

Steeltec ETG® 88/100

Product range

ETG® steels are available in various categories, finishes and sizes:

Steel category	Processes	Size range mm	Tolerance
ETG® 88 round	drawn	≥ 5,0 – ≤ 20,5	h9
		> 20,5 – ≤ 64,0	h11
		> 64,0 – ≤ 114,3	h12
ETG® 100 round	ground	≥ 5,0 – ≤ 100,0	≥ IT6
	drawn	≥ 6,0 – ≤ 64,0	h11
		> 64,0 – ≤ 70,8	h12
	ground	≥ 6,0 – ≤ 70,8	≥ IT6
ETG® 88 hexagonal	drawn	hex. 13 – 27	h11

Other categories to meet special requirements (e.g. mechanical properties) are available to special order.

- » Bar lengths: 3 – 6.5 m
- » Colour coding: ETG® 88 white end face, ETG® 100 gold end face
- » Bright-turned and bright-turned/ground to special order
- » Regular sizes are available from stock
- » 100% eddy current tested acc. to surface class 3 of EN 10277-1

Chemical composition

ETG® 88/100, analysis by mass in %

Element	C	Si	Mn	P	S
min.	0,42	0,10	1,35		0,24
max.	0,48	0,30	1,65	0,04	0,33

The analysis corresponds to SAE1144 and 44SMn28 (1.0762).

Piece analysis and melt analysis may vary according to EN 10087, table 2.

Mechanical properties

Typical values

ETG® 88

ETG® 100

Static					
Dimensions		Ø	mm	5,0 – 114,3	6,0 – 70,8
Proof stress	drawn	$R_{p0,2}$	N/mm ²	> 685	> 865
	ground	$R_{p0,2}$	N/mm ²	> 685	> 800
Tensile strength		R_m	N/mm ²	800 – 950	960 – 1100
Ultimate elongation		A_5	%	> 7	> 6
Reduction of area		Z	%	ca. 30	ca. 20
Elastic modulus			N/mm ²	ca. 200 000	ca. 200 000
Tensile strength (transverse)		R_m	N/mm ²	ca. 600	ca. 720
Hardness					
HRC				ca. 28	ca. 32
HB 30				ca. 280	ca. 320
Lateral shear strength		τ_s	N/mm ²	ca. 510	ca. 590
Torsional shear strength		τ_t	N/mm ²	ca. 440	ca. 540
Notched impact energy		AV_{RT}	J	ca. 25	ca. 10
Dynamic					
Tension/compression		σ_w	N/mm ²	ca. 350	ca. 370
Pulsating		σ_{sch}	N/mm ²	ca. 250	ca. 270
Reverse bending		σ_{bw}	N/mm ²	ca. 390	ca. 420
Torsional reversal		τ_{tw}	N/mm ²	ca. 195	ca. 225
Torsional pulsating		τ_{sch}	N/mm ²	ca. 345	ca. 390

Strength values of standard steels compared to ETG®

Guaranteed proof stress $R_{p0,2}$ [N/mm²] according to EN 10277

Material-number	EN reference	Process	Size range mm				
			5 - 10	10 - 16	16 - 40	40 - 63	63 - 100
Free-cutting tempering steels							
1.0726	35S20	+C	480	400	315	285	255
1.0756	35SPb20	+C+QT			380	320	320
		+QT+C	600	580	550	530	530
1.0760	38SMn28	+C	600	530	460	425	350
1.0761	38SMnPb28	+C+QT			420	400	380
		+QT+C	700	680	650	650	500
1.0762	44SMn28	+C	550	500	420	400	390
1.0763	44SMnPb28	+C+QT			420	410	400
		+QT+C	710	710	660	660	660
1.0727	46S20	+C	570	470	375	325	305
1.0757	46SPb20	+C+QT			430	370	370
		+QT+C	680	650	620	620	620
1.0728	60S20	+C	645	540	430	355	335
1.0758	60SPb20	+C+QT	570	570	490	450	450

Hardening steels

1.0501/1.0502	C35/C35Pb	+C	510	420	320	300	270
1.1181	C35E	+C+QT			370	320	320
1.0503/1.1195	C45/C45Pb	+C	565	500	410	360	310
1.1191	C45E	+C+QT			430	370	370
1.0601/1.0602	C60/C60Pb	+C	630	550	480		
1.1221	C60E	+C+QT			520	450	450
1.7218	25CrMo4	+C+QT			600	450	450
1.7213	25CrMoS4	+QT+C	800	770	670	520	450
1.7225	42CrMo4	+C+QT			750	650	650
1.7227	42CrMoS4	+QT+C	920	900	830	730	650
1.6582	34CrNiMo6	+C+QT			900	800	800
		+QT+C	950	950	950	850	820

+C Cold-drawn +C+QT Cold-drawn and tempered +QT+C Tempered and cold-drawn

High-Strength Special Steels

ETG® 88	drawn	←————— 685 —————→
ETG® 100	drawn	←————— 865 —————→

The guaranteed proof stress for all sizes means that ETG® can be used for a very wide range of applications. ETG® can be used instead of a whole range of standard steels. The deciding factor is what it will be used for. Optimised sizes enable significant savings in weight and cost.