

Mechanical properties bolts, screws, studs (ISO 898-1)

		Sterkteklassen / Grades									
		4.6	4.8	5.6	5.8	6.8	8.8		10.9	12.9	
							≤ M 16	> M 16			
Treksterkte / Tensile strength	Rm in MPa (N/mm ²)	Normwaarde / Nom.value	400	400	500	500	600	800	800	1.000	1.200
		Minimum	400	420	500	520	600	800	830	1.040	1.220
Onder vloeigrens / Yield stress	Rel in MPa(N/mm ²)	Normwaarde / Nom.value	240		300						
		Minimum	240		300						
Proefspanning / Tensile tension	Sp	Spanningsverhouding Sp/ReL or Rp0.2	0.94	0.91	0.93	0.90	0.92	0.91	0.91	0.88	0.88
		Proefspanning MPA (N/mm ²)	225	310	280	380	440	580	600	830	970
0.2% rekgrens / Elongation limit	Rp0.2 in Mpa (N/mm ²)	Normwaarde / Nom.value						640	640	900	1080
		Minimum						640	660	940	1100
Breukrek / Elongation after fracture	A ₅ in %	Minimum	22		20			12	12	9	8
Oppervlakte hardheid / Surface hardness	Hv=0,3	Maximum								390	435
Vickers hardheid / Hardness	HV=F 98N	Minimum	120	130	155	160	190	250	255	320	385
		Maximum	220	220	220	220	250	320	335	380	435
Brinell hardheid / Hardness	HB F=30D2	Minimum	114	124	147	152	181	245	250	316	380
		Maximum	209	209	209	209	238	316	331	375	429
Rockwell hardheid / Hardness	Hr	Minimum HRB	67	71	79	82	89				
		Minimum HRC						22	23	32	39
		Maximum HRB	95	95	95	95	99,5				
		Maximum HRC						32	34	39	44