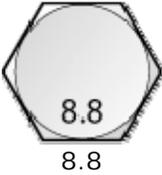




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Bolt Grade Markings and Strength Chart - Metric

Head Marking	Class and Material	Nominal Size Range (mm)	Mechanical Properties		
			Proof Load (MPa)	Min. Yield Strength (MPa)	Min. Tensile Strength (MPa)
	Class 8.8 Medium Carbon Steel, Quenched and Tempered	All Sizes below 16mm	580	640	800
		16mm - 72mm	600	660	830
	Class 10.9 Alloy Steel, Quenched and Tempered	5mm - 100mm	830	940	1040
12.9	Class 12.9 Alloy Steel, Quenched and Tempered	1.6mm - 100mm	970	1100	1220
Stainless markings vary. Most stainless is non-magnetic. Usually stamped A-2	A-2 Stainless 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/mm² = 145 pounds/inch²