



CONFIDENCE
IN EVERY
PRODUCT

HOT-DIP GALVANIZED STEEL

PRODUCT CATALOG



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ABOUT NLMK

Russia's No. 1 producer of steel, NLMK Group supplies products to sectors of the economy: from power engineering, petrochemical, pipe making, shipbuilding and construction through to manufacturing of railway transport, mining machinery, trucks, passenger cars, and yellow and white goods.

WHY NLMK

1. Reliability and quality guarantee

Our business model allows us to control the quality of our products at each stage: from the mining of raw materials to finished product manufacturing and servicing. Self-sufficiency in raw material and energy supplies ensures stability of our operations and unfailing delivery of all commitments to our partners.

2. A wide product mix

NLMK Group produces a wide range of steel products: from semi-finished products and standard grades to high-tech electrical steels. We also offer our clients made-to-order customization to match their individual specifications.

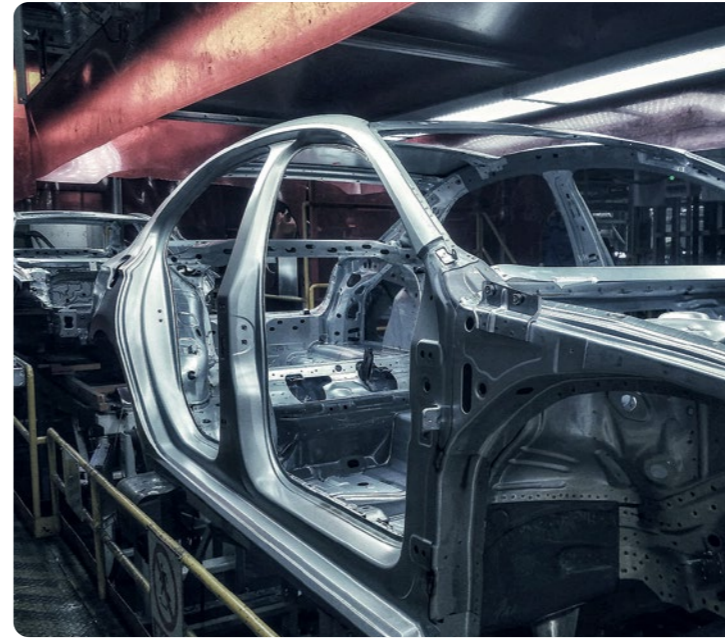
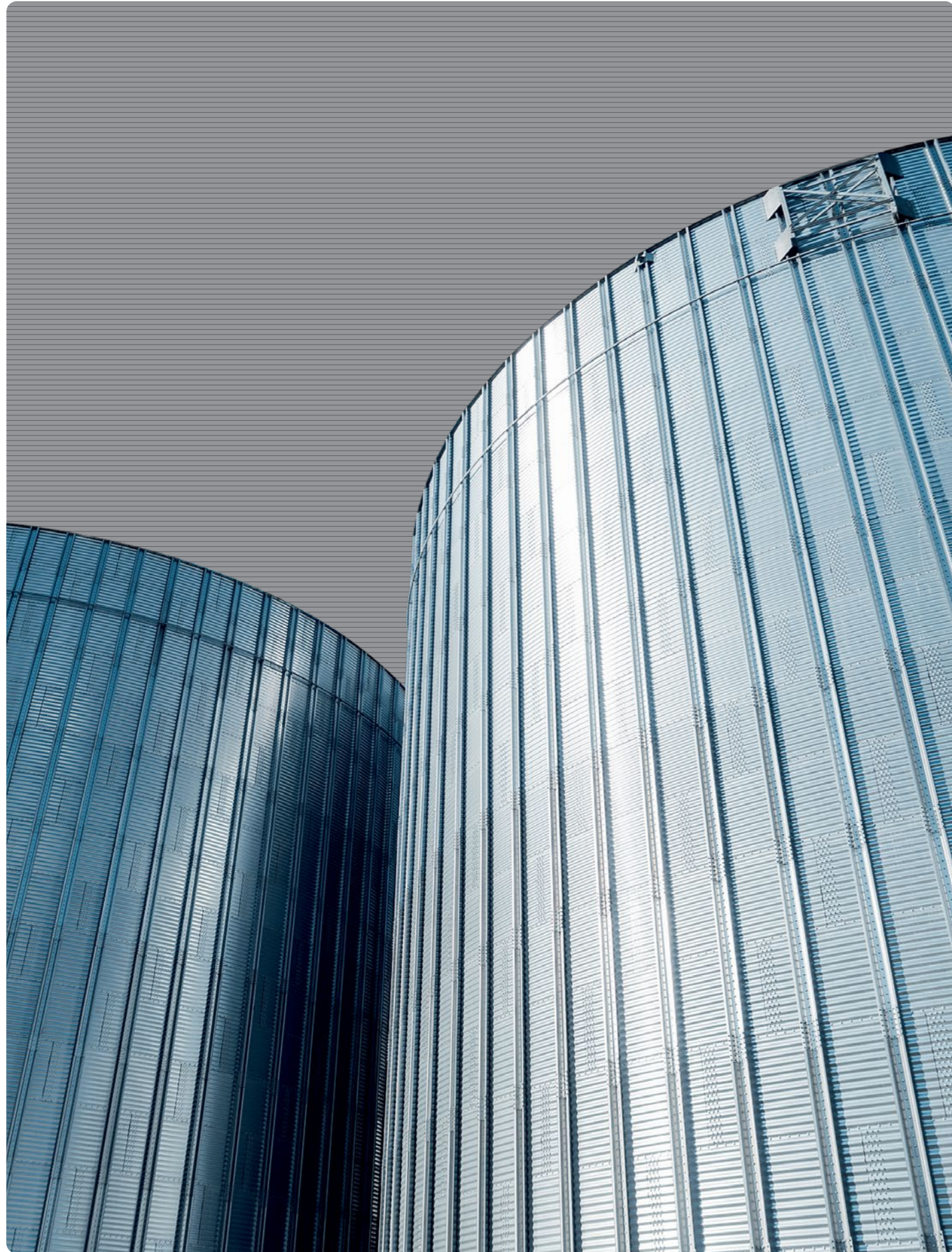
3. Strong team with a customized approach

