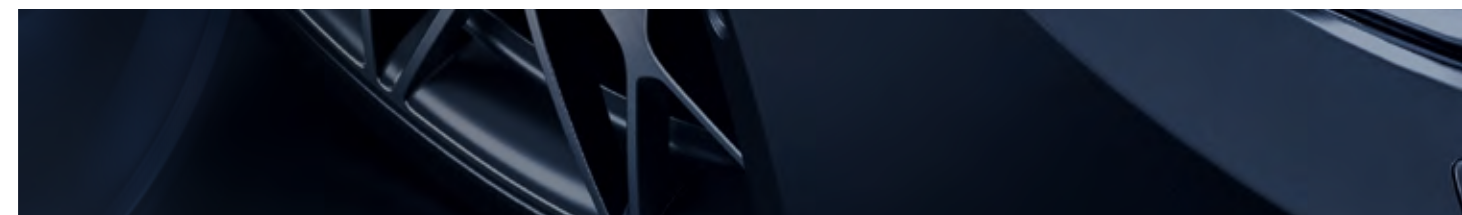
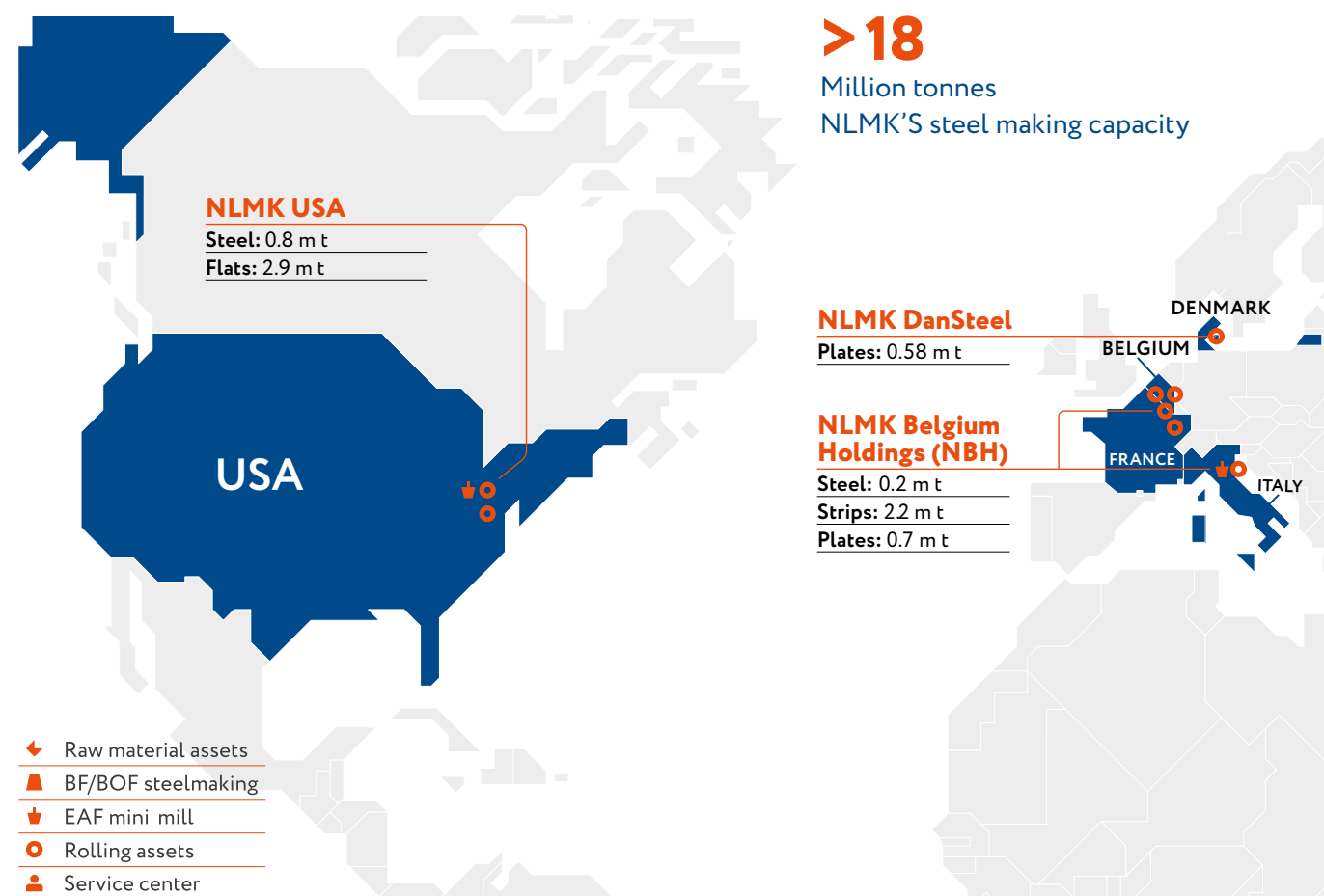




STEELS FOR AUTOMOTIVE



## AT A GLANCE



## NLMK Europe

The European branch of the NLMK includes all the steel businesses of the NLMK Group in Europe, bringing together production sites with a long history and extensive experience in producing flat steel. In addition, NLMK Europe has an extensive network focusing on transforming and distributing steel products to end users.

NLMK Europe employs almost 2.000 people and is made up of two business units: NLMK Europe-Strip Products producing coils, slit strips and sheets (Belgium and France), and NLMK Europe-Plate specialized in heavy plates and ingots (Belgium, Denmark and Italy).

Key end users include the automotive, general industry, ship-building, construction and energy-producing companies, as well as offshore windmill manufacturers.

## NLMK Europe Strip Products

NLMK Europe Strip manufactures coated and uncoated steels. Its production capacity is 2.2 million tonnes of hot-rolled steel, 1.2 million tonnes of pickled and oiled steel and 0.4 million tonnes of galvanized steel per year.

NLMK Europe Strip's facilities located in La Louvière (Belgium) and Strasbourg (France) offer hot-rolled, galvanized and organic coated steels for automotive, construction, general industry, tubes and distribution segments.

NLMK Steel Center located in Manage (Belgium) provides a range of transformation services for Strip business of NLMK Europe. It focuses on slitting (slit coil) and cutting (sheets) hot-rolled and galvanized steels for automotive, general industry and distribution segments.

