






# Bolt Grade Markings and Strength Chart

Head Marking	Grade and Material	Nominal Size Range (inches)	Mechanical Properties		
			Proof Load (psi)	Min. Yield Strength (psi)	Min. Tensile Strength (psi)
 No Markings	<b>Grade 2</b> Low or medium carbon steel	1/4 thru 3/4	55,000	57,000	74,000
		Over 3/4 thru 1-1/2	33,000	36,000	60,000
 3 Radial Lines	<b>Grade 5</b> Medium Carbon Steel, Quenched and Tempered	1/4 thru 1	85,000	92,000	120,000
		Over 1 thru 1-1/2	74,000	81,000	105,000
 6 Radial Lines	<b>Grade 8</b> Medium Carbon Alloy Steel, Quenched and Tempered	1/4 thru 1-1/2	120,000	130,000	150,000
Stainless markings vary. Most stainless is non-magnetic	<b>18-8 Stainless</b> Steel alloy with 17-19% Chromium and 8-13% Nickel	1/4 thru 5/8		40,000 Min. 80,000 – 90,000 Typical	100,000 – 125,000 Typical
		3/4 thru 1		40,000 Min. 45,000 – 70,000 Typical	100,000 Typical
		Above 1			80,000 – 90,000 Typical
Head Marking	Class and Material	Nominal Size Range (mm)	Mechanical Properties		
 8.8 8.8	<b>Class 8.8</b> Medium Carbon Steel, Quenched and Tempered	All Sizes below 16mm	580	640	800
		16mm - 72mm	600	660	830
 10.9 10.9	<b>Class 10.9</b> Alloy Steel, Quenched and Tempered	5mm - 100mm	830	940	1040

12.9	<b>Class 12.9</b> Alloy Steel, Quenched and Tempered	1.6mm - 100mm	970	1100	1220
Stainless markings vary. Most stainless is non-magnetic.  Usually stamped A-2	<b>A-2 Stainless</b> Steel alloy with 17- 19% Chromium and 8-13% Nickel	All Sizes thru 20mm		210 Min. 450 Typical	500 Min. 700 Typical

**Tensile Strength:** The maximum load in tension (pulling apart) which a material can withstand before breaking or fracturing.

**Yield Strength:** The maximum load at which a material exhibits a specific permanent deformation

**Proof Load:** An axial tensile load which the product must withstand without evidence of any permanent set.

1MPa = 1N/mm<sup>2</sup> = 0.2248 pounds/mm<sup>2</sup>