



Series	Description
NICRO 500-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 _m N/mm ²	Yield point R _{p0.2} N/mm ²	Elongation A ₅ %	Hardness * Brinell N/mm ²	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_{p0.2} min. 520 N/mm²

Nickel and Hard Chrome Plated Steel Bars

steel grade: C45E, 20MnV6 / 38MnVS6



Series **NICRO 500-NCB - C45E**
NICRO 500-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. 10 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 spite of its well known oxidation resistance, chrome plating has a limited corrosion resistance.*

✓ *Our solution in this case is nickel chrome plating, a process meant to give products a high durability while working in very aggressive environments, based on a nickel layer followed by a chromium plating.*

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 500-NCB NICRO 500-NCBM
Ø30 - 160	rating 10 after 500 h in NSS rating 10 after 180 h in AASS

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

These types of piston rods are commonly used for hydraulic cylinders working in very aggressive environments:

- ✓ marine atmosphere, corrosive chemicals
- ✓ extreme climates, power generation
- ✓ military sector and aerospace sector.