## NLMK GROUP

## STRENGTHS

### A strong shareholder

NLMK Group is the biggest Russian steel company. NLMK is vertically integrated and oversees the complete value chain, from the mining of raw materials to the delivery of products to consumers. In addition, the NLMK Group supports us in our numerous investments and in our ongoing development.

### Integrated supply chain

Our integrated supply-chain allows the continuous support that our customers seek. Our lean and flexible organization has made us a preferred partner in the segments we target.

### High quality slabs

They are produced directly in the steel shops of Lipetsk with the latest technology. Their quality consistency and clean-liness give us a competitive advantage for supplying finished products meeting the highest standards.

### Close to you

We are able to deliver our products to you very quickly, no matter where you are. Moreover, our different teams, made up of talented and skilled professionals, provide tailored solutions that help your business to grow.



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## HOT ROLLED STEELS

Hot rolled steels can be supplied with a surface finish as hot rolled or pickled. When required, a preservative oil can be applied on pickled steel according to several oil weight ranges between 0.5 and 2.5 g/m<sup>2</sup> per side.

The following edge finish are available\*:

- Mill edges for non-pickled or pickled (-and oiled) conditions,
- Trimmed edges for pickled (-and oiled) conditions.

\* For any further information, please contact our Sales Department.

### 1 Mild steels for cold forming and drawing

Low strength hot rolled steels have excellent ductility (elongation) enabling cold forming as bending, rolling, drawing, deep-drawing or even extra-deep-drawing.

### 2 High strength Low alloy steels

High strength, low alloy steels are characterised by low carbon and alloy element contents, which give them excellent functional properties such as suitability for cold forming, welding and coating.

### 3 Dual Phase steels

Dual Phase steels are made of martensitic (hard) phase improving resistance and ferritic (soft) phase enabling formability.

### 4 High resistant steels for cold forming

This steel grade completes the range of HSLA steels, offering steels with high tensile strength combined with an excellent forming and punching ability.



# 1 Mild Steels For Cold Forming And Drawing

Low strength hot rolled steels have excellent ductility (elongation) enabling cold forming as bending, rolling, drawing, deep-drawing or even extra-deep-drawing.

Mild steels are used extensively in the Automotive Industry with parts such as:

- Transmission pulleys
- Collars, joints and fasteners
- Deep drawn tanks, machine casings, oil sumps



## Quality Standard

Mild steels are in compliance with EN 10111 and VDA 239-100

EN 10111	Equivalent VDA 239-100 Grade
DD11	HRO
DD12	-
DD13	-
DD14	HR2

## Mechanical properties

Grades	Yield Strength (MPa) min-max		Tensile Strength (MPa) min-max	Elongation L <sub>0</sub> = 80 mm 1.0 t 15			% min L <sub>0</sub> = 5.65√S <sub>0</sub>
	1 ≤ t < 2 mm	2 ≤ t ≤ 11mm		1 ≤ t < 1.5mm	1.5 ≤ t < 2mm	2 ≤ t < 3mm	
DD11	170-360	170-340	≤440	22	23	24	28
DD12	170-340	170-320	≤420	24	25	26	30
DD13	170-330	170-310	≤400	27	28	29	33
DD14	170-310	170-290	≤380	30	31	32	36

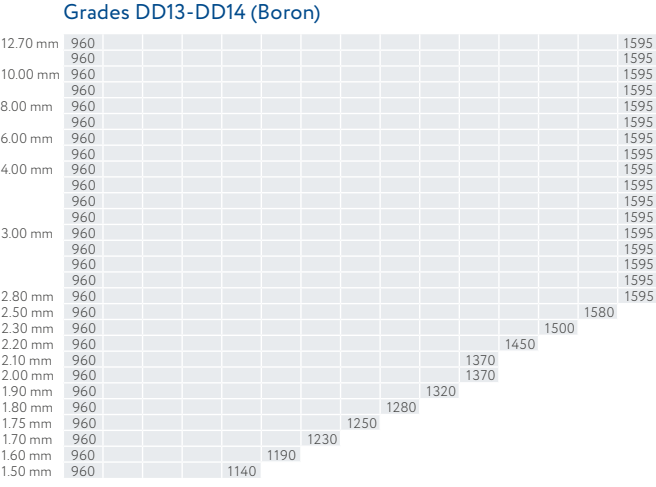
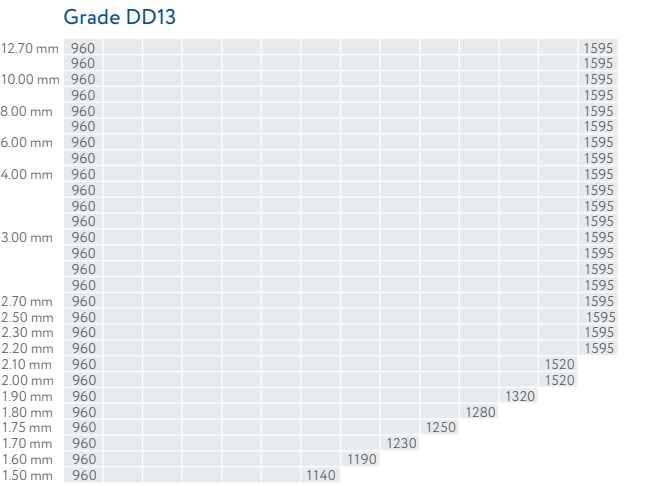
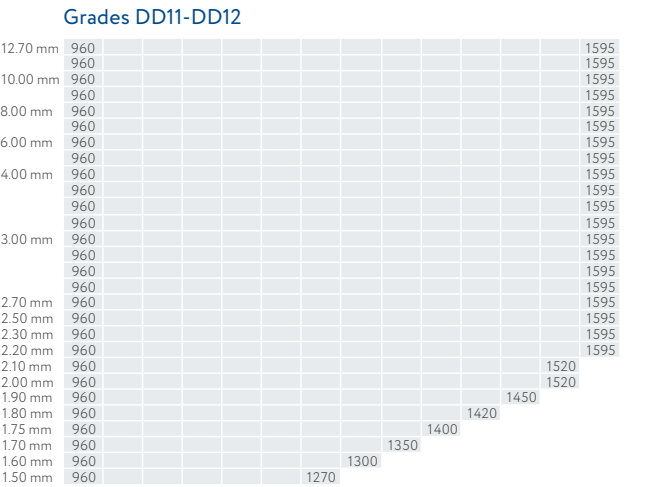
## Chemical composition

Grades	C% max	Mn% max	P% max	S% max
DD11	0.12	0.60	0.045	0.045
DD12	0.10	0.45	0.035	0.035
DD13	0.08	0.40	0.030	0.030
DD14	0.08	0.35	0.025	0.025



# Rolling program

## A. Range of specifications



Standard range

## B. Thickness tolerances

In compliance with European Standard EN 10051

(for 1/2 or 3/4 EN, please contact our Technical or Sales Departments)

## Steel processing

### A. Cutting

Unless otherwise mentioned, Hot rolled steel grades can all be processed by cutting (mechanical, laser, plasma, HD plasma); because of high risk that flame-cutting destroys the mechanical properties alongside the steel sheet, this process might be unused.