Our customer service model relies on NLMK Trading House and NLMK.shop, which enables direct engagement with any type of business. We offer a unique proposition in servicing and logistical capabilities, with a guarantee of high and stable product quality.

4. Long-standing expertise in steelmaking

NLMK's success is driven by 90 years' worth of experience in the market and by our continuous efforts in designing new products and deploying digital technologies in production. Our digitalisation projects are widely acclaimed by market experts and recognized with specialised awards.





NLMK Group's galvanized steel stands out with its high corrosion resistance. The wide range of galvanized products is manufactured by advanced equipment that enables thicknesses up to 4 mm and galvanization of both cold- and hot-rolled steel.

The key application of NLMK's galvanized steel is in construction. It is a perfect fit for light-gauge steel framing in quick construction. Galvanized steel is used in sandwich panels, siding, roofing, ventilation systems and structural shapes. It is also indispensable in car making and white goods, ensuring longevity of products made with NLMK steel. Galvanized steel of up to 4 mm thick is especially relevant for residential construction in the Far North and seismic zones.

OUR ADVANTAGES

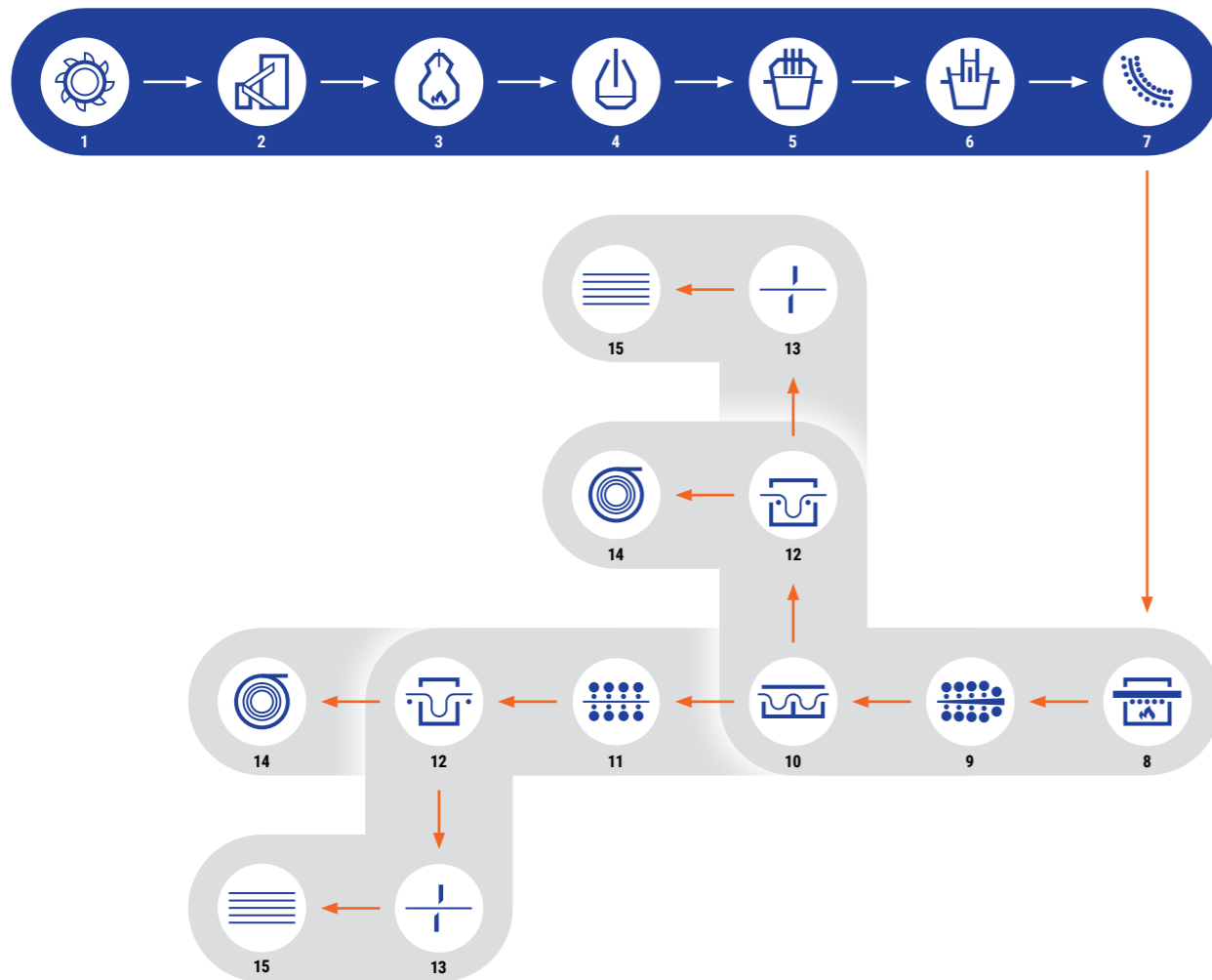
- High corrosion resistance
- Zinc galvanization of both cold- and hot-rolled steel
- Steel gauge up to 4 mm



