



# Haynes® 25 (L-605), UNS R30605

Shaped, Flat, Square, Round, Fine Wire, Plated and Bare Wire  
ASTM F90, AMS 5537, AMS 5759, AMS 5796, AMS 5797,  
AMS 5976

## L-605 Alloy Description or Haynes® 25 Wire Description

L-605 is a cobalt based alloy resistant to oxidation and carburization to 1900°F and has good forming and excellent high temperature properties. Alloy L-605 can only be hardened significantly by cold working. Cold working will increase creep strength up to 1800°F and stress rupture strength up to 1500°F. Strain aging at 700-1100°F improve creep and stress rupture strengths below 1300°F.



## Applications

Seal rings for gas turbines  
Jet engine components  
High temperature ball bearings and races  
Springs

## Chemistry Typical

Cobalt: Remainder  
Chromium: 19.00-21.00  
Nickel: 9.00-11.00  
Tungsten: 14.00-16.00  
Manganese: 1.00-2.00  
Iron: 3.00 max

Silicon: 1.00 max

Carbon 0.05-0.15

Sulfur: 0.03

Phosphorus: 0.03 max

## **Physical Properties**

Density: 0.330 lbs/in<sup>3</sup>, 9.13 g/cm<sup>3</sup>

Electrical Resistivity: micro-ohm-in, (micro-ohm-cm)

At 75°F (24°C): 34.9(89)

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

70-200°F (21-93°C): 6.8(12.3)

70-400°F (21-204°C): 7.2 (12.9)

70-600°F (21-316°C): 7.6(13.5)

70-800°F (21-427°C): 7.8(13.9)

70-1000°F (21-538°C): 8.0(14.4)

70-1200°F (21-649°C): 8.2(14.8)

70-1400°F (21-760°C): 8.6(15.5)

70-1600°F (21-871°C): 9.1(16.2)

70-1800°F (21-982°C): 9.4(17.7)

Thermal Conductivity: BTU-in/ft-°F (watt-cm./cm.<sup>2</sup>-°C)

300°F (200°C): 82(.130)

500°F (300°C): 97(.147)

700°F (400°C): 112(.166)

900°F (500°C): 127(.185)

1100°F (600°C): 142(.204)

1300°F (700°C): 157(.224)

1500°F (800°C): 172(.244)

1700°F (900°C): 191(.265)

Modulus of Elasticity: KSI(MPa)

32.6 x 10<sup>3</sup> (224 x 10<sup>3</sup>) in tension

Melting Range: 2425-2570°F (1329-1410°C)

## Mechanical Properties at Room Temperature

### **Properties: Annealed**

Ultimate Tensile Strength: 130 KSI min (896 MPa min)

Yield Strength (0.2% offset):

Gauges: less than 0.003 inches: 55 KSI min (379 MPa min)

Gauges: 0.003 inches and greater: 55-80 KSI (379-552 MPa)

Elongation: Consult Ulbrich

### **Properties Tempered**

Alloy L-605 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

## **Cold Forming**

Alloy L605 may be cold or hot-formed by various techniques.

## **Welding**

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

\*Alloy 25® is a registered trademark of Haynes Alloys.

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