### B. Weldability

Unless otherwise mentioned, low carbon steels are in compliance with usual welding processes.

### C. Forming

Unless otherwise mentioned, NLMK hot rolled steels have due forming ability, as for drawing, bending and rolling.

## Delivery

	HR Black	HR Pickled
T/coils	25 t max	
Kg/mm	18 kg max	
Outside diameter	1900 mm max	
Inside diameter	762 (-30) mm	610 mm
Axis	Horizontal	
Strapping	Radial & circumferential	
Label	1 inside / 1 outside	
Packaging	Nothing	To be defined
Protection	-	Anticorrosion oil
Certificate	In compliance with standard EN 10204	

## 2 High Strength Low Alloy Steels

High strength, low alloy steels are characterised by low carbon and alloy element contents, which give them excellent functional properties such as suitability for cold forming, welding and coating.

HSLA steels are extensively used for manufacturing structural parts, in a variety of sectors as:

- **Automotive:** pressed chassis and reinforcement parts, seats
- **Industrial vehicles:** trailers and skips as chassis components



### Quality Standard

In compliance with the European Standard EN 10149-2 and VDA 239-100

EN 10149-2	Equivalent VDA 239-100 Grade
S315MC	HR300LA
S355MC	HR340LA
S420MC	HR420LA
S460MC	HR460LA
S500MC	HR500LA
S550MC	HR550LA
S600MC	-

### Mechanical properties

Grades	Yield Strength (MPa) min	Tensile Strength (MPa) min-max	Elongation L <sub>o</sub> =80 mm t<3.00 mm	L <sub>o</sub> =5.65√S <sub>o</sub> (%) t≥3.00 mm	Min Bending Radius
S315MC	315	390-510	≥20	≥24	0.0 x ep
S355MC	355	430-550	≥19	≥23	0.5 x ep
S420MC	420	480-620	≥16	≥19	0.5 x ep
S460MC	460	520-670	≥14	≥17	1.0 x ep
S500MC	500	550-700	≥12	≥14	1.0 x ep
S550MC	550	600-760	≥12	≥14	1.5 x ep
S600MC	600	650-820	≥11	≥13	1.5 x ep

Mechanical properties of samples in the rolling direction

### Chemical composition

Grades	C% max	Mn% max	Si% max	P% max	S% max	Nb% max	Ti% max	V% max	Mo% max	B% max
S315MC	0.12	1.30	0.50	0.025	0.020	0.090	0.15	0.20		
S355MC	0.12	1.50	0.50	0.025	0.020	0.090	0.15	0.20		
S420MC	0.12	1.60	0.50	0.025	0.015	0.090	0.15	0.20		
S460MC	0.12	1.60	0.50	0.025	0.015	0.090	0.15	0.20		
S500MC	0.12	1.70	0.50	0.025	0.015	0.090	0.15	0.20		
S550MC	0.12	1.80	0.50	0.025	0.015	0.090	0.15	0.20		
S600MC	0.12	1.90	0.50	0.025	0.015	0.090	0.22	0.20	0.50	0.005