Applications

- Trucks and cars
- Agricultural machinery
- Roofing and finishing
- Lightweight steel framing
- White goods
- Retail fixtures and equipment
- Railroad machinery

PRODUCTION FLOW



Production stage	Description
1	Iron ore mining
2	Sintering
3	Blast furnace
4	Basic-oxygen converter
5	Ladle furnace
6	Vacuum degasser
7	Continuous casting machine
8	Reheating furnace
9	Mill 2000
10	Continuous pickling line
11	Cold-rolling mill
12	Hot-dip galvanizing line
13	Cutting machines
14	Finished products in coils
15	Finished products in sheets



PRODUCT MIX

MAIN PARAMETERS

Rolled product thickness	0.25–4.00 mm
Rolled product width	900–1,820 mm
Rolled product width after slitting	100–850 mm
Coil inner diameter	600 ± 10, 500 ± 10 mm (requested)
Coil weight	5–30 t
Weight of sheet bundles	Up to 10 t
Sheet length	1,500–3,500 mm
Weight of galvanized coating (both sides)	80 to 600 g/m ²
Coating type	With minimum spangle pattern

TOLERANCES FOR DIMENSIONS AND SHAPE OF ROLLED PRODUCTS

Standard for specification	GOST 14918	TU 14-106-438	EN 10346	ASTM A 653M
Standard for product mix, geometrical dimensions and tolerances	GOST 14918	GOST 19904 GOST 19851	EN 10143	ASTM A 924M

DESIGNATION OF SURFACE FINISHING

GOST 14918	EN 10346	ASTM A 653M
M (minimum spangle pattern) normal quality (without designation of the finishing group) Y (improved quality) B (high quality)	M (without spangle pattern) A (normal quality) B (improved quality) C (high quality)	– ("spangle-free" steel)

GALVANIZED COATING CLASSES

Class	Weight of galvanized coating (both sides of specimen), g/m ²		Reference value of galvanized coating thickness assumes the basis of zinc density of 7.13 g/cm ³
	average of three samples	one sample	
Z80	> 100	> 68	It is possible to produce a differentiated zinc coating Z140/100 (other classes – by agreement)
Z100	> 100	> 85	
Z120	> 120	> 100	
Z140	> 140	> 120	
Z150	> 150	> 130	
Z180	> 180	> 150	
Z200	> 200	> 170	
Z225	> 225	> 195	
Z275	> 275	> 235	
Z350	> 350	> 300	
Z450	450	385	
Z500	500	425	
Z600	600	510	

SURFACE PROTECTION AGAINST CORROSION DURING TRANSPORTATION AND STORAGE

- Chemical passivation based on Cr⁶⁺ or Cr³⁺
- Oiling
- Chemical passivation and oiling
- Thin organic coatings
- Without preservation

