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

NITRONIC 40®, UNS S21900, UNS S21904

Strip, Coil, Foil & Wire, ASTM A276 (XM-10), ASTM A314 (XM10), ASTM A412 (XM-10), ASTM A473 (XM-10), ASTM A580 (XM-10), AMS 5575, AMS 5656, ASTM A240 (XM-11), ASTM A276 (XM-11), ASTM A314 (XM-11), ASTM A412 (XM-11), ASTM A473 (XM-11), ASTM A479 (XM-11), ASTM A580 (XM11)

Applications

Aircraft engine components, chemical process equipment, pollution control equipment, ducting, and bellows. Application where low magnetic permeability is required even after severe cold work.

Description

Nitronic 40® is a versatile austenitic stainless steel that combines high yield strength with good corrosion resistance. Retains high strength and toughness even at sub-zero temperatures.

Chemistry Typical

UNS 21900

Carbon: 0.08 max*
Manganese: 8.00-10.00
Silicon: 1.00 max
Chromium: 19.00-21.50
Nickel: 5.50-7.50
Phosphorus: 0.060 max
Sulfur: 0.030 max
Nitrogen: 0.15-0.40
Iron: Balance

** Where Nitronic 40® must meet CuSO4H2SO4 test as defined by Federal Test Methods Standards 151b Method ASTM 393(A708) the use UNS 21904 with .040% max carbon.*

Physical Properties

Density: 0.283 lbs/in^3 7.83 g/cm^3

Thermal Conductivity: BTU/hr/ft^2/°F (W/m•K):
At -290 °F (-179 °C): 54 (7.8)
At -100 °F (-73 °C): 76 (10.9)
At 200 °F (93 °C): 96 (13.8)
At 400 °F (204 °C): 112 (16.1)
At 600 °F (316 °C): 126 (18.2)
At 800 °F (427 °C): 140 (20.2)
At 1000 °F (538 °C): 156 (22.5)
At 1200 °F (649 °C): 172 (24.8)
At 1400 °F (760 °C): 186 (26.8)
At 1600 °F (871 °C): 200 (28.8)

Magnetic Permeability: H = 200 Oersteds:
Annealed: 1.004
15% Cold Reduction: 1.003
35% Cold Reduction: 1.005
60% Cold Reduction: 1.012

Forms

Coil – Sheet, Strip, Foil
Wire – Profile, Round, Flat, Square

Mechanical Properties at Room Temperature

Properties: Annealed Typical

Ultimate Tensile Strength: 112 KSI (772 MPa)
Yield Strength: 68 Ksi (469 MPa)
Elongation: 44%
Hardness: Rb 96

Properties: Tempered

Nitronic 40® can be cold worked to various temper ranges. Contact Ulbrich Technical Service for additional information.

Additional Properties

Corrosion Resistance

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

Nitronic 40® is a registered Trademark of AK Steel

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 is not removed from tempered wire to act as a lubricant.

** Contact Ulbrich Wire with special finish requests.*

Heat Treatment

Nitronic 40® is non hardenable by heat treatment.

Welding

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