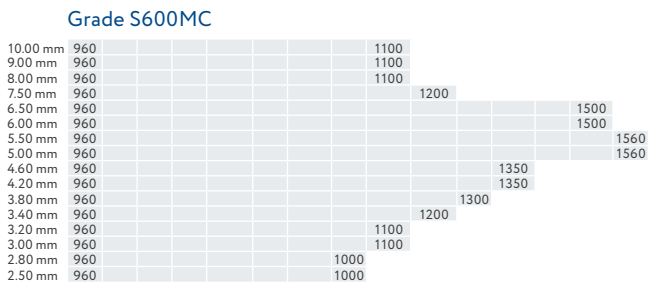
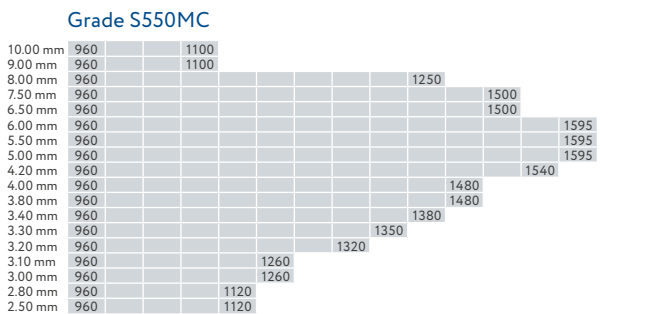
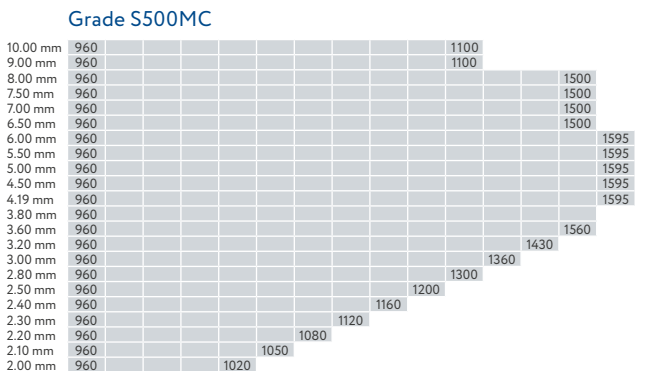
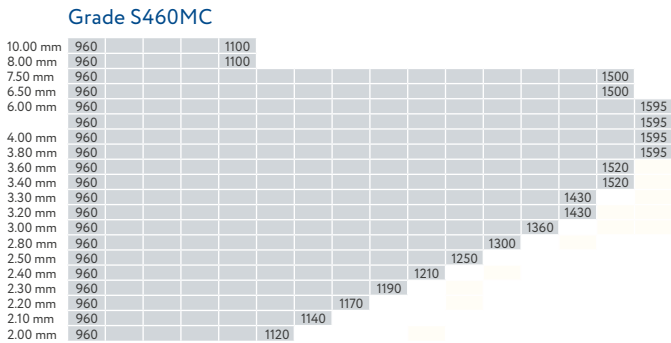
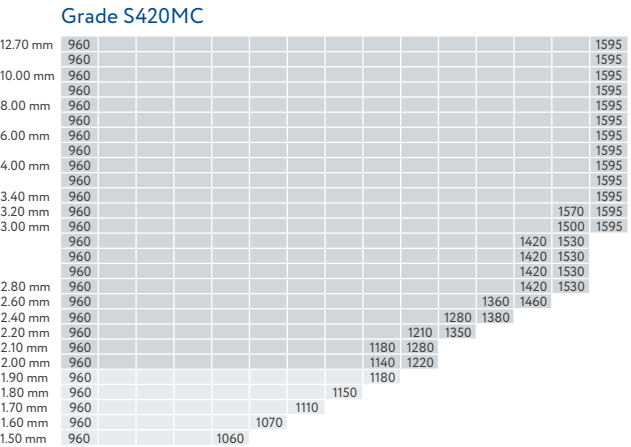
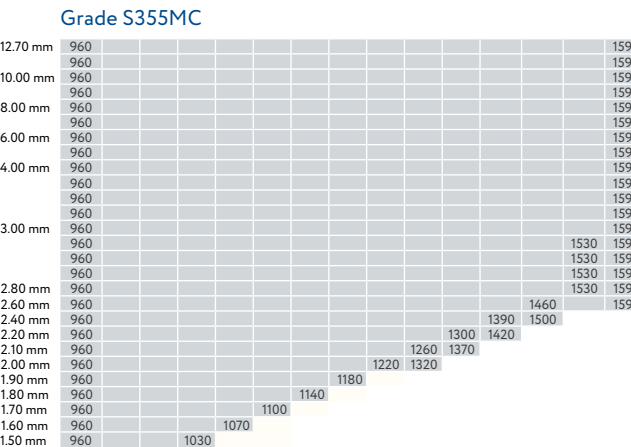
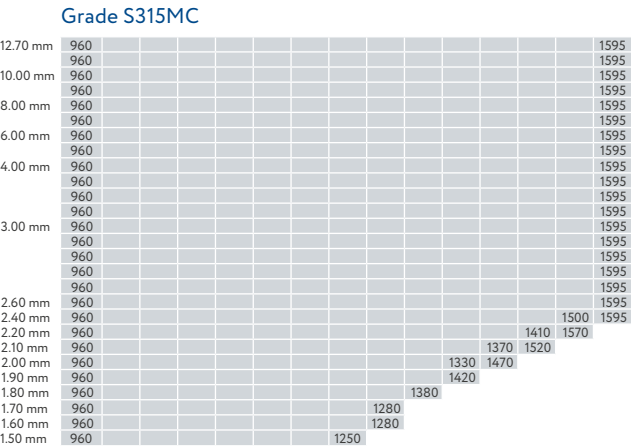
Specific requirements:

- Suitability for galvanising: Low Silicon.
- Impact strength: at-20°C/-40°C.

## Rolling program

### A. Range of specifications

The characteristics of hot strip mill enable the production of high strength quality products covering a broad range of dimensions.



Standard range  
Extended range subject to mill approval

Please contact our technical or sales teams for any questions or further information.



B. Thickness tolerances

In compliance with European Standard EN 10051  
  
(for 1/2 or 3/4 EN - Please contact our technical or sales teams for any questions or further information)

Steel processing

A. Cutting

Unless otherwise mentioned, Hot rolled steel grades can all be processed by cutting (mechanical, laser, plasma, HD plasma); because of high risk that flame-cutting destroys the mechanical properties alongside the steel sheet, this process might be unused.

B. Weldability

Unless otherwise mentioned, low carbon steels are in compliance with usual welding processes.

C. Forming

Unless otherwise mentioned, NLMK hot rolled steels have due forming ability, as for drawing, bending and rolling.

Naming - According to other standards

Corresponding specification		Former corresponding specification			
Grades	Steel Number	EU 149 part 2	SEW 092°	GB BS1449	US SAEJ1392
S315MC	1.0972		QStE300TM	43F35	Gr 45
S355MC	1.0976	FeE355-TM	QStE360TM	46F40	Gr 50
S420MC	1.0980	FeE420-TM	QStE420TM	50F45	Gr 60
S460MC	1.0982		QStE460TM		Gr 65
S500MC	1.0984		QStE500TM		Gr 70
S550MC	1.0986	FeE560-TM	QStE550TM	60F55	Gr 80
S600MC	1.8969		QStE600TM		

° The strength values of these grades of steel are tested on transverse samples.

Delivery

	HR Black	HR Pickled & Oiled
T/coils	25 t max	
Kg/mm	18 kg max	
Outside diameter	1900 mm max	
Inside diameter	762 (-/30) mm	610 mm
Axis	Horizontal	
Strapping	Radial & circumferential	
Label	1 inside / 1 outside	
Packaging	Nothing	To be defined
Protection	-	Anticorrosion oil
Certificate	In compliance with standard EN 10204	





### 3 DP Steels Dual Phase

Dual Phase steels are made of martensitic (hard) phase improving resistance and ferritic (soft) phase enabling formability. The very best compromise between resistance and drawability.

- Strongly fatigue resistant
- Superiorly performant to impact test
- Enhancing weight-reduction combined with higher tensile strength

### Quality Standard

In compliance with the European Standard EN 10338 and VDA 239-100

EN 10338	Equivalent VDA 239-100 Grade
HDT580X	HR330Y580T-DP

### Mechanical properties

Norm	Grade	Yield Strength (MPa)	Tensile Strength (MPa)	Elongation		$n_{4-6}$	$n_{10-20/Ag}$	$BH_2$ (MPa)
				A80 <sup>1</sup> mm (%)	A5 mm (%) $t \geq 3$ mm			
VDA 239-100	HR330Y580T-DP-UC	330-450	580-680	$\geq 19$	$\geq 23$	$\geq 0.16$	$\geq 0.13$	$\geq 30$

Norm	Grade	Yield Strength (MPa)	Tensile Strength (MPa)	Elongation		$n_{10-UE}$
				A80 <sup>1</sup> mm (%)	A5 mm (%) $t \geq 3$ mm	
EN 10338	HDT580X	330-450	$\geq 580$	$\geq 19$	$\geq 23$	$\geq 0.13$

