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# 420F Stainless Steel

Free-Machining Hardenable Martensitic Stainless • UNS S42020

420F stainless steel is the free-machining, hardenable variant of Type 420. It is used for machined parts where production cutting efficiency matters, but is not interchangeable with standard 420 for pressure-containing, corrosion-critical or high-polish uses.

## MATERIAL SPECIFICATIONS

| Property / designation | Reference data / purchase requirement |
|---|---|
| **Grade and UNS** | 420F / UNS S42020 |
| **Alloy structure** | Free-machining martensitic stainless |
| **Chromium (Cr)** | 12.0–14.0 wt% (Carpenter reference) |
| **Machining addition** | Sulfur-modified composition; check grade-specific certified limits |
| **Carbon content** | Verify purchase standard and actual heat; supplier representations vary |
| **Related grade** | 420/UNS S42000 differs from 420F |
| **Reference long-product standard** | ASTM A582 or AMS 5620, where required |
| **Heat-treatment response** | Can be hardened and tempered; properties depend on condition |
| **Pressure-service caution** | Supplier does not recommend for high-pressure vessels |
| **Finishing caution** | Not preferred where top-quality mirror-finish cavities are critical |

## SELECTED APPLICATIONS

Automatic screw-machined valve and pump parts • Machined gears, pivots and precision hardware • Hardened wear components requiring finishing review

## GRADE SELECTION & FINISHING

Standard 420 and 420F differ in machining-related composition and potential corrosion/finish performance. Carpenter notes that 420F is not recommended for pressure-vessel use or mold cavities demanding a high mirror finish.

Before grinding 420F, confirm heat treatment, stock allowance, finished tolerance and achievable surface finish. Avoid representing typical grade behavior as certified final hardness.

## INFORMATION FOR A QUOTE

Specify UNS S42020, ASTM/AMS requirements, required condition, finished OD, tolerances, surface finish and quantity with certificates.

Material: material/420f-stainless-steel/
Technical source: Carpenter Technology, Alloy 420F overview; Carpenter 420F datasheet
Reference values only; the specified product standard, material condition and mill test report govern.


Not a mill test report or stock availability guarantee. Confirm actual heat, condition and specification.