



TECHNICAL DATA SHEET

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303 Stainless Steel / SUS303

Free-Machining Austenitic Stainless Steel

Document Control

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Specification	ASTM A276 Type 303 / JIS SUS303	Product Form / UNS	Bar, hex, and machining stock / UNS S30300

Engineering use note: Starter-library values are intended for engineering screening and template standardization. Verify against the latest governing specification, drawing, PO, and MTR before production release.

1. General Description

303 is a sulfur-modified austenitic stainless steel selected when machinability is the primary requirement. It machines significantly better than 304, but the sulfur addition reduces weldability and corrosion performance relative to standard 18-8 grades.

2. Chemical Composition (wt%)

Property	Value
Chromium (Cr)	17.0-19.0
Nickel (Ni)	8.0-10.0
Carbon (C)	≤ 0.15
Manganese (Mn)	≤ 2.00
Silicon (Si)	≤ 1.00
Phosphorus (P)	≤ 0.20
Sulfur (S)	≥ 0.15
Iron (Fe)	Balance

3. Mechanical Properties

Property	Value
Condition	Annealed typical wrought
Ultimate tensile strength	≥ 500 MPa

Property	Value
0.2% yield strength	≥ 190 MPa
Elongation	≥ 35 %
Hardness	≤ 95 HRB typical wrought

4. Physical Properties

Property	Value
Density	8.00 g/cm ³
Elastic modulus	193 GPa
Thermal conductivity	16 W/m.K
Melting range	1400-1450 C

5. Heat Treatment / Processing

Normally supplied annealed. 303 is not hardenable by heat treatment; strength increase is generally by cold work.

6. Corrosion / Environmental Performance

Good atmospheric corrosion resistance, but generally lower than 304 because the sulfur addition reduces pitting resistance and can affect surface finish in corrosive duty.

7. Key Characteristics

- Excellent machinability
- Good non-galling behavior versus many stainless grades
- Lower weldability than 304
- Useful for automatic screw machine parts

8. Typical Applications

- Fittings
- Shafts
- Valve parts
- Fasteners
- Turned precision components

9. Standards & Equivalents

ASTM A276 Type 303
JIS SUS303
UNS S30300
EN 1.4305

10. Notes & Limitations

Use 303 where machining productivity is important. Avoid specifying it for welded fabrications or aggressive chloride service unless performance is validated.