<sup>1</sup> Testing in longitudinal direction

### Chemical composition

The typical chemical analysis consists of low carbon content alloyed with significant Manganese & Chromium percentages

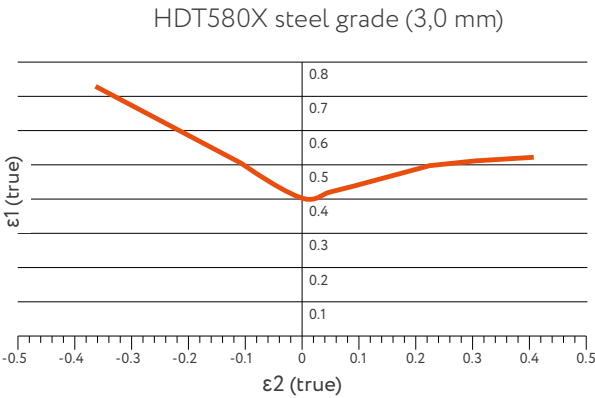
Norm	Grade	C% max	Si% max	Mn% max	P% max	S% max	Al <sub>total</sub>	Cr%+Mo% max	Nb%+Ti% max	B% max	Cu% max
VDA 239-100	HR330Y580T-DP-UC	0.14	1.00	2.20	0.060	0.010	0.015-0.100	1.40	0.15	0.005	0.20

Norm	Grade	C% max	Si% max	Mn% max	P% max	S% max	Al <sub>total</sub>	Cr%+Mo% max	Nb%+Ti% max	V% max	B% max
EN10338	HDT580X	0.14	1.00	2.20	0.085	0.015	0.015-0.100	1.40	0.15	0.20	0.005

### Use

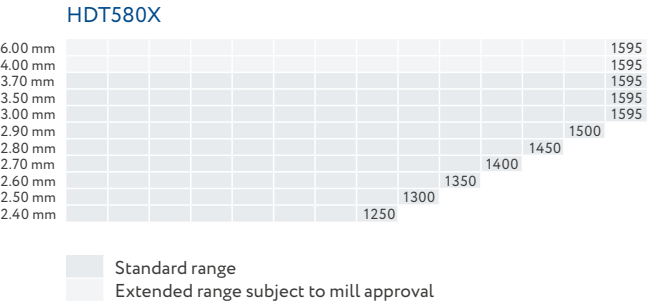
Bake Hardening Effect: after temperature raise (up to 170°) and 20-minutes time organic coating process, the DP steels resistance is further increased.

The DP steels are designed for cold forming, **especially drawing safety and re-enforcing parts** in Automotive industry.



### Rolling program

#### A. Range of specifications



#### B. Thickness tolerances

In compliance with European Standard EN 10051

(for 1/2 or 3/4 EN - Please contact our technical or sales teams for anyquestions or further information)



### Steel processing

#### A. Cutting

Unless otherwise mentioned, Hot rolled steel grades can all be processed by cutting (mechanical, laser, plasma, HD plasma); because of high risk that flame-cutting destroys the mechanical properties alongside the steel sheet, this process might be unused.

#### B. Weldability

Unless otherwise mentioned, low carbon steels are in compliance with usual welding processes.

#### C. Forming

Unless otherwise mentioned, NLMK hot rolled steels have due forming ability, as for drawing, bending and rolling.

### Coating ability

The steel can be subject to the deposit of a metallic coating by immersion or electro-deposition and/ or an organic coating or other. When a coating is planned, it has to be specified at the order request.

### Delivery

	HR Black	HR Pickled
T/coils	25 t max	
Kg/mm	18 kg max	
Outside diameter	1900 mm max	
Inside diameter	762 (-30) mm	610 mm
Axis	Horizontal	
Strapping	Radial & circumferential	
Label	1 inside / 1 outside	
Packaging	Nothing	To be defined
Protection	-	Anticorrosion oil
Certificate	In compliance with standard EN 10204	

# 4 High Resistant Steels For Cold Forming

This steel grade completes the range of HSLA steels, offering steels with high tensile strength combined with an excellent forming and punching ability. The very best compromise between high resistance and weightreducing needs.

- Guaranteed tensile strength from 440 to 560 MPa
  - Outstandingly improved ductility
  - Improved fatigue resistance
- Naming:
- HR45 (HR330Y450T - FB/HDT450F)
  - HR60 (HR440Y580T - FB/HDT580F)

## Use

These steels are specifically intended for cold forming. The main applications are in the automotive industry for critical safety parts in relatively complex shapes:

- structural parts: body parts, brackets, reinforcements, mechanical parts,
- safety parts: pillars, rails, beams, chassis parts, bumpers,
- wheels and drive shafts,
- mechanical parts: suspension components, gearboxes.



## Quality Standard

In compliance with VDA 239-100

EN 10338	Equivalent VDA 239-100 Grade
HDT450F	HR300Y450T-FB
HDT580F	HR440Y580T-FB

## Mechanical properties

Driven by the constructor’s specifications, the Worldwide standard properties can be summarized as follows.

VDA239 - 100

Grades	Yield Strength	Tensile Strength	Elongation				BH <sub>2</sub> MPa
	R <sub>p0.2</sub> MPa	R <sub>m</sub> MPa	A %	Type 1 A <sub>50mm</sub> %	Type 2 A <sub>80mm</sub> %	Type 3 A <sub>50mm</sub> %	
HR330Y450T-FB	300 - 400	450 - 550	≥ 27	≥ 25	≥ 24	≥ 26	≥ 30
HR440Y580T-FB	440 - 560	580 - 700	≥ 17	≥ 16	≥ 15	≥ 16	≥ 30

EN10338

Grades		Proof Strength	Tensile Strength	Elongation		Strain hardening exponent
		R <sub>p0.2</sub>	R <sub>m</sub>	R <sub>80</sub>	R <sub>5</sub> Thickness ≥3 mm	
Steel name	Steel number	MPa <sup>a</sup>	MPa <sup>a</sup> min.	% min.	% min.	min.
Ferritic-bainitic steel (F)						
HDT450 F	1.0961	300 - 420	450	24	27	
HDT580 F	1.0994	460 - 620	580	25	17	

## Chemical composition

The chemical composition of HR 45 (FB) and HR 60 (FB) all comply with the following limits.

