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NITRONIC 32®, UNS S24100

Wire, ASTM A276 (XM-28), ASTM A313 (XM-28), ASTM A580 (XM-28)

Applications

Clamps for pole line hardware, concrete reinforcing accessories, abrasion and corrosion resistant screens, high strength non-magnetic springs, wire forms, racks, cages

Description

Nitronic 32® (XM-28) is an austenitic stainless steel that has almost twice the yield strength of 304 and comparable corrosion resistance. The alloy has high work hardenability which leads cold working to high strengths while maintaining good ductility.

Chemistry Typical

Carbon: 0.15 max
Manganese: 11.00-14.00
Silicon: 1.00 max
Chromium: 16.50-19.00
Nickel: 0.50-2.50
Nitrogen: 0.20-0.45

Physical Properties

Density: 0.281 lbs/in³ 7.781 g/cm³

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

73 - 200 °F (23 - 93 °C): 8.98×10^{-6} (16.16×10^{-6})

73 - 400 °F (23 - 204 °C): 9.35×10^{-6} (16.83×10^{-6})

73 - 600 °F (23 - 316 °C): 9.77×10^{-6} (17.59×10^{-6})

73 - 800 °F (23 - 427 °C): 10.03×10^{-6} (18.05×10^{-6})

73 - 1000 °F (23 - 538 °C): 10.31×10^{-6} (18.56×10^{-6})

73 - 1200 °F (23 - 649 °C): 10.73×10^{-6} (19.31×10^{-6})

73 - 1400 °F (23 - 760 °C): 11.02×10^{-6} (19.84×10^{-6})

73 - 1600 °F (23 - 871 °C): 11.25×10^{-6} (20.25×10^{-6}) *Nitronic 32® is a registered trademark of Armco Inc.*

73 - 1800 °F (23 - 982 °C): 11.60×10^{-6} (20.88×10^{-6})

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Modulus of Elasticity: ksi (MPa)
 28.9×10^3 (199.2×10^3) in tension

Magnetic Permeability: H = 200:
 Annealed: < 1.02
 70% Cold Worked: < 1.011

Forms

Coil – Contact Ulbrich Sales
 Wire – Profile, Round, Flat, Square

Mechanical Properties at Room Temperature

Properties: Annealed Typical

Ultimate Tensile Strength: 120 KSI min (793 MPa min)
 Yield Strength: 60 KSI min (414 MPa min)
 Elongation: 55% min
 Hardness: Rb 95 min

Properties: Tempered

Nitronic 32® (XM-28) can be cold worked to various tempers. Contact Ulbrich Wire Technical Service for additional information.

Additional Properties

Corrosion Resistance

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

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

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** Not All Finishes are Available for All Alloys – Consult Sales for Applicable Finishes.*

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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 32® (XM-28) 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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