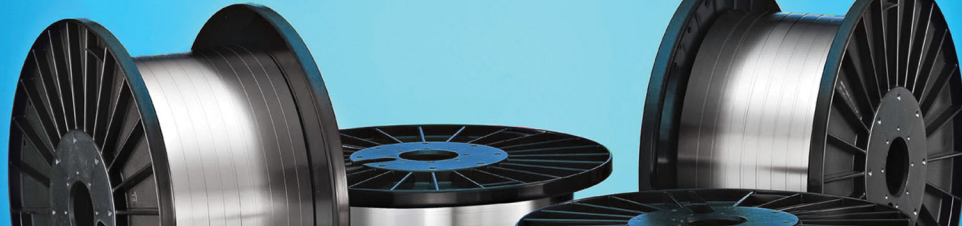




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INCONEL® 617, UNS N06617

**(Nickel 617) Strip, Coil, Foil & Wire, AMS 5887, AMS 5888, AMS 5889,
ASTM B166**

Applications

Inconel® 617 is used in gas turbines for combustion cans, ducting, and transition liners; for petrochemical processing; for heat-treating equipment; and in nitric acid production. The alloy also offers attractive properties for components of power-generating plants, both fossil fueled and nuclear.

Description

Inconel® 617 is a nickel-chromium-cobalt-molybdenum alloy with an exceptional combination of metallurgical stability, strength, and oxidation resistance at high temperatures. Resistance to oxidation is enhanced by an aluminum addition. The alloy also resists a wide range of corrosive aqueous environments. Used in gas turbines for combustion cans, ducting, and transition liners; for petrochemical processing; for heat-treating equipment; and in nitric acid production. Standard product forms are round, forging stock, extruded section, plate, sheet, strip, pipe, tube, and wire.

Chemistry Typical

Nickel: 44.5 min
Chromium: 20.0-24.0
Cobalt: 10.0-15.0
Molybdenum: 8.0-10.0
Aluminum: 0.8-1.5
Carbon: 0.05-0.15
Iron: 3.0 max.
Manganese: 1.0 max.
Silicon: 0.10 max.
Sulfur: 0.015 max.
Titanium: 0.6 max.
Copper: 0.5 max.
Boron: 0.006 max

Inconel® 617 is a registered trademark of Special Metals Corp

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Physical Properties

Density: 0.302 lb/in³, 8.36 g/cm³

Electrical Resistivity: ohm-cir-mil/ft (micro-ohm-m):

At 78 °F (20 °C): 736 (1.222)

At 200 °F (100 °C): 448 (1.245)

At 400 °F (200 °C): 757 (1.258)

At 600 °F (300 °C): 764 (1.268)

At 800 °F (400 °C): 770 (1.278)

At 1000 °F (500 °C): 779 (1.290)

At 1200 °F (600 °C): 793 (1.308)

At 1400 °F (700 °C): 807 (1.332)

At 1600 °F (800 °C): 803 (1.342)

At 1800 °F (900 °C): 824 (1.338)

At 2000 °F (1000 °C): — (1.378)

Specific Heat: BTU/lb-°F (J/Kg-°C): At 78 °F (20 °C): 0.100 (419)

Thermal Conductivity: BTU-in/hr-ft²-°F (W/m•°C):

At 78 °F (20 °C): 94 (13.4)

At 200 °F (100 °C): 101 (14.7)

At 400 °F (200 °C): 113 (16.3)

At 600 °F (300 °C): 125 (17.7)

At 800 °F (400 °C): 137 (19.3)

At 1000 °F (500 °C): 149 (20.9)

At 1200 °F (600 °C): 161 (22.5)

At 1400 °F (700 °C): 173 (23.9)

At 1600 °F (800 °C): 185 (25.5)

At 1800 °F (900 °C): 197 (27.1)

At 2000 °F (1000 °C): 209 (28.7)

Mean Coefficient of Thermal Expansion: $\mu\text{in/in-}^\circ\text{F}$ ($\mu\text{m/m-}^\circ\text{C}$):

78 - 200 °F (20 - 100 °C): 7.0 (11.6)

78 - 400 °F (20 - 200 °C): 7.2 (12.6)

78 - 600 °F (20 - 300 °C): 7.49 (13.1)

78 - 800 °F (20 - 400 °C): 7.6 (13.6)

78 - 1000 °F (20 - 500 °C): 7.7 (13.9)

78 - 1200 °F (20 - 600 °C): 8.0 (14.0)

78 - 1400 °F (20 - 700 °C): 8.4 (14.8)

78 - 1600 °F (20 - 800 °C): 8.7 (15.4)

78 - 1800 °F (20 - 900 °C): 9.0 (15.8)

78 - 2000 °F (20 - 1000 °C): 9.2 (16.3)

Modulus of Elasticity: KSI (MPa): 30.6×10^3 (211×10^3) in tension

Melting Range: 2430 - 2510 °F (1332 - 1380 °C)

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Forms

Coil – Sheet, Strip, Foil

Wire – Profile, Round, Flat, Square

Mechanical Properties at Room Temperature

Properties: Annealed Typical

Ultimate Tensile Strength: 95 KSI min (655 MPa min)

Yield Strength: 35 KSI min (241 MPa min)

Elongation: 30% min

Properties: Tempered

Inconel® 617 can be cold worked 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.

** Not all finishes are available in all alloys – Contact 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 coating on tempered wire to act as lubricant.

** Contact Ulbrich Wire with special finish requests.*

Heat Treatment

Inconel® 617 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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