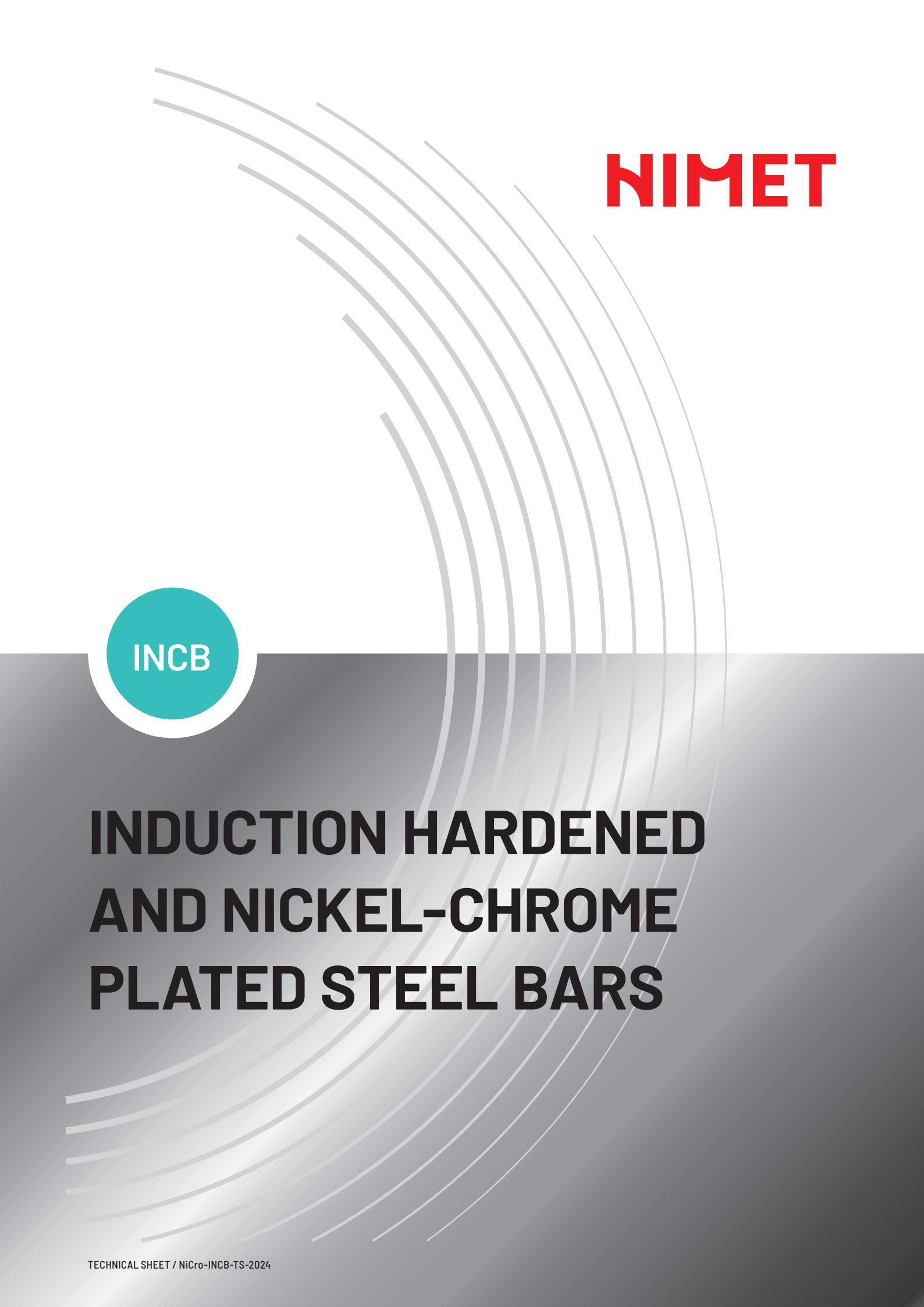




NIMET

INCB

INDUCTION HARDENED AND NICKEL-CHROME PLATED STEEL BARS

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NiCro INCB

NiCro INCB - C45E | NiCro INCBM - 20MnV6 / 38MnVS6

INCB

In choosing the right product for an application, there are certain aspects to be taken into consideration. Both the properties of the base material and those of the finished surface are of crucial importance in delivering the optimal solution. The questions to be answered in making the correct decision are:

- ✓ What is the product that best fits the application's function and its technical requirements?
- ✓ What is the most effective cost-wise solution?
- ✓ Which is the product with the less long term impact on the environment?

