

ترکیب شیمیایی طبق ISO 898-1 برای گریدهای معمولی

Classes	Material and Treatment	C min.	C max.	P max.	S max.	B max.	Tempering temp. [°C]
8.8	carbon steel with additives (e.g. b, mn or cr) quenched and tempered	0.15 (d)	0.40	0.025	0.025	0.003	425
8.8	carbon steel quenched and tempered	0.25	0.55	0.035	0.025	0.003	425
10.9	carbon steel with additives (e.g. b, mn or cr) quenched and tempered	0.15 (d)	0.35	0.025	0.025	0.003	340
10.9	carbon steel quenched and tempered	0.25	0.55	0.025	0.025	0.003	425
10.9	carbon steel with additives (e.g. b, mn or cr) quenched and tempered	0.20 (d)	0.55	0.025	0.025	0.003	425
10.9	alloy steel quenched and tempered (g)	0.20	0.55	0.025	0.025	0.003	425
12.9	alloy steel quenched and tempered (g)	0.28	0.50	0.025	0.025	0.003	380

(d) in case of plain carbon boron steel with a carbon content below 0.25% (ladle analysis), min manganese 0.6% for 8.8 and 0.7% for 10.9

(g) alloy steel shall contain one of the following elements: chromium 0.30%, nickel 0.30%, molybdenum 0.20%, vanadium 0.10%

خواص مکانیکی و فیزیکی مطابق با ISO 898-1 برای گریدهای معمولی

Mechanical or Physical Property		Class 8.8 (M16 and below)	Class 8.8 (above M16)	Class 10.9	Class 12.9
Tensile strength (MPa)	no m.	800	800	1000	1200
Tensile strength (MPa)	min.	800	830	1040	1220
Stress at 0.2% non-proportional elongation (yield) (MPa)	no m.	640	640	900	1080
Stress at 0.2% non-proportional elongation (yield) (MPa)	min.	640	660	940	1100
Stress under proof load (MPa)	no m.	580	600	830	970
Elongation after fracture for machined test piece (%)	min.	12	12	10	8
Reduction of area after fracture for machined test piece (%)	min.	52	52	48	44
Impact strength, charpy v-notch (J)	min.	27	27	27	(under investigation)

سختی مورد نیاز طبق ISO 898-1 برای گریدهای معمولی

Hardness Scale	Class 8.8 (M16 and below)	Class 8.8 (above M16)	Class 10.9	Class 12.9
Vickers, HV	250-320	255-335	320-380	385-435
Brinell, HB	238-304	242-318	304-361	366-414
Rockwell, HRC	22-32	23-34	32-39	39-44