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# 420LC STAINLESS STEEL STRIP, UNS S42000

**Strip, Coil, Foil, Wire. This alloy is unique to Ulbrich: No applicable industry specification**

## Applications

Cutlery, surgical and dental instruments, scissors, tapes, straight edges, fasteners, firearms

## Description

Type 420LC is a martensitic stainless steel that provides good corrosion resistance similar to 410 plus increased strength and hardness. It is magnetic in both the annealed and hardened conditions. Maximum corrosion resistance is attained only in the fully hardened condition. It is never used in the annealed condition.

## Chemistry Typical

Carbon: 0.22-0.27  
Manganese: 1.00 max  
Silicon: 1.00 max  
Chromium: 12.00-14.00  
Nickel: 0.50 max  
Molybdenum: 0.50 max  
Phosphorus: 0.040 max  
Sulfur: 0.030 max  
Copper: 0.50 max  
Aluminum: 0.15 max  
Tin: 0.050 max  
Iron: Balance

## Physical Properties

Density: 0.28 lbs/in<sup>3</sup> 7.74 g/cm<sup>3</sup>

Electrical Resistivity: microhm-in (microhm-cm): 68 °F (20 °C): 21.71 (55.0)

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Specific Heat: BTU/lb/°F (kJ/kg•K):  
32 - 212 °F (0 - 100 °C): 0.11 (0.46)

Thermal Conductivity: BTU/hr/ft<sup>2</sup>/ft/°F (W/m•K):  
At 212 °F (100 °C): 14.4 (24.9)  
At 932 °F (500 °C): 16.6 (28.7)

Mean Coefficient of Thermal Expansion: in/in/°F (µm/m•K)  
32 - 212 °F (0 - 100 °C):  $5.7 \times 10^{-6}$  (10.2)  
32 - 1200 °F (0 - 649 °C):  $6.8 \times 10^{-6}$  (12.1)

Modulus of Elasticity: ksi (MPa)  
 $29 \times 10^3$  ( $200 \times 10^3$ ) in tension

Magnetic Permeability: Magnetic

Melting Range: 2723 °F (1495 °C)

## Forms

Coil – Strip, Foil, Ribbon  
Wire – Profile, Round, Flat, Square

## Mechanical Properties at Room Temperature

### Properties: Annealed

Ultimate Tensile Strength: 100 KSI max (690 MPa max)  
Yield Strength (0.2% Offset): 60 KSI max (414 MPa max)  
Elongation: 18% min  
Hardness: B 92 max

### Properties: Tempered

Type 420LC can be cold rolled to various tempers. Contact Ulbrich Technical Services for additional information.

## Additional Properties

### Corrosion Resistance

Type 420LC provides full corrosion resistance only in the hardened or hardened and tempered. In these conditions, its corrosion resistance is similar to type 410.

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

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**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 for all alloys – Contact Ulbrich Sales for more information.*

**Wire Finishes**

XC – Extra clean bright annealed or bright annealed and cold rolled

Grease – Ultra-bright finish (for decorative applications)

Soap – Soap is not removed from tempered wire to act as a lubricant.

*\* Contact Ulbrich Wire for custom wire finishes.*

**Cold Forming**

Type 420LC can be moderately drawn and formed in the annealed condition.

**Heat Treatment**

Type 420LC can be hardened by cold working and heat treating. Contact Ulbrich Technical Service for details.

**Welding**

The martensitic class of stainless steels has limited weldability due to its hardenability.

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

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