

Alloy 69/Inconel X-750 Data Sheet

Description

Inconel® X750 is a precipitation hardenable Nickel-Chromium alloy with high strength at temperatures up to 1300°F (704°C) and oxidation resistance up to 1800°F (982°C). Inconel® X750 offers excellent resistance to relaxation and as a result it is widely used for springs operating at elevated temperatures.

Industries Supplied

Oil & Gas Extraction and Processing, Nuclear, Aerospace, Power Generation and Automotive

Nominal Composition

Ni: 70.0 min
Cr: 14.0 - 17.0
Fe: 5.0 - 9.0
Ti: 2.25 - 2.75
Al: 0.40 - 1.0
Cb (Nb): 0.70 - 1.20
Mn: 1.0
Si: 0.50 max
C: 0.08 max
S: 0.01 max
Cu: 0.5 max

Physical Properties

Density: 0.299 lb/in³, (8.28 g/cm³)

Modulus of Elasticity (E):

At 70°F (20°C): 31.0 x 10⁶ psi (214 GPa)

At 1000°F (538°C): 26.7 x 10⁶ psi (184 GPa)

Modulus of Rigidity (G):

At 70°F (20°C): 12.0 x 10⁶ psi (82.7 GPa)

Coefficient of Expansion:

7.8 μin/in.-°F (70°F to 1000°F)

14.5 μm/m-°C (20°C to 538°C)

Electrical Resistivity: 20.1 μΩ.in, (122 μΩ.cm)

Thermal Conductivity: 83 Btu-in/ft²hr-°F, (12.0 W/m-K)

Applicable Specifications

Wire & Bar: AMS 5698, AMS 5699, AMS 5778, NACE MR0175 (ISO 15156-3), ASTM B637, AMS 5667, AMS 5668, AMS 5670

Typical Mechanical Properties

- **Annealed**
 - **Heat Treatment:** 2000 - 2200°F (1093 - 1204°C)
 - **Tensile Strength:** 130 ksi max; (896 MPa) max