Free Cutting Steel = 5.8?!

Initial Point

Contrary to former standard definitions, no general agreement can be done any more regarding the compliance with the strength class 5.8 any longer, when using free cutting steel 11SMnPb30C (Material Number 1.0718) and 11SMn30C (Material Number 1.0715).

Reason

The strength class 5.8 is defined as follows:
5 = Tensile strength of the set point 500 N/mm²
8 = Elastic limit of 400 N/mm²
(see DIN EN ISO 898-1, edition November 1999, Chart 3, Page 7)
Free cutting steel 11SMnPb30C/11SMn30C according to EN10277-3, Edition 1999, Chart 3, Page 5: The tensile strength changes with a growing diameter for cold-drawn material (+C = cold drawn) see chart.

Material - ø	Tensile Strength Rm N/mm²
5 - 10	510 - 810
10 - 16	490 - 760
16 - 40	460 - 710
40 - 63	400 - 650

Normally, the used material complies with the tensile strength of 500 N/mm², so it complies with the property class 5.8. With a growing diameter, the risk increases that the tensile strength of 500 N/mm² will fall below the limit, if the lower tolerance of the material is utilized. No strength class is specified in the appropriate standards for the production of screw plugs and similar turned parts, only the used material, for example, 11SMnPb30C (compare DIN 906/908/910/7604). Technically, it does not make any sense to specify a tensile strength for a screw plug, which is exposed to pressure.

Conclusion

The steel 11SMnPb30C/11SMn30C complies with the necessary mechanical characteristics that are necessary for screw plugs. It is exclusively used by all well-known manufacturers of hydraulic fittings for screw plugs without exception. You can refrain from using strength class 5.8 for these applications.

Contact
Please contact our quality manager for any further questions:

Mrs. Hiltrud Heinrichs
Tel. +49 (0)6762 9305-65
hiltrud.heinrichs@heinrichs.de