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Ulbrich Stainless Steels & Special Metals, Inc. • 153 Washington Avenue • North Haven, CT 06473 USA • 800-243-1676 • ULBRICH.com

INCOLOY® 800, UNS N08800

(Nickel 800) Strip, Coil, Foil, and Wire, AMS 5766, AMS 5871, AMS 5876, AMS 5877, ASTM B 408, ASTM B409

Applications

Furnace equipment parts, muffles, radiant tubes, heat treat trays, cracker tubes, manifolds, food processing

Description

Incoloy® 800 is a nickel-iron-chromium alloy designed with good strength and to resist oxidation and carburization at elevated temperatures. The high nickel content (30% Min.) makes the alloy highly resistant both to chloride stress-corrosion cracking and to embrittlement from precipitation of sigma phase. The general corrosion resistance is excellent.

Chemistry Typical

Nickel: 30.00-35.00
Chromium: 19.00-23.00
Iron: 39.50 min
Carbon: 0.10 max
Manganese: 1.50 max
Sulfur: 0.015 max
Silicon: 1.00 max
Copper: 0.75 max
Aluminum: 0.15-0.60
Titanium: 0.15-0.60
Phosphorus: 0.035 max

Physical Properties

Density: 0.27 lbs/in³, 7.94.g/cm³

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Specific Heat, Btu/lb•°F, J/kg•°C:

32 - 212 °F (0 - 100 °C): 0.11 (460)

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

70 - 212 °F (20 - 100 °C) – 7.9×10^{-6} (14.2)

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

70 °F (21 °C): 6.7 (11.6)

Modulus of Elasticity: ksi (MPa)

28.5×10^3 (196.5×10^3) in tension

Permeability at 70 °F (21 °C) H = 200 Oersted : Annealed : 1.014

Melting Point: 2525 °F (1385 °C)

Forms

Coil – Strip, Foil, Ribbon

Wire – Profile, Round, Flat, Square

Mechanical Properties at Room Temperature

Properties: Annealed

Ultimate Tensile Strength: 75 KSI min (420 MPa min)

Yield Strength (0.2% offset): 30 KSI (gauges ≥ 0.020 inches)

Elongation: 30% min

Hardness: Rb 84 nom

Tempered:

Incoloy® 800 can be cold rolled 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 in all alloys – Contact Ulbrich Sales for more information.*

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 Ulbrich Wire for custom wire finishes.*

Heat Treatment

Incoloy® 800 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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