

Grade 12.9 Steel



Please be advised that grade 12.9 steel can be made from number of different specific grades and alloys of steel.

Some fasteners may exhibit reduced mechanical properties dependant on their shape.

The full technical information offered is available on standard ISO 898.

Chemical Content

	Carbon		Phosphorus	Sulphur	Boron	Tempering
	Min %	Max %	Max %	Max %	Max %	Temp (°C)
Alloy steel quenched and temperedg	0.28	0.5	0.035	0.035	0.003	380

f - For the materials of these property classes. there shall be a sufficient hardenability to ensure a structure consisting of approximately 90 % martensite in the core of the threaded sections for the fasteners in the “as-hardened” condition before tempering.

g - This alloy steel shall contain at least one of the following elements in the minimum quantity given: chromium 0.30 %, nickel 0,30 %, molybdenum 0,20 %, vanadium 0,10 %. Where elements are specified in combinations of two, three or four and have alloy contents less than those given above, the limit value to be applied for steel class determination is 70 % of the sum of the individual limit

h - Fasteners manufactured from phosphated raw material shall be dephosphated before heat treatment; the absence of white phosphorus enriched layer shall be detected by a suitable test method.

I - Caution is advised when the use of property class 12.9/12.9 is considered. The capability of the fastener manufacturer, the service conditions and the wrenching methods should be considered. Environments can cause stress corrosion cracking of fasteners as processed as well as those coated.

Physical Properties

Tensile Strength (Mpa) - Nominal	1200
Tensile Strength (Mpa) - Minimum	1220
Lower yield strength (MPa) - Nominal	-
Lower yield strength (MPa) - Minimum	-
Strees at 0.2% Elongation (Mpa) - Nominal	1080
Strees at 0.2% Elongation (Mpa) - Minimum	1100
Stress under proof load (Mpa)	970
Proof Strength Ratio	0.88
Elongation after fracture for machine test pieces (%)	8
Percentage reduction of area after fracture for machined test pieces (%)	44
Head soundness	No fracture
Vickers Hardness (HV) - Maximum	435

Vickers Hardness (HV) - Minimum	385
Brinell Hardness (HBW) - Maximum	414
Brinell Hardness (HBW) - Minimum	366
Rockwell hardness (HRB) - Maximum	-
Rockwell hardness (HRB) - Minimum	-
Rockwell hardness (HRC) - Maximum	44
Rockwell hardness (HRC) - Minimum	39

The information provided in this datasheet is based upon average values and is intended for guidance purposed only. Vital Parts assumes no responsibility or liability for the accuracy of the information contained on this datasheet. Product samples are available for the to determine the suitability of the product for any application.