LOW-CARBON IF STEELS FOR COLD WORKING AND STEELS FOR CONSTRUCTION

MECHANICAL PROPERTIES

Rolled product grade	Standard	Yield strength, MPa (N/mm ²)	Ultimate strength, MPa (N/mm ²)	Relative elongation, %, min.	R _{0.2}	n _{0.2}	Sampling direction with respect to rolling direction
DX51D	EN 10346	–	270–500	22	–	–	Transverse
DX52D		140–300	270–420	26	–	–	
DX53D		140–260	270–380	30	–	–	
DX54D		140–220	260–350	36	≥ 1.6	≥ 0.18	
DX56D		120–180	260–350	39	≥ 1.9	≥ 0.21	
DX57D		120–170	260–350	41	≥ 2.1	≥ 0.22	
S220GD		≥ 220	≥ 300	20	–	–	Longitudinal
S250GD		≥ 250	≥ 330	19	–	–	
S280GD		≥ 280	≥ 360	18	–	–	
S320GD		≥ 320	≥ 390	17	–	–	
S350GD	≥ 350	≥ 420	16	–	–		
S390GD	≥ 390	≥ 460	15	–	–		
S420GD	≥ 420	≥ 480	15	–	–		
S450GD	≥ 450	≥ 510	14	–	–		
01	GOST 14918	–	–	–	–	–	Transverse
02		–	270–500	20	–	–	
03		–	270–420	24	–	–	
04		≤ 260	270–380	28	–	–	
05		≤ 220	270–350	34	≥ 1.6	≥ 0.18	
06		≤ 180	270–350	35	≥ 1.9	≥ 0.21	
07		≤ 170	260–350	37	≥ 2.1	≥ 0.22	
220		≥ 220	≥ 300	18	–	–	Longitudinal
250		≥ 250	≥ 330	17	–	–	
280		≥ 280	≥ 360	16	–	–	
320	≥ 320	≥ 390	15	–	–		
350	≥ 350	≥ 420	14	–	–		
390	≥ 390	≥ 450	13	–	–		
420	≥ 420	≥ 480	12	–	–		
450	≥ 450	≥ 510	13	–	–		
BF	TU 14-106-438	–	270–410	26–28	–	–	Transverse
CB		≤ 205	270–380	32–34	–	–	
OCB		≤ 195	270–350	34–36	≥ 1.6	≥ 0.20	
BOCB		≤ 185	270–350	38–40	≥ 2.0	≥ 0.21	
CS Type A	ASTM A 653M	170–380	–	20	–	–	Longitudinal
CS Type B		205–380	–	20	–	–	
CS Type C		170–410	–	15	–	–	
FS Type A, B	–	170–310	–	26	1.0–1.4	0.17–0.21	
SS 230	–	≥ 230	≥ 310	20	–	–	Longitudinal
SS 255	–	≥ 255	≥ 360	18	–	–	
SS 275	–	≥ 275	≥ 380	16	–	–	

For galvanized steel as per GOST 14918, GOST R 52246, and TU 14-106-438, requirements for relative elongation depend on the rolled product thickness. For galvanized steel as per EN 10346 with thickness < 0.7 mm, relative elongation can be reduced by 2%.

Mechanical properties of galvanized steel of CS, FS, DDS and EDDS grades are not rated; the table contains the typical range of mechanical properties as per ASTM A 653/A 653M.

Yield strength of DX52D grade steel is rated only for skin-passed steel (with "B" and "C" surface finish).

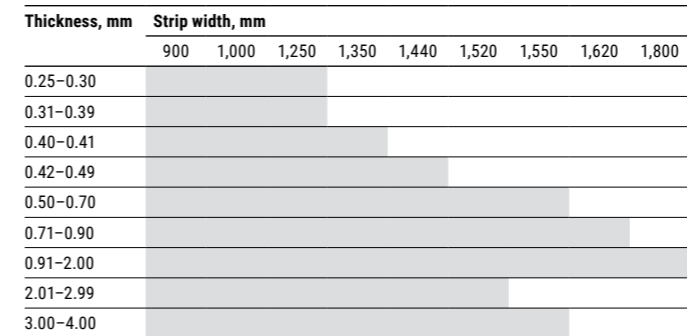
Other specified mechanical properties are available upon request.

APPROXIMATE COMPARISON OF GRADES AND THEIR APPLICATIONS

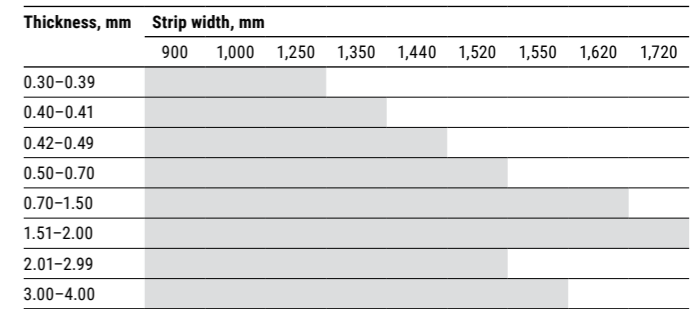
Rolled product application as per GOST 14918	GOST 14918	TU 14-106-438	EN 10346	ASTM A 653M
Production of flat products by bending	01	–	–	–
Production of cooking and household wares by bending and lock-joining	02	–	DX51D	CS (Type A, B, C)
Production of stamped products with special deep drawing quality and complex sections	03	BF	DX52D	FS (Type A, B)
Production of stamped products of complex drawing quality	04	–	DX53D	–
	–	CB	–	–
Production of stamped products of extra-complex drawing quality	05	–	DX54D	–
	–	OCB	–	–
Production of stamped products of special extra-complex drawing quality	06, 07	BOCB	DX56D, DX57D	–
Structural rolled steel for shaped products	220	–	S220GD	SS 230
	250	–	S250GD	SS 255
	280	–	S280GD	SS 275
	320	–	S320GD	–
	350	–	S350GD	–
	420	–	S420GD	–
	450	–	S450GD	–

