



QUALITY	C45E - C45R	W.NR. 1.1191-1.1201
REFERENCE NORM HOT ROLLED STEEL PRODUCTS		ISO 683-1
REFERENCE NORM BRIGHT STEEL PRODUCTS		UNI EN 10277

CHEMICAL COMPOSITION (%)

	C	Si	Mn	P (max.)	S (max)	Cr (max)	Mo (max)	Ni (max)	Cu (max)	Cr+Mo+Ni (Max)
C45E	0,42 ÷ 0,50	0,10 ÷ 0,40	0,50 ÷ 0,80	0,025	0,035	0,40	0,10	0,40	0,30	0,63
C45R					0,020 ÷ 0,040					

MECHANICAL PROPERTIES HOT ROLLED NORMALIZED STEEL (ISO 683-1)

Size (mm)	ReH (MPa) Min.	Rm (MPa)	A% Min.	Z% Min	KV Min (J)
d ≤ 16mm	340	620	14		
t ≤ 16mm					
16mm < d ≤ 100mm	305	580	16		
16mm < t ≤ 100mm					
100mm < d ≤ 250mm	275	560	16		
100mm < t ≤ 250mm					

MECHANICAL PROPERTIES HOT ROLLED QUENCHED & TEMPERED STEEL (ISO 683-1)

Size (mm)	ReH (MPa) Min.	Rm (MPa)	A% Min.	Z% Min	KV Min (J) + 20°
d ≤ 16mm	490	700 ÷ 850	14	35	15
t ≤ 16mm					
16mm < d ≤ 100mm	430	650 ÷ 800	16	40	15
16mm < t ≤ 100mm					
100mm < d ≤ 250mm	370	630 ÷ 780	17	45	15
100mm < t ≤ 250mm					

MECHANICAL PROPERTIES BRIGHT STEEL PRODUCTS (UNI EN 10277)

Size (mm)	(+SH) HOT ROLLED + PEELED		(+C) COLD DRAWN			(+QT+SH) QUENCHED & TEMPERED + PEELED				(+QT+C) QUENCHED & TEMPERED + COLD DRAWN		
	Hardness (HBW) Max.	Rm (MPa)	Rp0,2 (MPa) Min.	Rm (MPa)	A5 (%) min.	Rp0,2 (MPa) Min.	Rm (MPa)	A5 (%) min.	KV Min (J) + 20°	Rp0,2 (MPa) Min.	Rm (MPa)	A5 (%) min.
5 ≤ t ≤ 10			565	750 + 1050	5					595	850 + 1050	8
10 < t ≤ 16			500	710 + 1030	6					565	810 + 1010	8
16 < t ≤ 40	172 + 241	580 + 820	410	650 + 1000	7	430	650 + 800	16	25	525	700 + 900	9
40 < t ≤ 63	172 + 241	580 + 820	360	630 + 900	8	370	630 + 780	17	25	455	650 + 850	10
63 < t ≤ 100	172 + 241	580 + 820	310	580 + 850	8	370	630 + 780	17	25	455	650 + 850	11

Jominy test values HRC (ISO 683-1)

Distance from ends mm	1	2	3	4	5	6	7	8	9	10	11
MAX	62	61	61	60	57	51	44	37	34	33	32
MIN	55	51	37	30	28	27	26	25	24	23	22

Distance from ends mm	13	15	20	25	30
MAX	31	30	29	28	27
MIN	21	20			

Indicative values based on current regulations.