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422 Stainless Steel

AMS 5655 / UNS S42200

Alloy 422 stainless bar is a hardenable, martensitic stainless steel designed for service temperatures as high as 1200 F. This grade develops high mechanical properties via heat treatment and offers good scaling and oxidation resistance. Typical applications have included buckets and blades in steam turbines, high temperature bolting and valve and valve trim.

Nominal Composition %

- C — Carbon - 0.20 - 0.25
- Cr — Chromium - 11.5 - 13.50
- P — Phosphorous - 0.040 max
- Mo — Molybdenum - 0.75 - 1.25
- S — Sulfur - .030 max
- W — Tungsten - .75 - 1.25
- Si — Silicon - 1.00 max
- V — Vanadium - 0.20 - 0.50
- Mn — Manganese - 1.00 max
- Fe — Iron - Balance

Percent by weight, maximum unless a range is listed.

Standard Inventory Specifications

- AMS 5655
- ASTM A 176
- ASTM A 565
- AMSE SA 176
- B50A951 A1
- B50A951 A2
- AISI 636
- UNS S42200

Forms Stocked

- Bar

Thickness Stocked

- 0.500” - 13.000” thick

Applications

- Power generation
- Compressors
- Steam turbines
- Aircraft parts
- High-temperature bolting
- Valve trim

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Industries

- Aerospace
- Power Generation

Physical Properties

Properties of 422 stainless	Value
Density	0.280 lb/in^3 (8.97 g/cm^3)
Heat Treatment	Heat treatment is sensitive as the alloy is very susceptible to cracking, and welded parts should be preheated followed by post-weld stress relief at temperatures of 1,100-1,400° F (590- 760°C) for 4 hours.
Hardening	In the annealed condition, typical hardness is Rc 21/25. In the quenched and tempered condition, hardness is typically Rc 45/50.

Mechanical Properties

422 bar is readily machinable in the annealed condition with machining characters similar to those of alloy 420 stainless steel.