

440C Stainless Steel (UNS S44004) — Material Data Sheet

ASTM A276 bar · UNS S44004 · AISI 440C

High-carbon martensitic stainless steel, hardenable to 60 HRC

The hardest stainless steel: about 1 percent carbon and 17 percent chromium, heat treatable to 58 to 60 HRC, for bearings, valve balls and seats, and wear-resistant machined parts.

HARDNESS, ANNEALED BAR	269 HBW max (hot finished)	CHROMIUM	16.0–18.0 %
HARDNESS, HARDENED	58–60 HRC typical	MAGNETIC	Yes
CARBON	0.95–1.20 %	TYPICAL USE	Wear parts, not bolting

Nominal composition



Midpoints of the specification ranges, for orientation only. Limits are in the table.

Chemical composition — Type 440C (UNS S44004)

Element	Symbol	Min %	Max %
Carbon	C	0.95	1.20
Manganese	Mn	—	1.00
Phosphorus	P	—	0.040
Sulfur	S	—	0.030
Silicon	Si	—	1.00
Chromium	Cr	16.0	18.0
Molybdenum	Mo	—	0.75

Values per ASTM A276/A276M-17 Tables 1 and 2 (verified against the specification). Confirm the edition called out on your purchase order with our estimating team.

Physical properties (typical)

DENSITY	0.278 lb/in ³ (7.70 g/cm ³)
MODULUS OF ELASTICITY	29.0 × 10 ⁶ psi (200 GPa)
THERMAL EXPANSION (68–212 °F)	5.6 µin/in·°F
MAGNETIC	Yes

Heat treatment

Annealed for machining. Hardened by austenitizing at 1875 °F minimum and air quenching (A276 Table 3), and tempering at 300 to 400 °F for maximum hardness (about 58 to 60 HRC) or higher for more toughness. Sub-zero treatment after quenching is used to transform retained austenite where dimensional stability matters.

Bar properties — ASTM A276 Type 440C

Condition and nominal diameter (in.)	Tensile strength, min (ksi)	Yield strength 0.2% offset, min (ksi)	Elongation, min (%)	Reduction of area, min (%)	Hardness
Condition A (annealed), hot finished — all	—	—	—	—	269 HBW max
Condition A (annealed), cold finished — all	—	—	—	—	285 HBW max

Values per ASTM A276/A276M-17 Tables 1 and 2 (verified against the specification). Confirm the edition called out on your purchase order with our estimating team. A276 controls 440C bar by annealed hardness; hardened properties are to the drawing.

Applicable standards

ASTM A276	Stainless steel bars and shapes
ASTM A967	Passivation
AMS 5630	Aerospace bar specification

Forms we supply in 440C Stainless

- Hex and heavy hex bolts and cap screws
- Full-thread studs and threaded rod
- Socket head cap and set screws
- Hex, jam and lock nuts
- Washers and spacers
- Machined components from certified bar

Typical applications

- Valve balls, seats and stems
- Bearing races, balls and rollers
- Pump wear rings, sleeves and nozzles
- Cutting tools, knives and dies
- Precision pins, bushings and gauges