



# Induction Hardened and Chrome Plated Steel Bars

DIAMETER 5 - 130 mm

Steel Grade	DIN	B.S	UNI	JIS	GOST	ASI/SAE/ASTM	Werkstoff
C45E	Ck45	080M46	C45	S45C	45	1045	1,1191
C35E	Ck35	080M36	C35	S35C	35	1035	1,1181

Steel Grade	C	Si	Mn	P	S	Cr	Mo	Ni	Cu	V	N
C45E	0.42-0.50	max. 0.40	0.50-0.80	≤0.030	≤0.035	≤0.40	≤0.10	≤0.40	≤0.30	–	–
C35E	0.32-0.39	0.10-0.40	0.50-0.80	≤0.025	≤0.035	≤0.40	≤0.10	≤0.40	≤0.30	–	–

Steel Grade	Diameter	Tensile Strength N/mm <sup>2</sup>	Yield Strength N/mm <sup>2</sup>	Elongation A%	Impact Energy J/Min.	Hardness Brinell N/mm <sup>2</sup>	Norm	Tristar Steel Product Code
C45E	6<Ø≤10	750-1050	Min. 520	Min. 5	–	225-320	EN 10277	STAR ICB
	10<Ø≤16	710-1030	Min. 520	Min. 6	–	210-315	EN 10277	
	16<Ø≤25	650-1000	Min. 520	Min. 7	–	200-298	EN 10277	
	25<Ø≤100	Min. 580	Min. 305	Min. 16	–	172-242	EN ISO683-1	
	100<Ø≤130	Min. 560	Min. 275	Min. 16	–	172-242	EN ISO683-1	
C45E+QT	25≤Ø≤40	650-800	Min. 430	Min. 16	15J / 20°C	190-235	EN ISO683-1	STAR ICBY
	40<Ø≤90	630-780	Min. 370	Min. 17	15J / 20°C	185-230	EN ISO683-1	
C35E	6<Ø≤10	650-1000	Min. 510	Min. 6	–	190-298	EN 10277	STAR ICBX
	10<Ø≤16	600-950	Min. 420	Min. 7	–	180-285	EN 10277	
	16<Ø≤25	580-880	Min. 320	Min. 8	–	172-263	EN 10277	
	25<Ø≤100	Min.520	Min. 270	Min. 19	–	154-207	EN ISO683-1	
	100<Ø≤130	Min.500	Min. 245	Min. 19	–	154-207	EN ISO683-1	

#### STRAIGHTNESS

6 ≤ Ø ≤ 10mm: Max. 0.3 mm/1000 mm  
 12 ≤ Ø ≤ 18mm: Max. 0.25 mm/1000 mm  
 20 ≤ Ø ≤ 130 mm: Max. 0.20 mm/1000 mm

#### ROUNDNESS

Max. ½ from Dia. Tolerance

#### CHROME LAYER THICKNESS

Ø < 20 mm: min. 15 µm  
 Ø ≥ 20 mm: min. 20 µm

#### STANDARD LENGTH

5800-7500 mm mm  
 (Available on request)

#### SURFACE ROUGHNESS

Ra: max. 0.15 µm; Rt: max. 1.2 µm

#### CHROME LAYER MICROHARDNESS

900 HV0.1

Diameter (mm)	Hardening Depth (mm)
6	0.5 - 0.8
6.35 - 12	0.6 - 1.2
12.7 - 15	0.8 - 1.4
15.875 - 19.05	1.1 - 1.5
19 - 19.05	1.2 - 1.5
20	1.2 - 1.5
22 - 25.4	1.4 - 1.7
28	1.5 - 1.8
28,575	1.5 - 1.8
30 - 36	1.5 - 1.9
38 - 40	1.7 - 2.3
42 - 45	1.7 - 2.3
48 - 80	2.2 - 2.6
82 - 101.6	2.2 - 3.2
105 - 120	2.5 - 3.5
125 - 130	2.5 - 3.5

#### TOLERANCE

f7, other on request

#### SURFACE HARDNESS

Surface hardness beneath the chrome layer

C45E 58±3 HRC  
 C45E+QT 58±3 HRC  
 C35E 53±3 HRC

#### CORROSION RESISTANCE

Neutral salt spray test according to ISO 9227 -  
 Evaluation according to ISO 10289 :

#### RATING 10 (NO RUST)

Ø < 20 mm: 144 hours min.  
 Ø ≥ 20 mm: 200 hours min.