



# AL-6XN Stainless Steel, UNS N08367

Shaped, Flat, Square, Round, Fine Wire, Plated and Bare Wire  
ASTM A182, ASTM A240, ASTM A249, ASTM A312, ASTM A479,  
ASTM B366, ASTM B462, ASTM B472, ASTM B564, ASTM B675,  
ASTM B676, ASTM B688, ASTM B691, ASTM B804

## AL-6XN<sup>®1</sup> Alloy Description

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AL-6XN<sup>®1</sup> is low carbon, nitrogen bearing super austenitic stainless steel. The alloy was designed to be a seawater resistant material and has been found to be resistant to a broad range of corrosive environments. Due to the alloy's corrosion resistance and high strength, AL-6XN<sup>®1</sup> is a better choice than conventional duplex stainless alloy and more cost effective nickel-base alloys.

## Applications

Screens for pulp and paper processing

Seals and other components for chemical processing, oil and gas processing Food processing

## Chemistry Typical

Carbon: 0.03 max

Manganese: 2.00 max

Silicon: 1.00 max

Chromium: 20.00- 22.00

Nickel: 23.50- 25.50

Molybdenum: 6.00-7.00

Phosphorus: 0.04 max

Sulfur: 0.03 max

Copper: 0.75 max

Nitrogen: 0.18-0.25

Iron: Balance

## Physical Properties

Density: 0.291lb/in<sup>3</sup>, 8.06 g/cm<sup>3</sup>

Electrical Resistivity: ohm-cir-mil/ft ( $\mu$ ohms-cm):

535 (89.0)

Specific Heat: BTU/lb-°F (J/kg-K)

70°F (21°C): 0.113 (474)

212°F (100°C): 0.118 (492)

392°F (200°C): 0.123(514)

572°F (300°C): 0.128 (536)

752°F (400°C): 0.133 (557)

932°F (500°C): 0.138 (578)

1112°F (600°C): 0.146 (610)

1292°F (700°C): 0.149(622)

1472°F (800°C): 0.151(633)

1652°F (900°C): 0.153(642)

1832°F (1000°C): 0.156(651)

2012°F (1100°C): 0.158 (660)

2192°F (1200°C): 0.160(668)

2372°F (1300°C): 0.162(676)

Thermal Conductivity: BTU-in/hr-ft-°F (W/m•K)

200°F (93°C): 7.50 (12.98)

400°F (204°C): 8.76 (15.16)

600°F (316°C): 10.03 (17.36)

800°F (427°C): 11.23 (19.43)

1000°F (538°C): 12.55 (21.72)

1200°F (649°C): 13.91 (24.07)

1400°F (760°C): 14.76 (25.55)

1600°F (871°C): 15.64 (27.07)

1800°F (982°C): 16.32 (28.25)

2000°F (1093°C): 17.26 (29.87)

2200°F (1204°C): 17.52 (30.32)

2400°F (1316°C): 18.10 (18.63)

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): 7.84 (14.11)

70-400°F (21-204 °C): 8.36 (15.05)

70-600°F (21-316 °C): 8.59 (15.46)

70-800°F (21-427°C): 8.75 (15.75)

70-1000°F (21-538°C): 8.96 (16.13)

70-1200°F (21-649°C): 9.24 (16.63)

70-1400°F (21-760°C): 9.45 (17.01)

70-1600°F (21-871°C): 9.61 (17.30)

70-1800°F (21-982°C): 9.77 (17.59)

70-2000°F (21-1093°C): 9.93 (17.87)

70-2200°F (21-1204°C): 10.12 (18.22)

70-2400°F (21-1316°C): 10.35 (18.63)

Modulus of Elasticity: KSI (MPa)

28.3 x 10<sup>3</sup> (195 x 10<sup>3</sup>) in tension

Magnetic Permeability: H= 200 Oersteds

Annealed: 1.0028

65% cold work: 1.0028

Melting Range: 2410-2550°F (1320-1400°C):

## Mechanical Properties at Room Temperature

### **Properties: Annealed Typical**

Ultimate Tensile Strength: 112 KSI (770 MPa)

Yield Strength: 57 KSI (393 MPa)

Elongation: 44%

Hardness: Rb 88

## **Properties: Tempered**

AL-6XN® can be cold worked to various tempers. Contact Ulbrich Technical Service for additional information

## Additional Properties

### **Corrosion Resistance**

Refer to NACE (National Association of Corrosion Engineers) for recommendations

### **Standard Wire Finishes**

**Extra Clean:** 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**

AL-6XN®<sup>1</sup> is non hardenable by heat treatment

### **Welding**

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

<sup>1</sup>AL-6XN® is a registered trademark of the Allegheny Ludlum Corporation

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