

**Strength values of screws**

The identification of the tensile strength class for standard steel screws consists of two figures separated by a point:

- the first figure, called the strength index, is equal to  $\frac{1}{100}$  of the tensile strength  $R_m$  in  $N/mm^2$
- the second figure, known as the yield point ratio, is 10 times the ratio of the yield point  $R_e$  or the substitute yield point  $R_{p0.2}$  to the nominal tensile strength  $R_m$ .

If the tensile strength  $R_m$  is multiplied by  $\frac{1}{10}$  of the second figure, the result is the yield point  $R_e$ .

Example:

Screw of the strength class 5.8, strength index = 5, yield point ratio = 8

Tensile strength  $R_m = \text{Strength index} \times 100 = 5 N/mm^2 \times 100 = 500 N/mm^2$

Yield point  $R_e = \text{Tensile strength } R_m \times 0.8 = 500 N/mm^2 \times 0.8 = 400 N/mm^2$

Material characteristics	Strength class						
	4.6	5.6	5.8	6.8	8.8	10.9	12.9
Tensile strength $R_m$ in $N/mm^2$	400	500	500	600	800	1000	1200
Yield point $R_e$ in $N/mm^2$	240	300	400	480	640	900	1080
Elongation at break A in %	22	20	10	8	12	9	8

If, for standard elements, simply one figure is given, e.g. "strength class 5", it is equal to the strength index and must thus be correspondingly handled.

**Strength values of nuts**

The identification of the strength class for standard steel nuts consists of only one figure. It gives information about the test stress  $S_p$  on a hardened test mandrel and is expressed as the ratio  $\frac{1}{100}$ . The test stress  $S_p$  is equal in principle to the tensile strength  $R_m$ .

Example:

Nut of strength class 6

Tensile strength  $R_m = \text{Strength index} \times 100 = 6 N/mm^2 \times 100 = 600 N/mm^2$

Test stress $S_p$ in $N/mm^2$ for threading	Strength class				
	5	6	8	10	12
... M 4	520	600	800	1040	1150
above M 4 ... M 7	580	670	855	1040	1150
above M 7 ... M 10	590	680	870	1040	1160
above M 10 ... M 16	610	700	880	1050	1190
above M 16 ... M 39	630	720	920	1060	1200

Nuts and screws of the same strength classes such as Nut 8 - Screw 8.8 can be loaded together up to the yield point of the screw without damaging the nut.