

Material Information

Stainless Steel 303



Introduction

Stainless Steel 303, also known as AISI 303 or UNS S30300, is a free-machining austenitic stainless steel developed from the 18-8 chromium-nickel stainless steel family. The addition of sulfur improves machinability and chip breaking, making 303 well suited to CNC machined components with complex features and extensive material removal.

Advantages

Excellent machinability, good toughness, and good general corrosion resistance. Stainless Steel 303 is particularly suitable for CNC turning, drilling, milling, tapping, and threading, where efficient chip control and consistent machining performance are important.

Disadvantages

Stainless Steel 303 has lower corrosion resistance, formability, and weldability than 304 stainless steel. The sulfur added to improve machinability also reduces its suitability for welded or heavily formed components, particularly where higher corrosion resistance is required.

Tolerance

3DSPRO can manufacture and inspect to tight tolerances, including sub +/- 0.001" tolerances, per your drawing specifications and GD&T callouts.

Recommendation

The excellent machinability and good corrosion resistance of Stainless Steel 303 make it suitable for CNC machined components used in industrial, automotive, aerospace, and general engineering applications. It is particularly appropriate for precision parts with threads, holes, grooves, shafts, and other features that require substantial machining.

Material Specifications (For reference only.)	
Tensile strength	240MPa
Shear modulus	77GPa
Elongation at Break	50%
Hardness	160 HB
Density	8 g/cm ³

Attention

Stainless Steel 303 is primarily intended for machining rather than welding or extensive forming. The sulfur content that improves chip breaking can reduce corrosion resistance compared with 304, so 303 should be selected carefully for applications involving aggressive or chloride-containing environments. It is also not hardenable by heat treatment, although solution annealing can be used to restore a soft condition after cold working.

Applications

3DSPRO finds people using Stainless Steel 303 to make functional parts and prototypes in the following industries and applications.

Aerospace components:

Aircraft fittings, precision fasteners, shafts, bushings, and other heavily machined components.

Automotive parts and supplies:

Shafts, valve components, fittings, fasteners, pins, and other precision mechanical parts.

Industrial equipment:

Pump and valve components, machine parts, gears, bushes, and other CNC machined hardware.

Consumer and general hardware:

Screws, nuts, bolts, instrument components, threaded parts, and other precision-machined products.