THICKNESS/WIDTH RATIO FOR ROLLED PRODUCTS

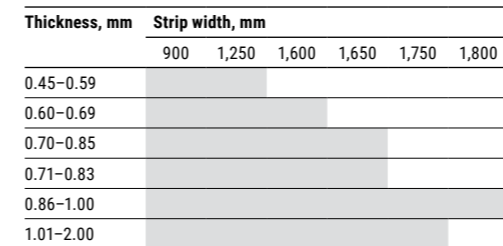
01, 02, DX51D, CS (Type A, B, C)



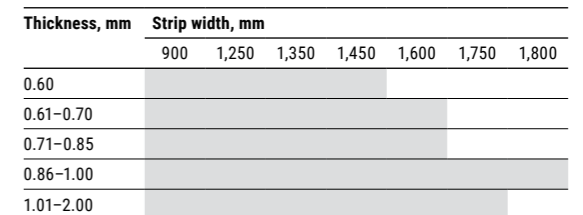
03, DX52D, FS (Type A, B)



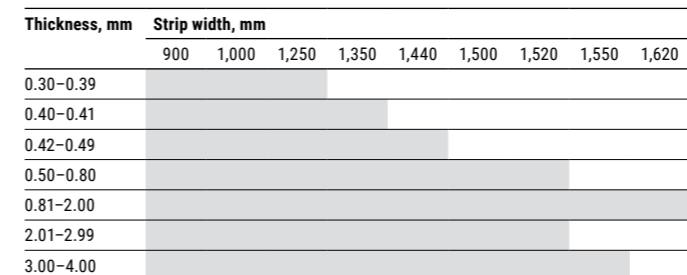
04, 05, DX53D, DX54D, CB, OCB



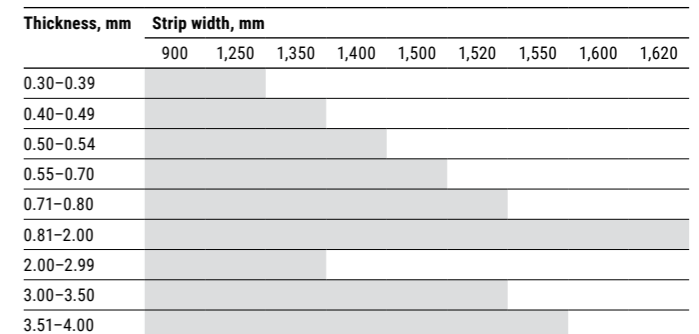
05, 06, 07, DX56D, DX57D, BOCB, BOCB-T



220, S220GD, SS 230



250, S250GD, SS 255



• **280, S280GD, SS 275**

Thickness, mm	Strip width, mm									
	900	1,250	1,320	1,350	1,420	1,470	1,500	1,520	1,600	
0.30-0.41										
0.42-0.54										
0.55-0.80										
0.81-1.50										
1.51-1.80										
1.81-2.00										
2.01-2.44										
2.45-3.00										
3.01-4.00										

• **320, 350, S320GD, S350GD**

Thickness, mm	Strip width, mm									
	900	1,250	1,270	1,300	1,320	1,370	1,505	1,520	1,550	1,600
0.50-0.80										
0.81-0.85										
0.86-0.95										
0.96-1.80										
1.81-2.00										
2.01-2.49										
2.50-2.99										
3.00										
3.01-3.50										
3.51-4.00										

• **390, S390GD**

Thickness, mm	Strip width, mm									
	900	1,250	1,300	1,320	1,370	1,400	1,520	1,550	1,600	
0.80-2.00										
2.01-2.49										
2.50-2.99										
3.00										
3.01-3.51										
3.51-4.00										

• **420, 450, S420GD, S450GD**

Thickness, mm	Strip width, mm									
	900	1,078	1,265	1,320	1,370	1,400	1,520	1,550	1,600	
1.50-1.79										
1.80-2.29										
2.30-2.99										
3.00-4.00										

LOW-ALLOYED STEELS WITH HIGH YIELD STRENGTH FOR COLD WORKING

MECHANICAL PROPERTIES

Rolled product grades	Standard	Yield strength, MPa (N/mm ²)	Ultimate strength, MPa (N/mm ²)	Relative elongation, R %, min.	n	Sampling direction with respect to rolling direction
HX180YD	EN 10346	180-240	330-390	34	≥ 1.7	≥ 0.18
HX220YD		220-280	340-420	32	≥ 1.5	≥ 0.17
HX260YD		260-320	380-440	30	≥ 1.4	≥ 0.16
HX300YD		300-380	380-480	27	-	-
HX260LAD		260-330	350-430	26	-	-
HX300LAD		300-380	380-480	23	-	-
HX340LAD		340-420	410-510	21	-	-
HX380LAD		380-480	440-560	19	-	-
HX420LAD		420-520	470-590	17	-	-

THICKNESS/WIDTH RATIO FOR ROLLED PRODUCTS

• **HX180YD**

Steel thickness before galvanizing, mm	Strip width, mm					
	900	1,420	1,550	1,570	1,640	1,750
0.49-0.57						
0.58-0.64						
0.65-0.77						
0.78-1.17						
1.18-1.59						

