Description

420B/1.4028 is a martensitic stainless steel with enhanced hardness and corrosion resistance compared to standard 420 grade. It is a high carbon version of 420 stainless steel, with the carbon content optimized for maximum hardness. 420B can be hardened by heat treatment to achieve optimal hardness and good corrosion resistance.

Chemical Composition (%)

Element	Min	Max
Carbon (C)	0.26	0.35
Silicon (Si)	-	1.00
Manganese (Mn)	-	1.50
Phosphorus (P)	-	0.040
Sulfur (S)	-	0.030
Chromium (Cr)	12.0	14.0

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Mechanical Properties

Annealed Condition (+A)

- Hardness: ≤245 HB
- Tensile Strength (Rm): ≤800 MPa

Quenched & Tempered Condition (+QT850)

- Yield Strength (Rp0.2): ≥650 MPa
- Tensile Strength (Rm): 850-1000 MPa
- Elongation (A): ≥10%
- Impact Toughness (KV) at 20°C: ≥12J

Thermal & Physical Properties

- Density: 7.73 g/cm³
- Modulus of Elasticity: 195 GPa
- Electrical Resistivity: 68 Microhm-cm
- Thermal Expansion Coefficient (20-100°C): 10.2 μm/m°C
- Thermal Conductivity (at 20°C): 27.4 W/m·K

Other Designations

- DIN: 1.4028 (X30Cr13)
- AISI: 420B
- EN: X30Cr13

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Fabrication & Heat Treatment

Annealing: Heat to 840-900°C, slow furnace cool to 600°C, then air cool

Hardening: Heat to 980-1035°C, oil quench

Tempering: 150-370°C, typically 625-675°C

Applications

420B/1.4028 is commonly used for surgical and dental instruments, scissors, pump and valve parts due to its excellent hardness and corrosion resistance.

Supplied Forms

- Bars (round, square, flat, hexagonal, customized)
- Precision ground rods and bars

Key Features

- High hardness (up to 50 HRC)
- Good corrosion resistance in mild environments
- Magnetic in annealed and heat treated conditions

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