Property Classes of Screws and Nuts

Extract DIN ISO 898-1 / DIN ISO 898-2 / DIN ISO 3506-1 / DIN ISO 3506-2

Screws

Steel (DIN ISO 898-1)*

Property class*	Tensile strength R_m min. in N/mm²	Yield point R_e min. in N/mm²
4.6	400	240
5.6	500	300
5.8	500	400
6.8	600	480
8.8	800	640
9.8	900	720
10.9	1000	900
12.9	1200	1080

* When only a single figure is given for standard parts as a simplification, e.g. “Property class 5”, this corresponds to the strength index and must be treated as such.

The identification of the property class for standard steel screws consists of two figures separated by a period. The first figure, referred to as the strength index, corresponds to 1/100 of the tensile strength R_m in N/mm². The second figure, referred to as the yield point ratio, represents 10 times the ratio of the yield point R_e or the 0.2% offset yield strength Rp 0.2 to the nominal tensile strength R_m an. If the tensile strength R_m is multiplied by 1/10 of the second figure, the result is the yield point R_e.

Example:
- Screw of the property class 5.8, strength index = 5, yield point ratio = 8
- Tensile strength R_m = Strength index x 100 = 5 N/mm² x 100 = 500 N/mm²
- Yield point R_e = Tensile strength R_m x 0.8 = 500 N/mm² x 0.8 = 400 N/mm²

Stainless steel (DIN ISO 3506-1)**

Property class	Tensile strength R_m min. in N/mm²	Yield point R_p min. in N/mm²
50	500	210
70	700	450
80	800	600

** Values apply for thread ≤ M 20

The identifications for stainless steel type and property class for standard screws of stainless steel are separated by a hyphen. The second figure, called the strength index, corresponds to 1/10 of the tensile strength R_m in N/mm².
The proof strength can be found in the table to the left.

Example:
- Screw of A2-70, strength index = 70
- Tensile strength R_m = Strength index x 10 = 70 N/mm² x 10 = 700 N/mm²

Nuts

Steel (DIN ISO 898-1)

Property class		Proof stress S_p
Low nut	Normal nut / Tall nut	min. in N/mm²
04	-	400
05	**5**	500
-	**6**	600
-	**8**	800
-	**10**	1000
-	**12**	1200

The identification of the property class for standard steel nuts consists of only one figure. This indicates the proof stress S_p with reference to a hardened test mandrel and is expressed as 1/100 of this value.
The proof stress S_p essentially corresponds to the tensile strength R_m.

Example:
- Nut of property class 6
- Tensile strength R_m = Strength index x 100 = 6 N/mm² x 100 = 600 N/mm²

Nuts and screws of the same property classes, such as nut 5 – screw 5.6 can be loaded together up to the yield point of the screw without damaging the nut.

Stainless steel (DIN ISO 3506-2)

Property class		Proof stress S_p
Low nut	Normal nut / Tall nut	min. in N/mm²
025	-	250
035	-	350
045	-	450
-	**50**	500
-	**70**	700
-	**80**	800

The identifications for stainless steel type and property class for standard nuts of stainless steel are separated by a hyphen. The second figure, called the strength index, indicates the proof stress S_p with reference to a hardened test mandrel and is expressed as 1/10 of this value. The proof stress S_p essentially corresponds to the tensile strength R_m.

Example:
- Nut of property class 50
- Tensile strength R_m = Strength index x 10 = 50 N/mm² x 10 = 500 N/mm²

Nuts and screws of the same property classes such as nut 50 – screw 50 can be loaded together up to the yield point of the screw without damaging the nut.