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Grade 303 Stainless steel represents superior machinability over all other austenitic stainless steels due to the addition of sulphur in the material.

The sulphur however, does reduce the material's resistance to corrosion as well as causing poor weldability results.

The uses of grade 303 are as follows:

- Nuts & bolts
- Bushings
- Shafts
- Aircraft fittings
- Electrical switchgear components
- Gears

Stainless Steel 303 is available from us in bars and Hexagons in the following sizes...

**Bar: from 3mm dia – 7" dia**

**Hexagon: from .3125" dia – 2.500" dia**

## Chemical & Physical Properties

### Typical Chemical Composition

<i>Elements</i>	<i>Min %</i>	<i>Max %</i>
<b>C</b>		0.1
<b>Cr</b>	17.0	19.0
<b>Fe</b>	Remainder	
<b>Mn</b>	1.5	2.0
<b>Mo</b>		0.6
<b>Ni</b>	9.0	10.0
<b>P</b>		0.04
<b>S</b>	0.3	0.35
<b>Si</b>		0.75

### Typical Mechanical Properties

<b>Property/unit</b>	<b>Condition</b>	<b>Min</b>	<b>Max</b>
<b>Tensile Strength (N/mm<sup>2</sup>)</b>	Cold Drawn	785	883
<b>Yield Stress (N/mm<sup>2</sup>)</b>	Cold Drawn	686	785
<b>Elongation in 5 x Diameter %</b>	Cold Drawn	30	35
<b>Reduction of Area %</b>	Cold Drawn	50	55
<b>Brinell Hardness (HB)</b>	Cold Drawn	225	240
<b>Tensile Strength (N/mm<sup>2</sup>)</b>	Turned	608	657
<b>Yield Stress (N/mm<sup>2</sup>)</b>	Turned	314	363
<b>Elongation in 5 x Diameter %</b>	Turned	55	60
<b>Reduction of Area %</b>	Turned	55	60
<b>Brinell Hardness (HB)</b>	Turned		180

## Tolerances

### Tolerances on diameter, for general purposes.

#### Round Bar:

Between 10mm and 15mm = +/- 0.4mm  
Between 16mm and 25mm = +/- 0.5mm  
Between 26mm and 35mm = +/- 0.6mm  
Between 36mm and 50mm = +/- 0.8mm  
Between 52mm and 80mm = +/- 1.0mm  
Between 85mm and 100mm = +/- 1.3mm  
Between 105mm and 120mm = +/- 1.5mm  
Between 125mm and 160mm = +/- 2.0mm  
Between 165mm and 200mm = +/- 2.5mm

220mm= +/- 3.0mm

250mm= +/- 4.0mm

### Tolerances on diameter, for precision purposes.

#### Round bar:

Between 10mm and 12mm= +/- 0.15mm  
Between 13mm and 22mm= +/- 0.20mm  
Between 24mm and 30mm= +/- 0.25mm  
Between 32mm and 40mm= +/- 0.30mm  
Between 42mm and 52mm= +/- 0.40mm  
Between 55mm and 75mm= +/- 0.50mm

#### Tolerances on hexagons:

##### Width across flats:

Between 13mm and 15mm = +/- 0.4mm  
Between 16mm and 23.5mm = +/- 0.5mm  
Between 25.5mm and 33.5mm = +/- 0.6mm  
Between 35.5mm and 47.5mm = +/- 0.8mm  
Between 52mm and 78mm = +/- 1.0mm



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Between 83mm and 98mm = +/- 1.3mm  
103mm = +/- 1.5mm

#### Corner Radius:

Below 20.0mm= up to a 1.5mm radius.  
Over 20.0mm to 28.5mm= up to 2.0mm radius.  
Over 28.5mm to 48.0mm= up to 2.5mm radius  
Over 48.0mm to 83.0mm = up to 3mm radius  
Over 83.0mm to 103.0mm= up to 3.5mm radius

#### Straightness:

Below 39.5mm= not fixed tolerance in the plane.

Between 39.5mm and 83.0mm= q up to  $0.004 \times L$  tolerance in the plane.

Between 83.0mm and 103.0mm= q up to  $0.0025 \times L$  tolerance in the plane.

The information above is based on our current knowledge and is given in good faith; however the company will accept no liability in respect of any third party reliance thereon.