

420 Stainless Steel

420 STAINLESS STEEL DATASHEET

420 stainless steel is Martensitic, magnetic and heat-treatable with excellent corrosion resistance to a variety of environments, including freshwater, seawater, and acids. 420 stainless steel is hard and can be heat-treated to a very high hardness (up to 60 HRC). This makes it a good choice for applications where wear resistance is important, such as knives, saw blades, and surgical instruments. Chromium is added to a minimum content of 12%. 420 stainless steel is ductile when annealed and has excellent corrosion resistance when polished or hardened. 420 stainless steel has a bright, silver-gray appearance and it can be polished to a mirror finish.

Common industry/applications for 420 stainless steel include: Industrial Chains, Bearings, Firearms, Surgical Instruments, Pumps & Valves, Plastic Injection Molds & Dies, and Cutlery.

Product forms include round bar, plate & sheet, and forgings.



Standards

- UNS S42000

Physical Properties

- Density: 0.278 LB/in³ (7.74g/cm³)
- Melting Point: 2650-2750°F (1454-1510°C)
- Modulus of Elasticity: 29 x 103 ksi (200 x 103 MPa)

Characteristics

- High carbon variant of 410.
- Higher achievable strength and hardness compared to 410.
- High wear resistance and edge retention properties.

Chemical Composition

	C	Mn	S	P	Si	Cr	* Ni	* Mo	Cu	Al
MIN	0.15	-	-	-	-	12.00	-	-	-	-
MAX	0.40	1.00	0.30	0.04	1.00	14.00	0.50	0.50	0.50	0.15

* Potential optional additions by some manufacturers

Mechanical Properties: Tempered

Tempering Temperature, °F	Ultimate Tensile Strength, ksi	0.2% Yield Strength, ksi	Hardness HRC
Annealed	85.8	51.5	163 HBW
440	255.2	190.1	48
550	229.6	176.0	44
600	232.9	179.0	45
800	236.0	185.6	46
900	233.0	179.3	46
1000	158.5	137.9	36
1200	121.6	94.6	23

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