• **HX260YD**

Steel thickness before galvanizing, mm	Strip width, mm				
	900	1,370	1,490	1,620	1,750
0.58					
0.59-0.80					
0.81-1.50					
1.51-2.00					

• **HX260LAD**

Steel thickness before galvanizing, mm	Strip width, mm				
	900	1,390	1,520	1,570	1,660
0.58-0.80					
0.81-1.50					
1.51-1.90					
1.91-2.00					

• **HX340LAD**

Steel thickness before galvanizing, mm	Strip width, mm			
	900	1,320	1,420	1,510
0.68-0.89				
0.90-0.97				
0.98-1.50				

• **HX380LAD**

Steel thickness before galvanizing, mm	Strip width, mm				
	900	1,270	1,320	1,420	1,560
0.68-0.69					
0.70-0.89					
0.90-0.97					
0.98-1.50					

• **HX420LAD**

Steel thickness before galvanizing, mm	Strip width, mm		
	900	1,270	1,300
0.68-0.98			
0.99-1.50			

• **HX220YD**

Steel thickness before galvanizing, mm	Strip width, mm				
	900	1,370	1,520	1,560	1,620
0.58-0.62					
0.63-0.67					
0.68-1.27					
1.28-1.50					

• **HX300YD**

Steel thickness before galvanizing, mm	Strip width, mm			
	900	1,270	1,470	1,520
0.58-0.62				
0.63-0.96				
0.97-1.50				

• **HX300LAD**

Steel thickness before galvanizing, mm	Strip width, mm					
	900	1,320	1,455	1,460	1,580	1,600
0.58-0.67						
0.68-0.89						
0.90-1.47						
1.48-1.50						

PACKING CHARTS

Chart No. 05-1

No.	Description
1.2	Polyester packing strap
1.3	Steel baling strap
2	Strapping seal
5	Multilayer anticorrosive material
10.3	Protective sheet
13	Protective steel angle
15	Protective angle for pack corners
16	Standard timber pallet
16.4*	Double pallet for forklift
19	Label (shipping)

* Not visualized.

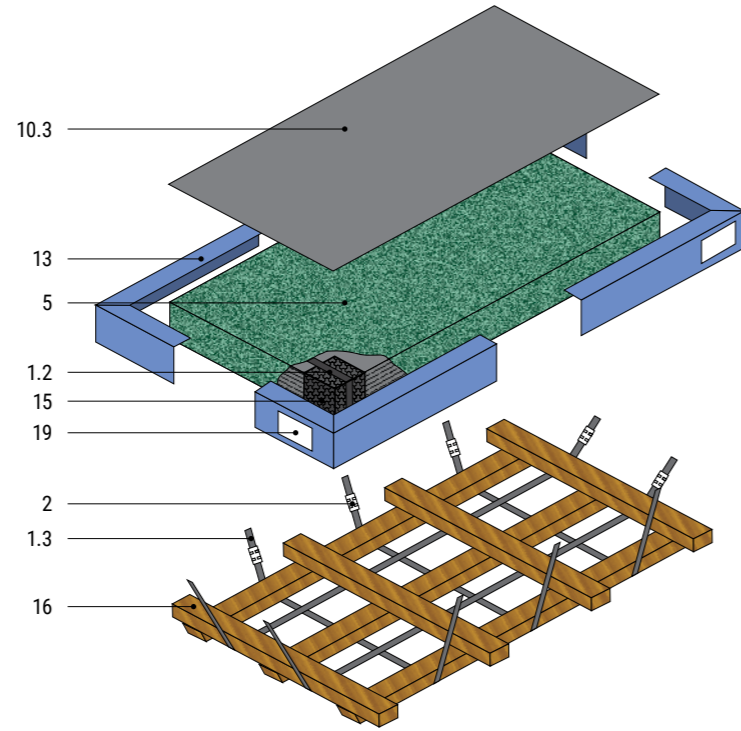


Chart No. 10, No. 10-1

No.	Description
1	Polyester packing strap
1.4	Steel baling strap
3	Adhesive tape 50 mm
5	Multilayer anticorrosive material
6	Polyethylene film
7	Protective cardboard angle
8	Plastic insert
8.1	Plastic shell
9*	Cardboard sleeve
10	External packing sheet
10.1	Internal packing sheet
11	End cover
12	External corrugated angle
12.1	Internal corrugated angle
19	Label (shipping)

* For Packing Chart No. 10-1.

