Strength values of bolts / nuts

Extracts from **EN ISO 898-1**
EN 20 898-2

	Strength classes of bolts						
	4.6	5.6	5.8	6.8	8.8	10.9	12.9
Nominal tensile strength $R_{m,\ nom.}$ N/mm²	400	500	500	600	800	1000	1200
Lower yield point R_{eL} N/mm²	240	300	400	480	–	–	–
0,2 %-yield limit $R_{p\ 0,2}$ N/mm²	–	–	–	–	640	900	1080
Tension under test force S_p N/mm²	225	280	380	440	580	830	970
Elongation A %	22	20	–	–	12	9	8

The strength class identification marking consists of two numerals:

– the first number corresponds to $^1/_{100}$ of the nominal tensile strength in N/mm² (see table)

– the second number shows ten times the ratio of lower yield point R_{eL} (or 0,2 %-yield limit $R_{p\ 0,2}$) and nominal tensile strength R_m, nom (yield point ratio).

Example: Strength class 5.8 means Minimum tensile strength R_m = 500 N/mm²
Minimum yield point R_{eL} = 400 N/mm²

Also, multiplying both numerals results in $^1/_{10}$ of the yield point in N/mm².

Test tension S_p N/mm² for thread	Strength classes of nuts						
	5	6	8	10	12		
below M 4	520	600	800	1040	1150		
above M 4 below M 7	580	670	855	1040	1150		
above M 7 below M 10	590	680	870	1040	1160		
above M 10 below M 16	610	700	880	1050	1190		
above M 16 below M 39	630	720	920	1060	1200		

The designation of a strength class consists of a distinctive number which provides information on the test tension of the material used:

Distinctive number × 100 = Test tension S_p

The test tension is equal to the minimum tensile strength in N/mm² of a bolt which, if paired with the appropriate nut, can be loaded up to the minimum yield point of the bolt.

Example: Bolt 8.8 – nut 8, connection can be loaded up to the minimum yield point of the bolt.