Hastelloy® G-3 (Alloy G3), UNS N06985
Shaped, Flat, Square, Round, Fine Wire, Plated and Un-plated
ASTM 581, ASTM B 582

Hastelloy G-3 Wire Description
Alloy G3 has excellent corrosion resistance to oxidizing chemicals and atmospheres while offering resistance to reducing chemicals resulting from the nickel and copper content. The high molybdenum provides very good resistance to pitting and crevice corrosion. The low carbon helps prevent sensitization, giving the alloy resistance to inter-granular corrosion.

Applications
Components used in handling equipment that processes reducing acids such as phosphoric and sulfuric
Components used in the productions of sour gas and oil

Chemistry Typical
Nickel: Balance
Chromium: 21.00-23.5
Iron: 18.00-21.00
Molybdenum: 6.0-8.0
Copper: 1.5-2.5
Cobalt: 5.0 max
Columbium + Tantalum: 0.50 max
Carbon: 0.015 max
Tungsten: 1.5 max
Silicon: 1.0 max
Phosphorus: 0.04 max
Sulfur: 0.03 max

**Physical Properties**

Density: 0.294lb/in³, 8.14 g/cm³

Electrical Resistivity: ohm-cir-mil/ft,(micro-ohms-cm):
675.97(112.37)

Specific Heat: BTU/lb-°F (J/Kg-°C)
At 77°F (25°C): 0.108 (453)
At 212°F (100°C): 0.111 (464)
At 392°F (200°C): 0.114 (478)
At 572°F (300°C): 0.118 (493)
At 752°F (400°C): 0.121 (507)
At 932°F (500°C): 0.124 (521)
At 1112°F (600°C): 0.130 (543)

Thermal Conductivity: BTU-in/hr-ft²-°F, (W/m-°C)
At 77°F (25°C): 69 (10.0)
At 212°F (100°C): 82 (11.8)
At 392°F (200°C): 96 (13.8)
At 572°F (300°C): 110 (15.9)
At 752°F (400°C): 124 (17.9)
At 932°F (500°C): 139 (20.0)
At 1112°F (600°C): 151 (21.8)
Mean Coefficient of Thermal Expansion: \( \mu_{\text{in/in- } ^\circ\text{F}} = \mu_{\text{m/m- } ^\circ\text{C}} \)
- 75-212°F (24-100°C): 8.1 (14.6)
- 75-392°F (24-200°C): 8.1 (14.6)
- 75-572°F (24-300°C): 8.1 (14.6)
- 75-752°F (24-400°C): 8.2 (14.8)
- 75-932°F (24-500°C): 8.4 (15.1)
- 75-1112°F (24-600°C): 8.4 (15.1)

Modulus of Elasticity: KSI (MPa)
28.9 \times 10^3 \text{ (199 \times 10^3)} \text{ in tension}

Melting Range: 2300-2450°F (1260-1343°C):

**Mechanical Properties at Room Temperature**

**Properties: Annealed Typical**
- Ultimate Tensile Strength: 90 KSI min (621 MPa min)
- Yield Strength: 35 KSI min (241 MPa min)
- Elongation: 45% min
- Hardness: Rb 100 max (aim)

**Properties Tempered**

Alloy G-3 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 Association of Corrosion Engineers) for recommendations.

**Standard Wire Finishes**
**Extra Clean: (XC)** Extra clean is also referred to as “bright annealed” or “bright annealed and cold rolled”

**Grease (round wire only):** Drawn in a heavy grease produces an “Ultra bright” finish for decorative applications

**Soap (round wire only):** Soap is used as a lubricant in the drawing process and is not removed. It acts as a lubricant during customer part forming operation. A soap finish is available in tempered products.

**Plated:** Many plating options are available.

*Special finishes are available: Contact Ulbrich Wire Sales with special finish and plating requests.
Forms:

**Continuous Coils**
Cut to lengths
Precision cutting

**Heat Treatment**
Alloy G-3 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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