● 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	38MnSiVS5	-	-	-	-	(15V41) ⁽¹⁾
46MnVS6	1.1304	44MnSiVS6	-	-	-	-	(10V45) ⁽¹⁾

⁽¹⁾Equivalent

● 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	-	-
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
46MnVS6	0.42 ÷ 0.49	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

⁽¹⁾Cr+Mo+Ni = max. 0.63

STEEL GRADE

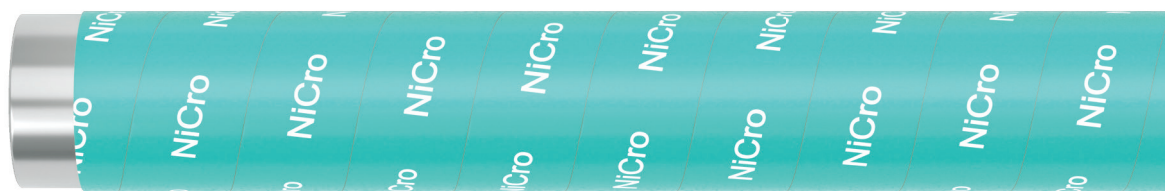
20MnV6 steel grade offers good weldability, enhanced mechanical characteristics, impact resistance at lower temperatures (-20°C).

38MnVS6 steel grade has excellent machinability, good weldability and it is widely used in civil, mechanical and chemical engineering applications.

● 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 %	Impact energy KV ₂ J	Hardness ⁽¹⁾ Brinell N/mm ²	Norm
C45E	6 < Ø ≤ 10	750 - 1050	min. 565	min. 5	-	225 - 320	EN 10277
	10 < Ø ≤ 16	710 - 1030	min. 500	min. 6		210 - 315	
	16 < Ø ≤ 40	650 - 1000	min. 410	min. 7		200 - 298	
	18 ≤ Ø ≤ 100	min. 580	min. 305	min. 14	-	172 - 242	EN ISO 683-1
	100 < Ø ≤ 200	min. 560	min. 275	min. 14		172 - 242	
C45E+QT	20 ≤ Ø ≤ 40	650 - 800	min. 430	min. 16	-	195 - 240	EN ISO 683-1
	40 < Ø ≤ 100	630 - 780	min. 370	min. 17		190 - 270	
	100 < Ø ≤ 160	The values of R _m , R _{p0.2} and A ₅ must be agreed				-	
20MnV6	6 < Ø ≤ 25	min. 700	min. 620	min. 10	min. 27J / - 20°C	213 - 260	Technical data according to internal norm
	19 < Ø ≤ 80	min. 600	min. 460	min. 18		159 - 220	
	80 < Ø ≤ 200	min. 550	min. 420	min. 18		155 - 220	
20MnV6 M	20 < Ø ≤ 90	min. 600	min. 520	min. 19	min. 27J / - 20°C	165 - 225	Technical data according to internal norm
38MnVS6	20 < Ø ≤ 120	800 - 950	min. 520	min. 12	-	240 - 290	EN 10267
	120 < Ø ≤ 200	700 - 950	min. 520	min. 12	-	210 - 300	
38MnV6X	20 < Ø ≤ 90	850 - 1000	min. 580	min. 14	-	240 - 290	EN 10267
46MnVS6	20 < Ø ≤ 160	900 - 1050	min. 585	min. 10	-	240 - 290	EN 10267

⁽¹⁾ The hardness values are for information only



INDUCTION HARDENED AND NICKEL-CHROME PLATED STEEL BARS

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NiCro INCB - C45E | NiCro INCBM - 20MnV6 / 38MnVS6

INCB

Dimensions	Ø20 - 160 mm / Ø1" - 6"		
Diameter tolerance	ISO f7 / other, on request		
Roundness	max. 1/2 from diameter tolerance		
Standard lengths	5000 - 6400 mm		
Special lengths	On request we can offer cut to fix lengths pieces and special lengths up to max. 6.400 mm		
Surface roughness	Ra: max. 0.20 µm		
	NiCro 150	NiCro 350	NiCro 500
Nickel layer thickness	min. 10 µm	min. 20 µm	min. 30 µm
Chrome layer thickness	min. 20 µm	min. 20 µm	min. 20 µm
Nickel layer microhardness	min. 300 HV0.1		
Chrome layer microhardness	min. 900 HV0.1		
Straightness	max. 0.2 mm/1000 mm		

● TABLE OF DIMENSIONS TOLERANCE

Diameter mm	ISO f7 µm
20 ≤ 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 LEVELS

Diameter mm	NiCro 150		NiCro 350		NiCro 500	
	NSS	AASS	NSS	AASS	NSS	AASS
Ø20 - 160	rating 10 after 500h	rating 10 after 150h	rating 10 after 1000h	rating 10 after 350h	rating 10 after 1500h	rating 10 after 500h

Tested in our own laboratory according to ISO 9227, evaluated according to ISO 10289.