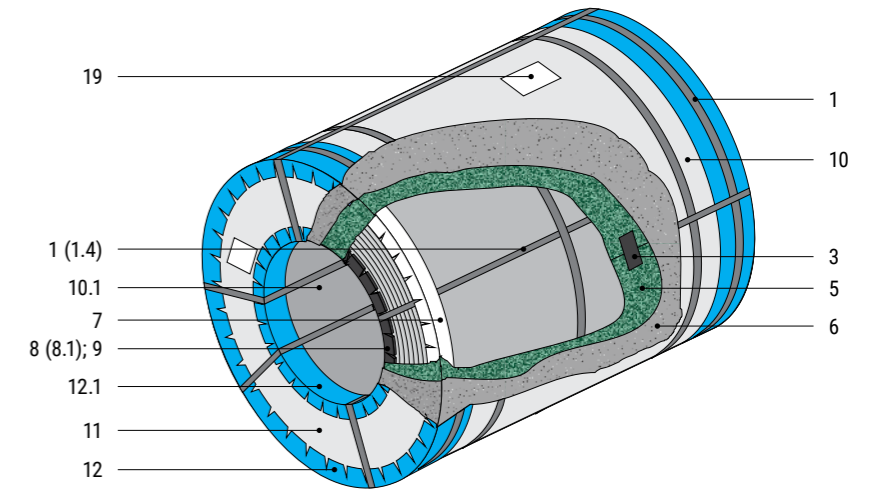


Chart No. 07

No.	Description
1.1	Steel baling strap
1.2	Polyester packing strap
2	Steel strapping seal
3	Adhesive tape 50 mm
5	Multilayer anticorrosive material
6	Polyethylene film
10.3	Protective steel sheet
13	Protective steel angle
16.1	International timber pallet
16.4*	Double pallet for forklift
19	Label (shipping)

* Not visualized.

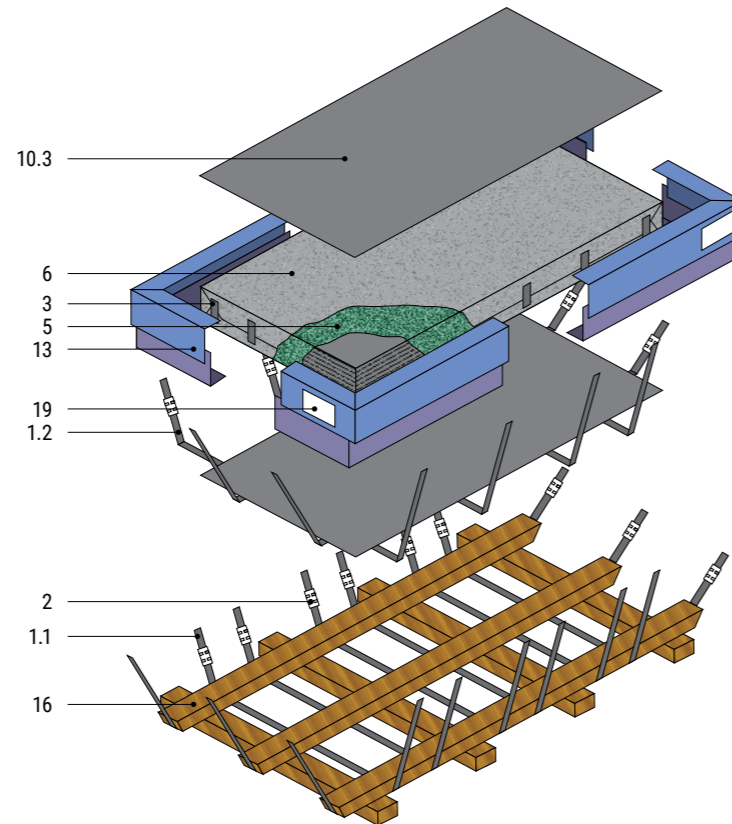


Chart No. 11, No. 11-1

No.	Description
1	Polyester packing strap
1.4	Steel baling strap
3	Adhesive tape 50 mm
3.1	Adhesive tape 100 mm
5	Multilayer anticorrosive material
6	Polyethylene film
7	Protective angle 60 x 60 mm
7.1*	Protective angle 120 x 80 mm
8	Plastic insert
8.1	Plastic shell
9**	Cardboard sleeve
10	External packing sheet
10.1	Internal packing sheet
10.5	Protective sheet for strap bundles
11	End cover
12	External corrugated angle
12.1	Internal corrugated angle
19	Label (shipping)

* To be installed if steel end covers are used.