Chemical Composition of Hot Rolled Ferritic Bainitic Steels

Grades	C %	Si %	Mn %	P %	S %	Al %	Ti +Nb%	Cr +Mo%	B %	Cu %
HR330Y450T-FB-UC	≤ 0,18	≤ 0,50	≤ 2,00	≤ 0,050	≤ 0,010	0,015 - 2,0	≤ 0,15	≤ 1,00	≤ 0,005	≤ 0,20
HR440Y580T-FB-UC	≤ 0,18	≤ 0,50	≤ 2,00	≤ 0,050	≤ 0,010	0,015 - 2,0	≤ 0,15	≤ 1,00	≤ 0,010	≤ 0,20

Steel Grade		% in mass									
Steel name	Steel number	C max	Si max	Mn max	P max	S max	Al	Cr+Mo max	Nb+Ti max	V max	B max
Ferritic-bainitic steels (F)											
HDT450F	1.0961	0,18	0,50	2,00	0,050	0,010	0,015 - 2,0	1,00	0,15	0,15	0,005
HDT580F	1.0994	0,18	0,50	2,00	0,050	0,010	0,015 - 2,0	1,00	0,15	0,15	0,010

## Coating

Depending on tensile strength combined with range of specifications, NLMK Strasbourg optionally provides hot rolled metallic coated steels up to 3,00 mm thickness.

This option is particularly suitable for automotive parts as well as building structures in corrosive atmosphere.

According to customer’s choice or constraint, metallic coatings will be:

- Double side
- Hot dipped galvanized: from 40 up to 70 g/m<sup>2</sup>/Side

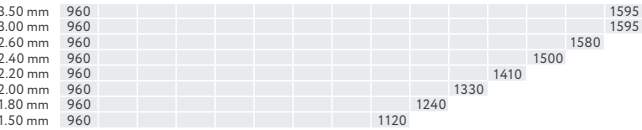
Notice: rolling program and delivery terms, as per §5 + §6 here-under mentioned, do not apply to metallic coated products (on this subject, revert to NLMK Strasbourg Galvanized data sheets).

## Rolling program

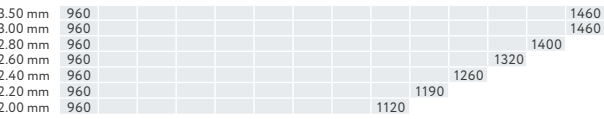
### A. Range of specifications

The characteristics of hot strip mill enable the production of high strength quality products covering a broad range of dimensions.

Grades HDT450F (EN10338)  
HR300Y450T-FB (VDA239-100)



Grades HDT580F (EN10338)  
HR440Y580T-FB (VDA239-100)



Standard range

### B. Thickness tolerances

In compliance with European Standard EN 10051

(for 1/2 or 3/4 EN - Please contact our technical or sales teams for any questions or further information)



# Delivery

	HR Black	HR Pickled
T/coils	25 t max	
Kg/mm	18 kg max	
Outside diameter	1900 mm max	
Inside diameter	762 (-/30) mm	610 mm
Axis	Horizontal	
Strapping	Radial & circumferential	
Label	1 inside / 1 outside	
Packaging	Nothing	To be defined
Protection	-	Anticorrosion oil
Certificate	In compliance with standard EN 10204	

## Steel processing

### A. Cutting

Unless otherwise mentioned, Hot rolled steel grades can all be processed by cutting (mechanical, laser, plasma, HD plasma); because of high risk that flame-cutting destroys the mechanical properties alongside the steel sheet, this process might be unused.

### B. Weldability

Unless otherwise mentioned, low carbon steels are in compliance with usual welding processes.

### C. Forming

Unless otherwise mentioned, NLMK hot rolled steels have due forming ability, as for drawing, bending and rolling.





## PRODUCT RANGE

### HOT DIP GALVANIZED STEELS

Hot rolled or cold rolled coils are annealed and coated in a 450°-melting bath of Zinc or Zinc-alloy in a continuous process. Zinc coating protects steel from corrosion. NLMK Strasbourg supplies a wide variety of Hot Dip Galvanized steels, especially designed for cold-forming, such as drawing, bending and profiling: Dual Phase (DP), Micro-alloyed (LA), Structural and Non-alloy mild steels. Galvanized steels, traditionally used for industrial applications, are nowadays extensively used in the Automotive sector.



# 1 Hot Dip Galvanized Steels

Hot rolled or cold rolled coils are annealed and coated in a 450°-melting bath of Zinc or Zinc-alloy in a continuous process. Zinc coating protects steel from corrosion.

**Cathodic protection:** spontaneous Zinc electro-chemical reaction generating a Max 3 mm wide or Max 3 mm thick corrosion-protective barrier relatively above surface scratches or along steelsheet edges.



## Use

Galvanized steels are traditionally used for industrial applications and automotive sector.

Steel Family	Grades	Applications	Properties
Dual Phase Steels (DP)	DP500/HCT490X-Z DP600/HCT590X-Z	White box, tunnels, ABC, anti-intrusion bars, beams, structural components	Energy absorption for structural components Strengthening of load-bearing elements
Cold Rolled High Strength Low Alloy Steels	HX260 LAD HX 300 LAD HX 340 LAD HX 380 LAD	Box reinforcement, structural elements, beams	Weight reduction, fatigue and impact resistance
Cold Rolled High Strength IF Steels	HX220YD HX260YD	Components requiring deep drawing, radiators, filters, casings	Suitable for cold forming according to the degree of the component to be produced including hydroforming
Mild and IF Steels	DX52D to DX57D		

## Quality Standard

Substrate steel grades and dimensions rolling programme are in compliance with the corresponding standards (revert to NLMK La Louviere or Strasbourg data sheets).

Galvanized steels are in compliance with European Standard EN 10346, VD239-100 or eventually automotive manufacturer’s specifications and their dimensional and shape tolerances with European Standard EN 10143.

See below the table of equivalence of steels versus norm.