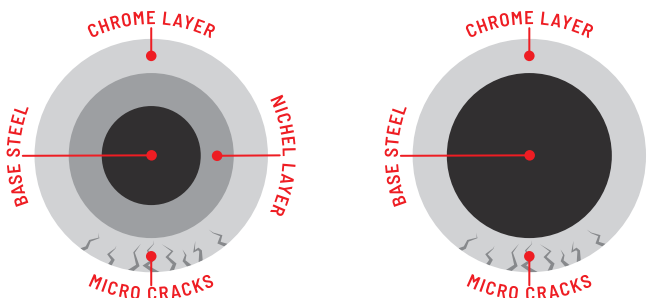
● CORRESPONDENCE BETWEEN STEEL GRADE AND SURFACE HARDNESS (INCB)

	NiCro INCB C45E	NiCro INCBM 20MnV6	NiCro INCBM 38MnVS6
Surface hardness beneath the chrome layer	54±3 HRC	44±3 HRC	54±3 HRC

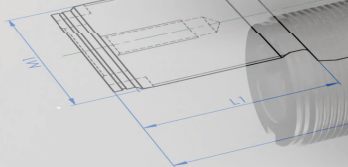
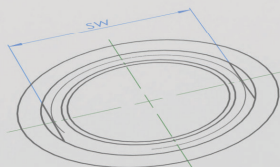
The hardening depth is defined as the distance from the surface, beneath the chrome layer up to the point where the hardness value has dropped to the value of 513 HV1 for C45E and 38MnVS6 steel grades, respective 360HV1 for 20MnV6 steel grade.

The hardening depth is between 1.0 - 2.0 mm, depending on diameter and steel grade.

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.



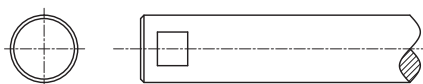
CUSTOMIZED MACHINING



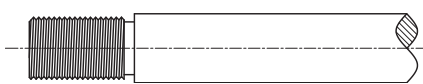
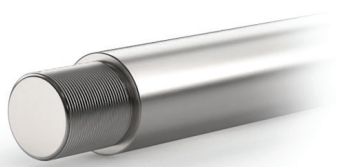
INCB

On request we can perform customized cutting and machining according to drawing.
We work with the latest technology and our CNC machines can perform high quality turning, milling, threading and drilling.

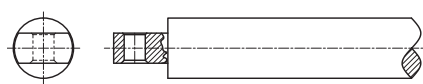
CROSSWISE GROOVE



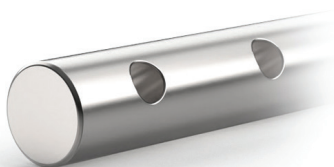
OUTSIDE DIAMETER THREAD



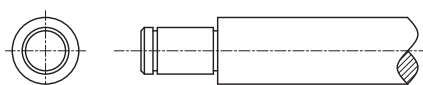
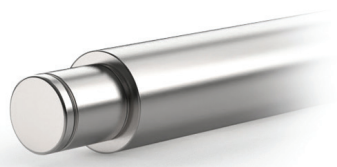
END FOR MOUNT
WITH CLEVIS CLAMP



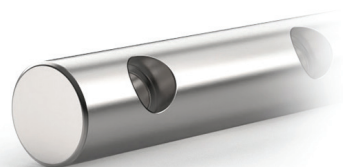
TAPPED OR DRILLED HOLES RADIALLY
THROUGH SHAFT



GROOVES FOR SNAP RING



RADIAL DRILLING HOLES, BORED



PACKAGING

Plastic Sleeves

WHITE Plastic Sleeves

Ø16 .. 105 mm - Recyclable plastic sleeve.
For sizes less than 16 mm - plastic net,
aluminum bubble foil and wooden cases.

Cardboard Tubes

Chrome Plated Steel Bars and Tubes
RED striped tubes

Induction Hardened and Chrome Plated
Steel Bars and Tubes
BLUE striped tubes

Nickel-Chrome Plated Steel Bars and Tubes
Induction Hardened and Nickel-Chrome Plated Steel Bars and Tubes
GREEN striped tubes

Marking on the cardboard tube or on the plastic sleeve:

Product Code - Diameter - Tolerance - Chrome layer - Material - Heat Number - Calendar Week/Year - www.nimet.ro
NIMAX 200-CB125f7 - 20µm - C45E - 479455 - 45/2023 - www.nimet.ro

STORAGE & HANDLING

RECOMMENDATIONS



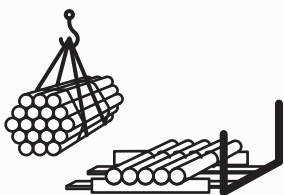
Keep the products stored in dry
and covered spaces.



