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HAYNES® 242, UNS N10242

(Nickel Alloy 242) Strip, Coil, Foil, Wire, ASTM B434 (cover annealed material only)

Applications

Seal rings, containment rings, duct segments, casings, fasteners, rocket nozzles, pumps, honeycombs. Chemical processing: such as high temperature HF vapor containing process, fluoroelastomer process equipment

Description

Haynes® 242 is an age hardenable nickel-molybdenum-chromium alloy which derives strength from a log-range ordering reaction upon aging. It has tensile and creep strength properties up to 1300 °F which are as much as double for solid solution strengthened alloys, but with high ductility in the aged condition. The thermal expansion characteristics of alloy 242 are much lower than those for most other alloys, and it has very good oxidation resistance up to 1500 °F.

Chemistry Typical

Nickel: Balance
Molybdenum: 24.00 – 26.00
Chromium: 7.00 – 9.00
Iron: 2.00 max
Cobalt: 2.50 max
Manganese: 0.80 max
Silicon: 0.80 max
Aluminum: 0.50 max
Carbon: 0.03 max
Boron: 0.006 max
Copper: 0.50 max

Physical Properties

Density: 0.327 lbs/in³, 9.05 g/cm³

Specific Heat BTU/lb.-°F(J/Kg-K):
At 70 °F (21 °C): 0.092 (386)

For Reference Only

Haynes® 242 is a registered trademark of Haynes Alloys

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Mean Coefficient of Thermal Expansion: in/in/°F (mm/m/°C):
70 - 212 °F (20 - 100 °C): 6.0 x 10^{-6} (10.8)

Thermal Conductivity: BTU-in/h-ft-°F (W/m-°K):
70 °F (21 °C): 75.7 (11.3)

Modulus of Elasticity: KSI (MPa)
33.2 x 10^3 (229 x 10^3) in tension

Melting Range: 2350 - 2510 °F (1290 - 1375 °C)

Forms

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

Mechanical Properties at Room Temperature

Annealed Typical

Ultimate Tensile Strength: 105 KSI min (950 MPa min)
Yield Strength: (0.2% offset) 45 KSI min 310 MPa min)
Elongation: 40% min
Grain Size: ASTM 3 min

Properties: Tempered

Haynes® 242 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.

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 – 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

Haynes® 242 can be hardened by:

- Cold working
- Age hardening
- Cold working and age hardening

Welding

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

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