



Series	Description
NICRO 1000-NCB	Nickel and Hard Chrome Plated Steel Bars with Utmost Corrosion Resistance steel grade: C45E, 20MnV6, 38MnVS6 / Ø30 - 160 mm / Ø1¼" - 6"

### Steel grades correspondents

EN	Werkstoff	DIN	B.S.	UNI	JIS	GOST	AISI SAE ASTM
C45E	1.1191	Ck45	080M46	C45	S45C	45	1045
-	1.5217	20MnV6	55M	-	-	-	A572
38MnVS6	1.1303	38MnSiV55	-	-	-	-	(10V45) *

\* equivalent

### Chemical composition - in % by weight

Steel grade	C	Si	Mn	P	S	Cr	Mo	Ni	V	N
C45E	0.42 ÷ 0.50	max. 0.40	0.50 ÷ 0.80	max. 0.030	max. 0.035	max. 0.40	max. 0.10	max. 0.40	-	-
20MnV6	0.16 ÷ 0.22	0.10 ÷ 0.50	1.30 ÷ 1.70	max. 0.035	max. 0.035	-	-	-	0.80 ÷ 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

### Mechanical properties

Steel grade	Diameter Ø mm	Tensile strength R <sub>m</sub> N/mm <sup>2</sup>	Yield point R <sub>p0.2</sub> N/mm <sup>2</sup>	Elongation A <sub>5</sub> %	Hardness * Brinell N/mm <sup>2</sup>	Norm
C45E	30 ≤ Ø ≤ 100	min. 580	min. 305	min. 16	172 - 242	EN 10083-2
	100 < Ø ≤ 160	min. 560	min. 275	min. 16	172 - 242	
20MnV6	30 ≤ Ø ≤ 80	min. 600	min. 460	min. 18	159 - 172	Technical data according to internal norm
	80 < Ø ≤ 160	min. 550	min. 420	min. 18	159 - 172	
38MnVS6	30 < Ø ≤ 160	800 - 950	min. 460 **	min. 12	240 - 290	EN 10267

Note:

Impact energy: min. 27J at - 20° C for 20MnV6

\* The hardness values are for information only

\*\* On request we can provide material with R<sub>p0.2</sub> min. 520 N/mm<sup>2</sup>

# Nickel and Hard Chrome Plated Steel Bars

steel grade: C45E, 20MnV6 / 38MnVS6



Series **NICRO 1000-NCB - C45E**  
**NICRO 1000-NCBM - 20MnV6 / 38MnVS6**

Dimensions	Ø30 - 160 mm / Ø1¼" - 6"
Diameter tolerance	ISO f7
Roundness	max. 1/2 from diameter tolerance
Standard length	up to 6000 mm / on request: cut lengths
Surface roughness	Ra: max. 0.20 µm
Nickel layer thickness	min. 30 µm
Chrome layer thickness	min. 25 µm
Nickel layer microhardness	min. 300HV0.1
Chrome layer microhardness	min. 900HV0.1
Straightness	max. 0.20 mm/1000 mm

- ✓ In comparison with chromed stainless steel and double chromed materials, the nickel and chrome plating is the optimal choice for eliminating the risk of corrosion.
- ✓ Steel grades as 20MnV6 or 38MnVS6 having a low carbon content and good weldability are the suitable bases for nickel chrome plated products.
- ✓ When using 38MnVS6, the nickel and chrome product combines the high strength with utmost corrosion resistance and excellent machinability.

### Table of dimensions - tolerance

Diameter mm	ISO f7 µm
Ø = 30	-20 / -41
30 < Ø ≤ 50	-25 / -50
50 < Ø ≤ 80	-30 / -60
80 < Ø ≤ 120	-36 / -71
120 < Ø ≤ 160	-43 / -83

### Corrosion resistance

Diameter mm	Standard product NICRO 1000-NCB NICRO 1000-NCBM
Ø30 - 160	rating 10 after 1000 h in NSS rating 10 after 350 h in AASS

Tested in our own laboratory according to ISO 9227.  
 Evaluated according to ISO 10289.

The nickel and chrome plating technology is the solution to extreme environments with intense corrosion:

- ✓ offshore, marine conditions
- ✓ military applications, wind, solar and aerospace sector
- ✓ agriculture, mining industry, oil and gas industry.

The nickel layer is completely free of cracks, pores and by this, the base material is isolated from the atmospheric corrosion, while the chrome layer ensures a very good wear resistance.

Nickel and chrome plated steel  
*(the micro-cracks don't reach the base steel)*

Chrome plated steel  
*(the micro-cracks reach the base steel)*