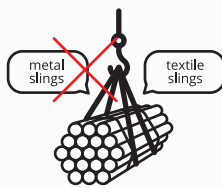
Do not expose the bars or tubes for a
long time to the sunlight or to very low
temperatures.



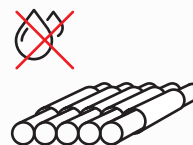
Direct contact with the floor and steel
supports that are not lined with soft
materials must be avoided; preferable to
use rubber or wood lined supports.



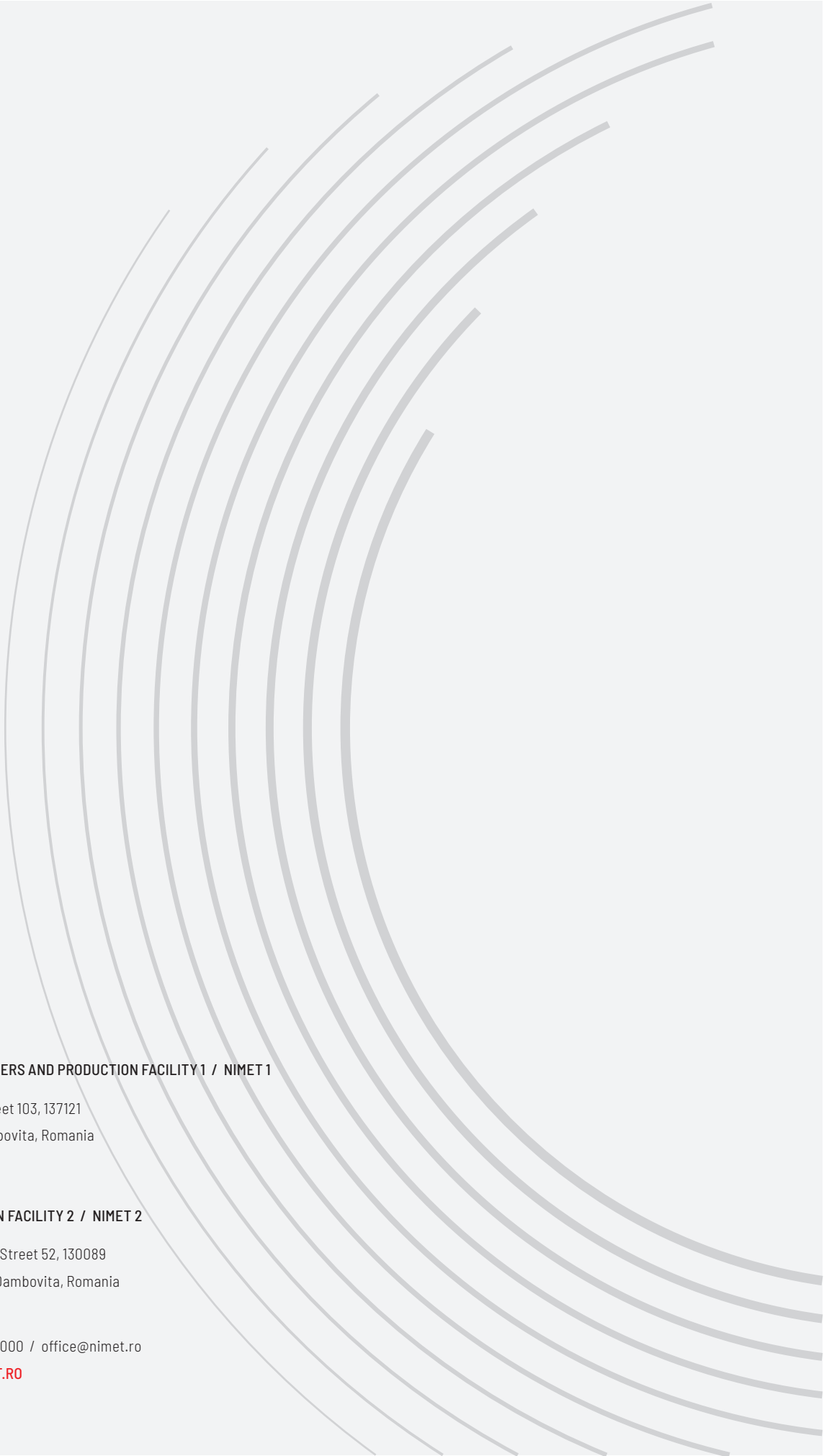
Whenever possible, please use the crane
to load or unload the bundles; when
using the fork lift please avoid the direct
contact of the forks with the products.



Always lift the bundles using textile
slings. Do not use metal slings during
handling of bundles.



Always keep dry the cardboard tubes
that protect the chromed products.



NIMET srl

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