



Induction hardened and chrome plated steel bars

NIMAX ICB
C45E, C35E

NIMAX ICBM
20MnV6, 38MnVS6

NIMAX ICBV
42CrMo4+QT

Dimensions

Ø6 - 160 mm / Ø1/4" - 6.25"

Diameter tolerance

ISO f7
other, on request

Roundness

max. 1/2 from diameter tolerance

Chrome layer thickness

Ø < 14 mm: min. 15 µm
Ø ≥ 14 mm: min. 20 µm
Ø ≥ 25 mm: min. 50 µm, on request

Chrome layer microhardness

min. 900 HV0.1

Surface roughness

Ra: max. 0.20 µm

Standard indicative length

6400 / 7400 (-0/+100) mm
other, on request

Straightness

Ø ≤ 16 mm: max. 0.3 mm/1000 mm
Ø > 16 mm: max. 0.2 mm/1000 mm

Standard corrosion resistance

Ø < 14 mm & Cr layer min. 15 µm:
NSS rating 10 after 120h, rating 9 after 200h
Ø ≥ 14 mm & Cr layer min. 20 µm:
NSS rating 10 after 120h, rating 9 after 200h

High corrosion resistance

Ø ≥ 14 mm & Cr layer min. 20 µm:
NSS rating 10 after 250h, rating 9 after 500h
Ø ≥ 25 mm & Cr layer min. 50 µm:
NSS rating 10 after 500h, rating 9 after 1000h

Salt spray test NSS / AASS: ISO 9227
Evaluation: ISO 10289

Chemical composition - in % by weight

Steel grade	C	Si	Mn	P	S	Cr	Mo	Ni	Cu	V	N
C45E ⁽¹⁾	0.42 ÷ 0.50	0.10 ÷ 0.40	0.50 ÷ 0.80	max. 0.025	max. 0.035	max. 0.40	max. 0.10	max. 0.40	max. 0.30	-	-
C35E ⁽¹⁾	0.32 ÷ 0.39	0.10 ÷ 0.40	0.50 ÷ 0.80	max. 0.025	max. 0.035	max. 0.40	max. 0.10	max. 0.40	max. 0.30	-	-
20MnV6	0.16 ÷ 0.22	0.10 ÷ 0.50	1.30 ÷ 1.70	max. 0.035	max. 0.035	-	-	-	-	0.08 ÷ 0.20	-
38MnVS6	0.34 ÷ 0.41	0.15 ÷ 0.80	1.20 ÷ 1.60	max. 0.025	0.020 ÷ 0.060	max. 0.30	max. 0.08	-	-	0.08 ÷ 0.20	0.010 ÷ 0.020
42CrMo4	0.38 ÷ 0.45	0.10 ÷ 0.40	0.60 ÷ 0.90	max. 0.025	max. 0.035	0.90 ÷ 1.20	0.15 ÷ 0.30	-	max. 0.40	-	-

(1) Cr+Mo+Ni = max. 0.63

Mechanical properties

Steel grade	Diameter Ø mm	Tensile strength	Yield point	Elongation	Impact energy	Hardness ⁽¹⁾
		R _m N/mm ²	R _{p0.2} N/mm ²	A ₅ %	KV ₂ J	Brinell N/mm ²
C45E	6 < Ø ≤ 10	750 - 1050	min. 565	min. 5	-	225 - 320
	10 < Ø ≤ 16	710 - 1030	min. 500	min. 6	-	210 - 315
	16 < Ø ≤ 40	650 - 1000	min. 410	min. 7	-	200 - 298
	40 < Ø ≤ 63	630 - 900	min. 360	min. 8	-	200 - 298
	18 ≤ Ø ≤ 100	min. 580	min. 305	min. 14	-	172 - 242
C45E+QT	100 < Ø ≤ 160	min. 560	min. 275	min. 14	-	172 - 242
	20 ≤ Ø ≤ 40	650 - 800	min. 430	min. 16	-	195 - 240
	40 < Ø ≤ 100	630 - 780	min. 370	min. 17	-	190 - 270
The values of R _m , R _{p0.2} and A ₅ must be agreed						
C35E	6 < Ø ≤ 10	650 - 1000	min. 510	min. 6	-	190 - 298
	10 < Ø ≤ 16	600 - 950	min. 420	min. 7	-	180 - 285
	16 < Ø ≤ 40	580 - 880	min. 320	min. 8	-	172 - 263
	18 ≤ Ø ≤ 100	min. 520	min. 270	min. 19	-	154 - 207
20MnV6	100 < Ø ≤ 160	min. 500	min. 245	min. 19	-	154 - 207
	6 < Ø ≤ 25	min. 700	min. 620	min. 10	-	213 - 260
	19 < Ø ≤ 80	min. 600	min. 460	min. 18	min. 27J / -20°C	159 - 220
20MnV6 M	80 < Ø ≤ 160	min. 550	min. 420	min. 18	-	155 - 220
	20 < Ø ≤ 90	min. 600	min. 520	min. 19	min. 27J / -20°C	165 - 225
38MnVS6	20 < Ø ≤ 120	800 - 950	min. 520	min. 12	-	240 - 290
	120 < Ø ≤ 160	700 - 950	min. 520	min. 12	-	210 - 300
38MnV6X	20 < Ø ≤ 90	850 - 1000	min. 580	min. 14	-	240 - 290
	6 < Ø ≤ 16	1100 - 1300	min. 900	min. 10	-	298 - 359
42CrMo4+QT	16 < Ø ≤ 40	1000 - 1200	min. 750	min. 11	-	298 - 359
	40 < Ø ≤ 100	900 - 1100	min. 650	min. 12	min. 35J / 20°C	271 - 331
	100 < Ø ≤ 160	800 - 950	min. 550	min. 13	-	240 - 290

(1) The hardness values are for information only

Steel grade surface hardness

	NIMAX ICB C35E	NIMAX ICB C45E	NIMAX ICBM 20MnV6	NIMAX ICBM 38MnVS6	NIMAX ICBV 42CrMo4+QT
Surface hardness beneath the chrome layer	55±3 HRC	58±3 HRC	45±3 HRC	57±3 HRC	59±3 HRC