



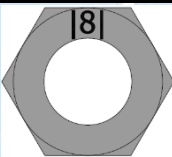
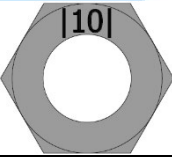



Mechanical Properties of Externally Threaded Fasteners – ISO 898-1

Metric Property Class	Typical Material	Size Range	Min. Proof Strength MPa	Min. Tensile Strength MPa	Core Hardness [Rockwell]		Min. Yield Strength MPa	Grade Identification Marking
					Min.	Max.		
4.6	Low or medium carbon steel	M5 - M39	225	400 (58,000 PSI)	B67	B99.5	240	
8.8	Medium carbon steel: quenched & tempered	M5 - M16	580	800 (116,000 PSI)	C22	C32	640	
		M18 - M39	600	830 (120,000 PSI)	C23	C34	660	
10.9	Alloy steel: quenched & tempered	M5 - M39	830	1040 (150,800 PSI)	C32	C39	940	
12.9	Alloy steel: quenched & tempered	M1.6 - M39	970	1220 (177,000 PSI)	C39	C44	1100	

Mechanical Properties of Internally Threaded Fasteners - DIN 267 Part 4

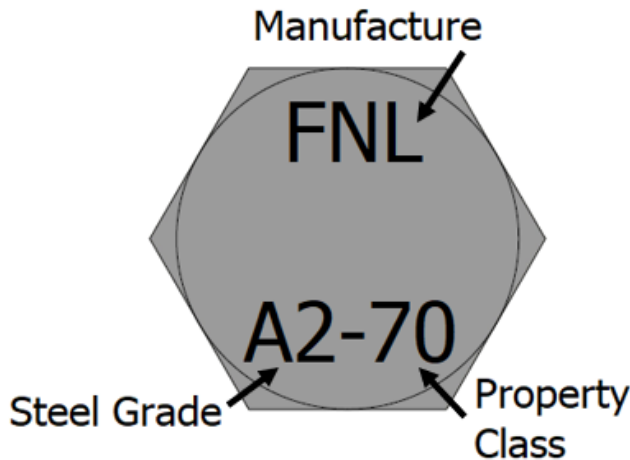
Property Class	Typical Material	Proof Stress MPa	Core Hardness [Rockwell] (max.)	Grade Identification Marking
Class 8	Low to Medium Carbon Steel	800	C30	
Class 10	Medium carbon steel; quenched & tempered	1000	C36	
Class 12	Medium carbon steel; quenched & tempered	1200	C36	

Mechanical Properties of Stainless Steel Fasteners - ISO 3506-1

Group	Grade	Property Class	Diameter Range	Bolts, Screws & Studs		Nuts
				Tensile Strength MPa	Stress at 0.2% Permanent MPa	Proof Load Stress MPa
Austenitic	A1, A2 & A4	50 (soft)	≤M39	500	210	500
		70 (cold-worked)		700	450	700
		80 (high strength) *		800	600	800
Martensitic	C1	50 (soft)		500	250	500
		70 (hardened & tempered)		700	410	700
	C3	80 (hardened & tempered)		800	640	800
	C4	50 (soft)		500	250	500
70 (hardened & tempered)		700	410	700		
Ferritic	F1	45 (soft)	≤M24	450	250	450
		60 (cold-worked)	≤M24	600	410	600

* Property Class 80 mechanical properties for the Austenitic group are difficult to achieve for larger diameters. Consideration should be given to ASTM A193/A193M B8 and B8M Class 2 for diameters M20 and above.

Example of ISO 3506-1 Head Marking



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