INCONEL® 625, UNS N06625
(Nickel 625) Strip, Foil, Wire, AMS 5599, AMS 5979, ASTM B443
Gr1 or Gr2

Gr1 - Annealed for service temps up to 1100 °F
Gr2 - Solution annealed for service temps above 1100 °F where resistance to creep and rupture is required

Applications
Honeycombs, flexible metal hose, tubing bellows, heat exchangers and header bars

Description
Inconel® 625 is a non-magnetic, corrosion and oxidation resistant, nickel-chromium alloy. Its outstanding strength and toughness in the temperature range from cryogenic to 2000 °F (1093 °C) are derived primarily from the solid solution effects of the refractory metals Columbium and molybdenum in a nickel-chromium matrix. The alloy has excellent fatigue strength and stress corrosion cracking to chloride ions.

Chemistry Typical
Nickel: 58.00 min
Chromium: 20.0-23.0
Iron: 5 min
Molybdenum: 8.0-10.0
Columbium + Tantalum: 3.15-4.15
Manganese: 0.50 max
Carbon: 0.10 max
Silicon: 0.50 max
Phosphorus: 0.015 max
Sulfur: 0.015 max
Aluminum: 0.40 max
Titanium: 0.40 max
Cobalt: 1.00 max
Physical Properties

Density: 0.305 lbs/in³, 8.44 g/cm³

Mean Coefficient of Thermal Expansion: in/in/°F (m/m/°C)
68 - 400 °F (20 - 204 °C): 7.3 x 10⁻⁶ (13.1)
68 - 600 °F (20 - 315 °C): 7.5 x 10⁻⁶ (13.5)
68 - 800 °F (20 - 427 °C): 7.7 x 10⁻⁶ (13.9)

Magnetic Permeability H= 200 Oersted Annealed: 1.0006

Modulus of Elasticity: ksi (MPa) in Tension
30.2 x 10³ (208 x 10³)

Melting Range: 2350 - 2460 °F (1290 - 1350 °C)

Forms

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

Mechanical Properties at Room Temperature

Annealed Typical

Ultimate Tensile Strength: 120 KSI min (827 MPa min)
Yield Strength: (0.2% offset) 60 KSI min (414 MPa min)
Elongation: 30% min (gauges > 0.040inched

Properties: Tempered

Inconel® 625 can be cold rolled to achieve the temper properties required by specific customers and/or manufacturing requirements. Contact Ulbrich Wire for details.

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.

* 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 Wire Sales for custom wire finishes.

Heat Treatment

Inconel® 625 cannot be hardened heat treating.

Welding

For best results refer to: SSINA’s “Welding of Stainless Steels and Other Joining Methods”.

Inconel® 625 is a registered trademark of Special Metals Corp.