Equivalence of standards		
Steel	EN10346	VDA 239-100
Dual Phase Steels (DP)	HCT490X-Z	CR290Y490T-DP-GI
	HCT590X-Z	CR330Y590T-DP-GI
Cold Rolled High Strength Low Alloy Steels	-	CR210LA-GI
	-	CR240LA-GI
	HX260LAD-Z	CR270LA-GI
	HX300LAD-Z	CR300LA-GI
	HX340LAD-Z	CR340LA-GI
Cold Rolled High Strength IF Steels	HX220YD-Z	CR210IF-GI
	HX260YD-Z	CR240IF-GI
Mild and IF Steels	DX52D-Z	CR1-GI
	DX53D-Z	CR2-GI
	DX54D-Z	CR3-GI
	DX56D-Z	CR4-GI
	DX57D-Z	CR5-GI

## Mechanical properties

### Dual Phase Steels (DP)

Grades	Rp <sub>02</sub> MPa min-max	R <sub>m</sub> MPa min	A <sub>80</sub> % min	n <sub>10-UE</sub> min	Bh <sub>2</sub> MPa min
HCT 490 X	300-380	500	23	0.15	30°
HCT 590 X	340-420	600	20	0.14	30°

° Please contact our Sales Department.

### Cold Rolled High Strength Low Alloy Steels

Grades	Rp <sub>02</sub> MPa min-max	R <sub>m</sub> MPa min	A <sub>80</sub> % <sup>1</sup> min
HX 260 LAD	260-330	350-430	26
HX 300 LAD	300-380	380-480	23
HX 340 LAD	340-420	410-510	21
HX 380 LAD	380-480	440-560	19

<sup>1</sup> For product thickness 0.5<t<0.70 mm, the minimum elongation at break A<sub>80</sub> values is to be reduced by 2 units. For t<0.50 mm, the reduction is 4 units.

### Cold Rolled High Strength IF Steels

Grades	R <sub>p</sub> MPa min-max	R <sub>m</sub> MPa min-max	A <sub>80</sub> % <sup>1</sup> min	r <sub>90</sub>	n <sub>90</sub>
HX 220 YD	220-260	340-400	32	1.5	0.17
HX 260 YD°	260-320	360-440	28	1.4	0.16

<sup>1</sup> For product thickness 0.5<t<0.70 mm, the minimum elongation at break A<sub>80</sub> values is to be reduced by 2 units. For t<0.50 mm, the reduction is 4 units.

° Please contact our Sales Department.

### Mild Steels and IF Steels

Grades	Rp <sub>02</sub> MPa min-max	R <sub>m</sub> MPa min-max	A <sub>80</sub> % <sup>1</sup> min	r min	n min
DX 51 D	-	270-500	22	-	-
DX 52 D	140-300	270-420	26	-	-
DX 53 D	140-260	270-380	30	-	-
DX 54 D	120-220	260-350	36	1.6	0.18
DX 56 D	120-180	260-350	39	1.9 <sup>2</sup>	0.21 <sup>3</sup>
DX 57 D	120-170	260-350	41	2,1	0,22

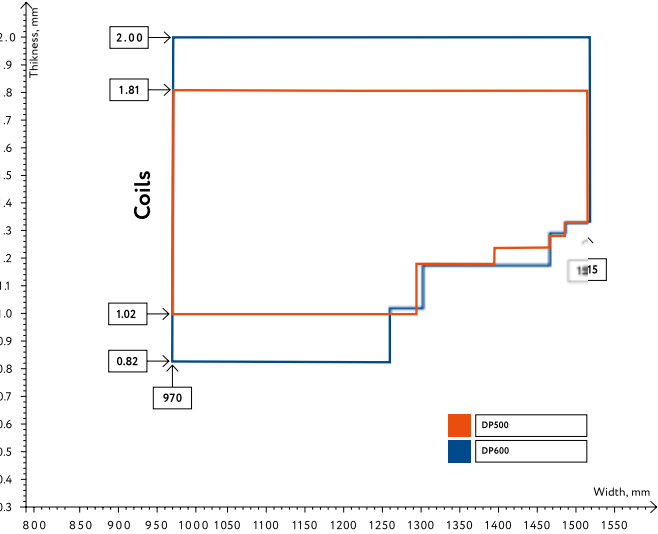
<sup>1</sup> For product thickness 0.5<t<0.70 mm, the minimum elongation at break A<sub>80</sub> values is to be reduced by 2 units. For t<0.50 mm, the reduction is 4 units.

<sup>2</sup> For thickness >1.50 mm, the r<sub>90</sub> value is to be reduced by 0.2.

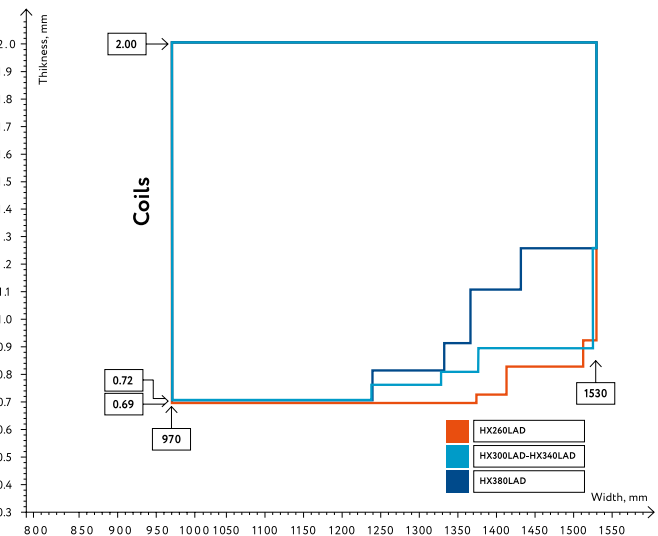
<sup>3</sup> For thickness <0.70 mm, the r<sub>90</sub> value is to be reduced by 0.2 et the n<sub>90</sub> value is to be reduced by 0.1.

