

PRINCIPAL APPLICATION FIELDS
General application steel:

C45 is a medium carbon steel is used when greater strength and hardness is required in the "as rolled" condition. For mechanical engineering components.

EUROPEAN GRADE: EN10083-2 / EN10277-2 / EN10277-5						
C45	1.0503	C45R	1.1201	C45E	1.1191	
COMPARABLE GRADE						
China GB	USA SAE -AISI	Japan JIS	Germany DIN	India IS	Korea KS	Russia GOST
45	1045	S 45 C	Ck45	45C8	SM 45 C	45

CHEMICAL COMPOSITION									
Element	C%	Si%	Mn%	P%	S%	Cr%	Mo%	Ni%	Cr+Mo+Ni%
MIN	0.42	-	0.50	-	0.020	-	-	-	-
MAX	0.45	0.40	0.80	0.030	0.035	0.40	0.10	0.40	0.63

MECHANICAL PROPERTIES – Peeled +SH or Peeled and ground +SH+SL						
Treatment	Natural (untreated) +U		Annealed +A	Normalized +N		
Ø mm	Rm (MPa)	Hardness (HB)	Hardness (HB)	Rm (MPa)	Rp0.2 (MPa)	A5%
16<Ø≤100	580-820	172-242	< 207	> 580	> 305	> 16
100<Ø≤200	580-820	172-242	< 207	> 560	> 275	> 16

MECHANICAL PROPERTIES – Peeled +SH or Peeled and ground +SH+SL					
Treatment	Quenched and tempered +QT				
Ø mm	Rm (MPa)	Rp0.2 (MPa)	A5%	Z%	KV (J at 20°C)
16<Ø≤40	650-800	> 430	> 16	> 40	> 25
40<Ø≤100	630-780	> 370	> 17	> 45	> 25
Different characteristics may be agreed					

NORMAL HARDENABILITY +H (850°C - hardness HRC – distance mm)													
HRC - mm	1	2	3	4	5	6	7	8	9	10	11	13	15
MAX	62	61	61	60	57	51	44	37	34	33	32	31	30
MIN	55	51	37	30	28	27	26	25	24	23	22	21	20

HIGH TEMPERATURE YIELD STRENGTH Rp0.2 EN 10269 QT condition (only for information)							
°C	50	100	150	200	250	300	350
Rp0.2 (MPa)	330	314	299	284	255	235	206

STRUCTURE – Austenite grain size 5 or finer (EN ISO 643)						
Degree of purity	8<Ø≤17	17<Ø≤35	35<Ø≤70	70<Ø≤100	100<Ø≤140	140<Ø≤200
DIN 50602 - K Oxides	K3≤30	K3≤40	K4≤35	K4≤40	K4≤45	K4≤50