



303 is an austenitic free-machining stainless steel. The additional sulfur present in 303 assists in breaking up turnings which reduced drag on the cutting tool. It is used for parts requiring machining, grinding or polishing. 303 is one of the most popular of all the free-machining stainless steels. It offers good strength, corrosion resistance and machinability.

Specifications AMS: 5640
 ASTM: A895
 UNS: S30300

Chemical Composition, %

Element	Maximum Unless Range is Specified
Carbon	0.15
Chromium	17-19
Iron	Balance
Manganese	2
Molybdenum	0.60
Nickel	8-10
Phosphorus	0.20
Silicon	1
Sulphur	0.15 min

Features

- Popular free-machining stainless steel
- Resist scaling at temperatures up to 1600°F
- Good resistance to corrosion

Applications

- Hardware
- Fasteners
- Valve Parts
- Nozzles
- Trim

Physical Properties

Grade	Density		Modulus of Elasticity in Tension	Melting Range
	g/cm ³	lb/in ³		
303	7.92	0.286	28 x 10 ⁶ psi	1398-1446°C
			193 GPa	2550-2635°F

Linear Coefficient of Thermal Expansion

Temperature Range		Coefficients
°C	°F	in/in/°F
20-100	68-212	9.2 X 10 ⁻⁶
20-600	38-932	10.4 X 10 ⁻⁶

Thermal Conductivity

Temperature Range			
°C	°F	W/m·K	Btu/hr-ft-°F
100	212	16.2	112

Electrical Resistivity (Annealed Condition)

Temperature Range		
°C	°F	microhm-cm
20	68	28.3
100	212	30.7
200	392	33.8
400	752	39.4
600	1112	43.7
800	1472	47.6

Mechanical Properties

Property	Type 303
Yield Strength, 0.2% Offset psi	45,000
MPa	310
Ultimate Tensile Strength, psi	85,000
MPa	586
Percent Elongation in 2 in. or 51 mm	50
Hardness, Max. (HBN)	202