Carpenter 20 CB-3® Stainless, UNS N08020

Shaped, Flat, Square, Round, Fine Wire, Plated and Bare Wire Specifications: ASTM A240, ASTM A265, ASTM B 463, ASTM B471, ASTM B 472, ASTM B 473, ASTM B475

Alloy 20 CB-3® Alloy Description

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Alloy 20 CB-3® is an austenitic stainless steel possessing excellent resistance to attack by sulfuric acid and many other aggressive environments. Alloy 20 CB-3 stainless is also stabilizes to limit inter-granular attack, even in the sensitized condition. Important advantages of alloy 20 CB-3 stainless are its excellent mechanical properties and comparative ease of fabrication. The presence of Columbium in the alloy minimizes the precipitation of carbides during welding.

Applications

Components for processing synthetic rubber processing
Components for processing gasoline,
solvents,
explosives,
plastics,
synthetic fibers,
chemicals Food and dye production
Components for processing pharmaceutical

Chemistry Typical

Carbon: 0.070 max
Manganese: 2.00 max

Copper: 3.00-4.00
Chromium: 19.00-21.00
Nickel: 32.50-38.00
Molybdenum: 2.00-3.00
Sulfur: 1.00 max
Columbium +Tantalum: 8 x C min-1.00 max
Phosphorus: 0.035 max
Iron: Balance

Physical Properties

Density, 0.292 lbs/in^3, 9.01 g/cm^3

Electrical Resistivity: microhm-in, (microhm-cm): 68°F (20°C): 28.4 (72)

Specific Heat: BTU/lb/°F (kJ/kg•K):
32-212°F (0-100°C): 0.12 (0.50)

Thermal Conductivity: BTU/hr/ft^2/ft/°F (W/m•K):
At 212°F: 7.57 at 752°F: 10.5

Mean Coefficient of Thermal Expansion: in/in/°F
77-212°F: 8.16 x 10^{-6}
77-600°F: 8.84 x 10^{-6}
77-1652°F: 9.53x 10^{-6}

Modulus of Elasticity: KSI (MPa) 29.0 x 10^3 (200 x 10^3) in tension 11.0 x 10^3 (0.78 x 10^3) in torsion

Magnetic Permeability:=200: Annealed < 1.02

Mechanical Properties at Room Temperature

Properties: Annealed
Ultimate Tensile Strength: 80 KSI min (551 MPa min)
Yield Strength (0.2% offset): 35 KSI min (241 MPa min)

Elongation: 30% min (gauges: >0 .015 inches)
Hardness: Rb 95 max < strong>Properties: Tempered
Alloy 20 CB-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

Cold Forming Alloy 20 CB-3® stainless steel can be readily blanked, deep drawn, formed and upset

Heat Treatment Alloy 20 CB-3® is not hardenable by heat treatment

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

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