

AISI 303 / UNS S30300 / DIN 1.4305

High Sulphur Free Machining Austenitic Stainless Steel

Alloy 303 Data Sheet

Introduction

Alloy 303 is modified version of Alloy 304 with addition of Sulphur to improve machinability. It has improved chemistry as compared to 18/8 Stainless Steel to display extra machining performance maintaining good mechanical & corrosion properties. Stainless Steel 303 offers excellent toughness though sulphur addition imparts cutback to some limit. Like 300 Series Stainless Steel, SS 303 is also non magnetic Alloy.

Chemical Composition (Typical)

Element	Limits	
	min	max
Carbon	0.000	0.150
Manganese	0.000	2.000
Phosphorus	0.000	0.200
Sulphur	0.000	0.150
Silicon	0.000	1.000
Chromium	17.000	19.000
Nickel	8.000	10.000
Iron	Remainder	

Mechanical Properties (Typical)

Parameter	Value
Yield 0.2 % (Mpa/Nmm ²), Min	310
Tensile (Mpa/Nmm ²), Min	620
Elongation (% in 50MM), Min	30
Reduction Area(%), Min	40
Hardness (BHN), Min	170

Physical Properties

Parameter	Value
Density (Kg/m ³)	8027
Elastic Modulus (Gpa)	193
*Co-eff of Expansion ($\mu\text{m}/\text{m}/^\circ\text{C}$)	18.4
*Thermal Condc. (W/m.K)	21.5
Electric Resistivity (n Ω .m) 20°C	720

*Note : @500°C

Corrosion Data

Alloy 303 is fairly corrosion resistance as compared to other 300 Series Stainless Steel like 304, 316 etc. For better corrosion resistance, Alloy 303 should be used in annealed condition with passivation of parts. Due to Sulphur addition, SS 303 should not be exposed to marine environment resulting in Corrosion Pitting. Due to Sulphur alignment in rolling direction, Alloy 303 offers least corrosion resistance in cross section.

Equivalent Grade Designation

AISI 303
UNS S30300
BS 303S31
DIN EN 1.4305
X8CrNiS18-9
SS 2346
SUS 303

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Available Product Forms

Round bars
Square bars
Hexagon Bars
Flat bars
Precision Components
Fasteners - Bolts & Nuts
Forged Components
Mechanical Tubings

Common Manufacturing Specifications

ASTM A194 (303, 8F, 8FA), A276, A314, A320, A473, A581, A582, A895,
ASME SA194 (303, 8F, 8FA), SA276, SA314, SA320, SA473, SA581, SA582, SA895,
AMS 5640 (TYPE 1), AMS 5640 (type 2), AMS 5641, AMS 5738,
MIL SPEC MIL-S-862, SAE J405

Alternate to Alloy

Alloy 304 is next best alternative to Alloy 303 with better corrosion resistance, weldability but at cost of machinability. Another possible alternative is Alloy 316 with improved corrosion compared to 303 & 304. AISi 416 is also a possible alternative with higher machinability with lower corrosion resistance than 303.

Applications & Industries

Fasteners - Nuts & Bolts
Bushings & Shaftings
Aircraft & Engine Components
Valve components
Automotive Gears & Equipments
Electrical components & parts
General engineering applications

Excellence Inherent

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