392 °F (200 °C): 93.0 (13.4)

At 572 °F (300 °C): 101.0 (14.6)

At 752 °F (400 °C): 111.0 (16.0)

At 932 °F (500 °C): 120.0 (17.3)

At 1110 °F (600 °C): 130.0 (18.7)

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

68 – 199 °F (20 – 93 °C): 5.72 (10.3)

68 – 399 °F (20 – 204 °C): 6.00 (10.8)

68 – 601 °F (20 – 316 °C): 6.22 (11.2)

68 – 801 °F (20 – 427 °C): 6.39 (11.5)

68 – 1000 °F (20 – 538 °C): 6.50 (11.7)

Modulus of Elasticity: KSI (MPa)

31.5×10^3 (217×10^3) in tension

Melting Range: 2426 - 2516 °F (1330 - 1380 °C)

Forms

Coil – Sheet, Strip, Foil

Wire – Profile, Round, Flat, Square

Mechanical Properties at Room Temperature

Properties: Annealed Typical

Ultimate Tensile Strength: 110 KSI min (758 MPa min)

Yield Strength: 51 KSI min (352 MPa min)

Elongation: 40 % min

Hardness: Rb 100 max

Properties: Tempered

Hastelloy® B-2 can be cold worked to various tempers. Contact Ulbrich Technical Service for additional information.

Additional Properties

Corrosion Resistance

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

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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 for all alloys – Consult Sales for applicable finishes.*

Wire Finishes

XC – Extra Clean Bright Annealed or Bright Annealed and Cold Rolled

Grease – Ultra bright finish (for decorative applications)

Soap – Soap coating on tempered wire to act as lubricant.

** Contact Wire with special finish requests.*

Heat Treatment

Hastelloy® B-2 is non hardenable by heat treatment.

Welding

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

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