

420 Stainless Steel

420 STAINLESS STEEL DATASHEET

Stainless steel grade 420 is martensitic, magnetic and heat-treatable with excellent corrosion resistance to a variety of environments, including freshwater, seawater, and acids. Grade 420 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%. Grade 420 is ductile when annealed and has excellent corrosion resistance when polished or hardened. Grade 420 stainless steel has a bright, silver-grey appearance and it can be polished to a mirror finish.

Common industry/applications are: Industrial Chains, Bearings, Firearms, Surgical Instruments, Pumps & Valves, Plastic Injection Molds & Dies, and Cutlery.

Product forms include round bar, hollow bar, and forgings.

Standards

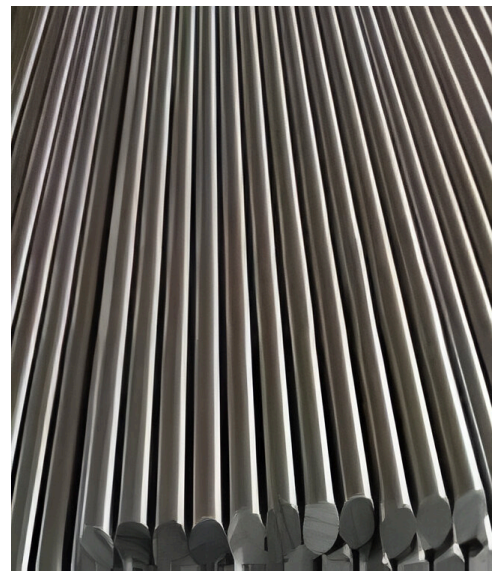
- UNS S42000
- ASTM A276
- ASTM A484
- AMS 5621
- AMS QQ-S763

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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