HONGCHEN METAL
INDUSTRIAL METAL MATERIALS

Phone / WhatsApp: +86 15052357278
Email: juniper@hongchen-steel.com

PRODUCT SPECIFICATIONS · BAR

Stainless Steel 420J1 Round Bar

Chemical composition, mechanical properties and material characteristics

Features

- 420 stainless steel is a high-carbon stainless steel, mainly composed of chromium, carbon and molybdenum, with good corrosion resistance and strength.

Typical Applications

- Selected for shafts, valves, fasteners, molds, cutters and CNC-machined parts where machinability, heat-treatment response and wear resistance matter. Rough machine in the softer condition when possible, then harden / age and finish grind for tight tolerances.

Product Parameters

Product Name	420 Stainless Steel Bar
Type	Precision Machining / Hardenable Stainless Grade
Standard	ASTM, AISI, JIS, GB, DIN, EN, etc.
Surface	Black, Bright Polished, Rough Turning, Mattness Surface Treatment, No. 4. BA, etc.
Delivery Condition	Annealed for machining, or quench-tempered / age-hardened to the ordered hardness.
Scope of Application	Selected for shafts, valves, fasteners, molds, cutters and CNC-machined parts where machinability, heat-treatment response and wear resistance matter. Rough machine in the softer condition when possible, then harden / age and finish grind for tight tolerances.
Certificate	EN 10204 3.1 MTC with chemistry and hardness / mechanical results as ordered.
Production Technology	Supplied for CNC turning, milling and drilling; heat treatment (quench-temper or aging) is applied after rough machining when final strength or wear resistance is required. Hot-rolled, forged or cold-drawn routes depending on size; cut-to-length available.
Edge Processing	Cut ends as standard; chamfering, deburring, peeling or centerless grinding available on request.
Outer Diameter	Round Bar
Hexagon Bar	18mm-57mm (11/16″ to 2-3/4″)
Square Bar	18mm-47mm (11/16″ to 1-3/4″)
Flat Steel	1/2 "to 10", Thickness: 2mm-150mm, Can provide customized
Length	1-6 meters, Length can be customized

Chemical Composition

C	Si	Mn	Cr	S	P
≤ 0.15	≤1.0	≤1.0	12.0～14.0	≤ 0.03	≤ 0.04

Mechanical Properties

Tensile Strength Kb (MPa)	Yield Strength σ0.2 (MPa)	Elongation D5 (%)	Hardness
≥634	≥440	≥20	Annealing ≤223HB; quenching and tempering ≥192HB

Physical Performance

Density(g/cm³)	Modulus of Elasticity(Gpa)	Coefficient of Thermal Expansion(10 -6 /°C)	Coefficient of Thermal Conductivity(W/m * K)	Resistivity(MΩ. cm)
7 .74	200	10.2	24.9	55

Selection note: leave finishing stock when hardening after rough machining to hold final tolerances.

Related Properties

Machinability	Suitable for CNC turning, milling, drilling and grinding when sharp tooling, stable fixturing and adequate coolant are used. Free-machining or annealed conditions cut more easily; hardened or heavily cold-worked stock needs reduced speed and more frequent tool changes.
Heat-Treatment Response	Martensitic and precipitation-hardening grades can be quench-tempered or age-hardened after rough machining to raise hardness, strength and wear resistance. Final dimensional stability depends on leaving finishing stock for post-heat-treat grinding.
Wear Resistance	Higher carbon content or a correctly hardened condition improves wear resistance for shafts, cutters, molds and sliding parts. Surface treatments (nitriding, coating) can be added when the base hardness alone is not enough.
Formability	Best bent, straightened or cold-formed in the softer annealed condition, then hardened if the finished part needs high strength. Attempting severe forming in the hardened state risks cracking.
Dimensional Control	Distortion during heat treatment and residual stress from heavy machining are the main risks for precision parts. Stress-relief steps, balanced stock removal and final grind after hardening help hold tight tolerances.

Material guidance for your next project

Send your grade, size and application requirements to our team.

hongchen-steel.com

© 2026 HongChen Metal. All rights reserved.