



钢铁之家

www.steels.org.cn

# 全球钢号百科!

Global Steel Grade Encyclopedia



涵盖的行业或国家与地区类别



国际材料与试验协会

GJB

国家军用标准



动力机械工程师协会

EU

前欧洲标准化

AISI

美国钢铁学会



德国工业标准

AMS

航空航天材料规范



国际标准

JASO

日本汽车标准组织

EN

欧洲标准

JB

中国机械行业标准

UNS

统一编号系统

UNI

意大利标准



美国机械工程师协会

SS

瑞典标准



国家标准



日本工业标准

# AISI 303 / UNS S30300 / DIN 1.4305

High Sulphur Free Machining Austenitic Stainless Steel

Alloy 303 Data Sheet

## Introduction

AISI 303 is a non magnetic austenitic stainless steel and a 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.

## 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 <sup>2</sup> ), Min	310
Tensile ( Mpa/Nmm <sup>2</sup> ), Min	620
Elongation (% in 50MM ), Min	30
Reduction Area(%), Min	40
Hardness ( BHN ), Min	170

## Physical Properties

Parameter	Value
Density ( Kg/m <sup>3</sup> )	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 $\Omega$ .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

Alloy 303 Data Sheet

## 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), A314, A320, A473, A581, A582, A895,  
ASME SA194 (303, 8F, 8FA), SA276, SA314, SA320, SA473, SA581, SA582, SA895,  
ASTM F593, F594, F836, F837, F880  
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