** For Packing Chart No. 11-1.

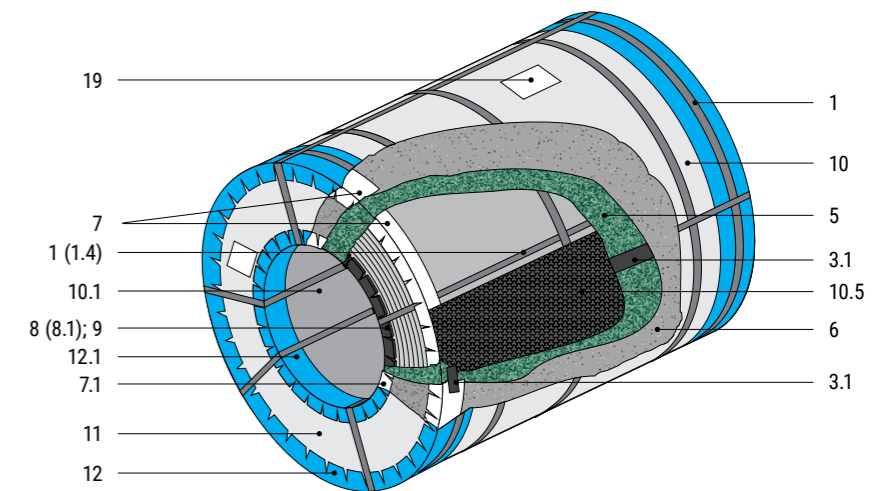
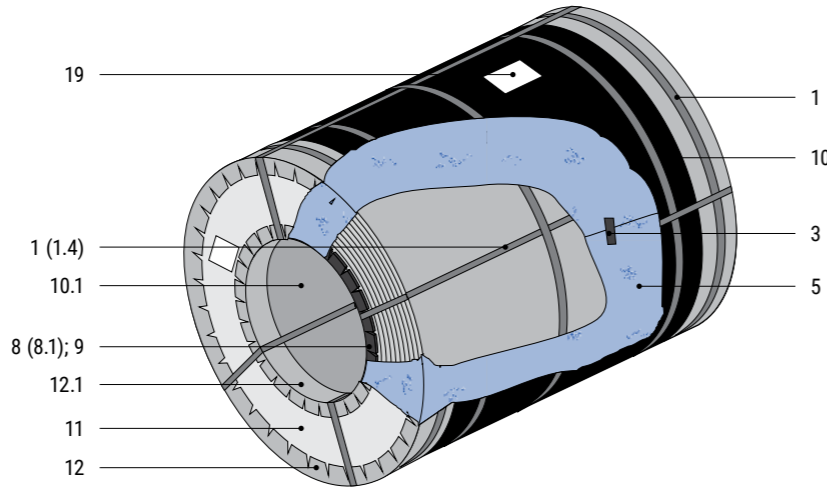


Chart No. 11K, No.11-1K

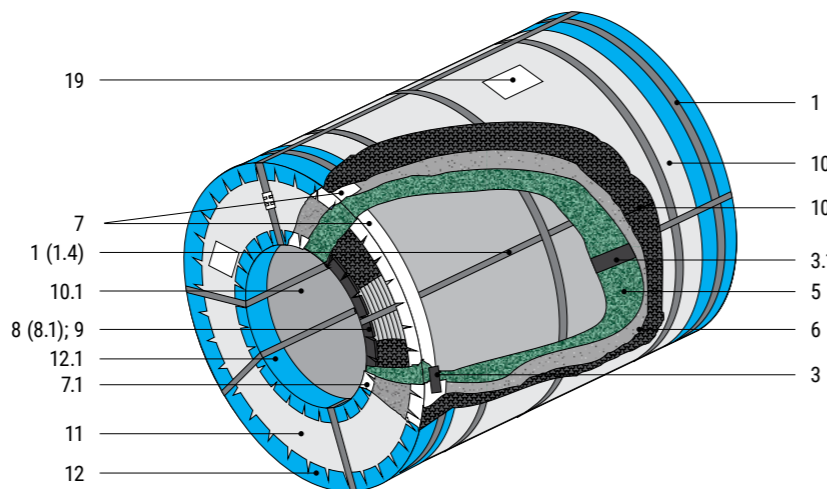
No.	Description
1	Polyester packing strap
1.4	Steel baling strap
3	Adhesive tape 50 mm
5	Multilayer anticorrosive material
8	Plastic insert
8.1	Plastic shell
9*	Cardboard sleeve
10	External packing sheet
10.1	Internal packing sheet
11	End cover
12	External corrugated angle
12.1	Internal corrugated angle
19	Label (shipping)



* For Packing Chart No. 11-1K.

Chart No. 12, No. 12-1

No.	Description
1	Polyester packing strap
1.4	Steel baling strap
3	Adhesive tape 50 mm
3.1	Adhesive tape 100 mm
5	Multilayer anticorrosive material
6	Polyethylene film
7	Protective angle 60 x 60 mm
7.1	Protective angle 120 x 80 mm
8	Plastic insert
9*	Cardboard sleeve
10	External packing sheet
10.1	Internal packing sheet
11	End cover
12	External corrugated angle
12.1	Internal corrugated angle
19	Label (shipping)

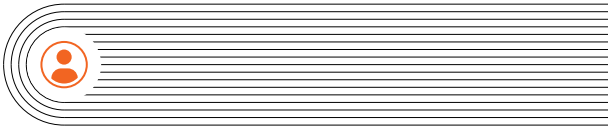


* For Packing Chart No. 12-1.

CERTIFICATION OF NLMK GROUP'S MANAGEMENT SYSTEM

Certification authority	International standard	System's name
TÜV AUSTRIA CERT GMBH	ISO 9001:2015	Quality Management System
TÜV AUSTRIA CERT GMBH	ISO 14001:2015	Environment Quality Management System
TÜV AUSTRIA CERT GMBH	ISO 45001:2018	Labour Protection & Industrial Safety Management System
TÜV AUSTRIA CERT GMBH	ISO 50001:2018	Energy Management System
Bureau Veritas Certification Holding	IATF 16949 (NLMK PSJC)	Automotive Quality Management System





CONTACT US

Integrated Sales Call Center

+7 800 551 62 16

sales@nlmk.com

NLMK Trading House

+7 495 787 00 86

nlmk.shop

store@nlmk.com

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