



420 HIGH CARBON STAINLESS STEEL, UNS S42000

Tempered Steel Strip, As Rolled, AMS 5506, ASTM A-176

Applications

Cutlery, Surgical and dental instruments, Scissors, Tapes, Straight edges, Fasteners, Firearms

Description

Type 420HC 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 – Element %

Carbon: 0.4 - 0.45
Manganese: 1.0 max
Silicon: 0.25 - 0.75
Phosphorus: 0.04 max
Sulfur: 0.015 max
Chromium: 12.5 - 13.5
Nickel: 0.5 max
Molybdenum: 0.5 max
Aluminum: 0.5 max
Copper: 0.5 max
Tin: 0.05 max
Nitrogen: 0.08 max

Physical Properties

Density: 0.28 lbs/in³ 7.74 g/cm³

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/ft²/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): 5.7×10^{-5} (10.2)
32 - 1200 °F (0 - 649 °C): 6.8×10^{-5} (12.1)

Modulus of Elasticity: ksi (MPa)
 29×10^3 (200×10^3) tension

Magnetic Permeability: Magnetic

Melting Range: 2723 °F (1495 °C)

Forms

Coil - Strip

Mechanical Properties at Room Temperature

Hardness:

40 - 52 Rockwell C Scale

Properties: Tempered

Type 420HC can be cold rolled to various tempers. Please consult Ulbrich Technical Services for additional information.

Additional Properties

Corrosion Resistance

Type 420HC provides full corrosion resistance when 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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