## Dimensional Programs

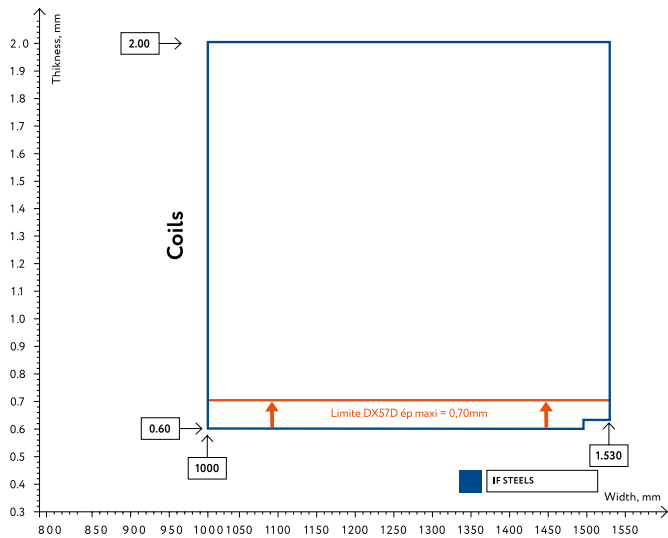
### Dual Phase Steels (DP)



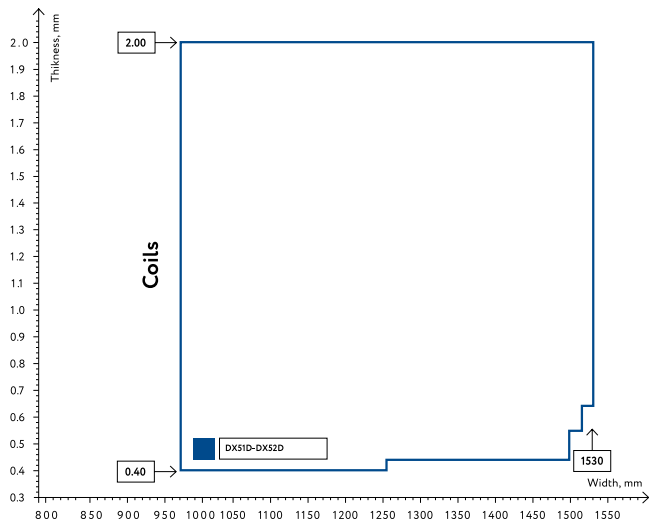
### Cold Rolled High Strength Low Alloy Steels



Cold Rolled High Strength IF Steels



Mild Steels and IF Steels



Please contact us if you have any questions or require further information.

# Rolling program

Framework of dimensions

- Thicknesses from 0.38 up to 3.00 mm
- Widths from 970 up to 1530 mm

Limits due to cold rolled or hot rolled substrate, or zinc coating.

# Coating

## A. Zinc mass

Depending on substrate' end-use and thickness, Zinc layer varies from 70 up to 450 gr/m²-double side.

Mass of zinc	Thickness
≥ 70 g/m² and ≤100 g/m²	≥ 0.60 mm and ≤2.00 mm
> 100 g/m² and ≤275 g/m²	≥ 0.40 mm and ≤3.00 mm
> 275 g/m² and ≤450 g/m²	≥ 0.45 mm and ≤3.00 mm for appearances A and B

Please contact our technical teams for any questions or further information.

## B. Surface

Minimized spangle ONLY

Aspect	Definition		Applications
Type A (MA)	Standard	Yes	Non-visible components
Type B (MB)	Skinpass	Yes	Non-visible or semi-visible components

## C. Treatments

Without treatment	X	
Oiled	X	PL3802-39S FUCHS + QUAKER N6130
Passivation	X	Without Cr <sup>6</sup>
Stamping	X	Approved by all OEMs

# Delivery

### Coils

- Horizontal Axis, radial and circumferential strapping
- t/coils: 2 t (min) to 27 t (Max)
- Inside diameter 508 or 610 mm  
outside diameter 780 to 2100 mm



## TECHNICAL DOCUMENTATION

### Steel processing

The galvanized steels have same grade and processing ability as their steel substrates.

However, the metallic finish coating type and thickness might prevent from cutting, forming or welding at usual technical terms.

Our galvanized steels can also be delivered as slits and/or sheets by our Steel Service Center.

### Standards and specifications

Without particular requirement of the user, our products are processed according to Euronorm standards.

On your request, our specialists will elaborate the material according to your own technical specifications.

Please contact us if you have any questions or require further information.



# PRODUCT RANGE

## GENERAL OVERVIEW

### Hot-rolled products

STEEL TYPE	STANDARD	STEEL GRADES							
Mild steels	EN 10111	DD11		DD12		DD13		DD14	
HSLA	EN 10149	S180MC S240MC	S315MC	S355MC	S420MC	S460MC	S500MC	S550MC	S600MC
Ferrito Bainitic	EN 10338	HR45/HDT450F			HR55			HR60/HDT580F	

HR0 and HR2 validated according to VDA

### Hot-dip galvanized products

STEEL TYPE	STANDARD	STEEL GRADES			
Low carbon LC	EN 10346	DX51D		DX52D	
Steel IF		DX53D	DX54D	DX56D	DX57D
High-tensile strength steel based on IF-P steel		HX220YD		HX260YD	
High-strength HSLA		HX260LAD	HX300LAD	HX340LAD	HX380LAD
Dual phase DP		HCT580X			
Ferrito Bainitic		HDT450F		HDT560F	

STEEL TYPE	STANDARD	STEEL GRADES				
Steel IF	VDA 239-100	CR2		CR3	CR4	
High-tensile strength steel based on IF-P steel		CR210IF			CR240IF	
High-strength HSLA		CR240LA	CR270LA	CR300LA	CR340LA	CR380LA
Dual phase DP		CR330Y590T				
Ferrito Bainitic		HR300Y450T-FB			HR440Y580T-FB	

Feasible Under development





# STEEL SERVICE CENTER

The Strip Product Business is backed up by a Steel Service Center in Belgium, giving it a wide range of processing services for strip products. 40% of the output of this Steel Service Center is dedicated to the automotive sector.

Certified with IATF and ISO 9001

## Decoiling lines

The operation consists in decoiling, flattening and cutting-to-length steel coils into sheets according to standard or customized dimensions.

	CTL 1	CTL 2
Coild Max	30 t	30 t
Thickness	3 - 8 mm	0,4 - 3 mm
Width	1000 - 2.000 mm	1000 - 1.600 mm
Length	1000 - 12.000 mm	1000 - 6.100 mm
Product	Hot Rolled Steels	Hot Rolled & Hot Dip Galvanized Steels
Production	120.000 tpa	50.000 tpa

## Slitting lines

The operation consists in decoiling and slitting coils into narrow strips of customized width(s).

	Slitter	
Coild Max	30 t	30 t
Thickness	0,5-3,5 mm	1,5 - 8 mm
Width	45 - 1.845 mm	1000 - 1.600 mm
Product	Hot Rolled & Hot Dip Galvanized Steels	
Production	70.000 tpa	40.000 tpa

## Our activity

Located in the heart of Europe (Manage, Belgium), our Service Centre provides a wide range of processing services for Mild Hot Rolled steels (black and pickled), HLE (high yield strength) steels, hot-dip galvanized and pre-painted steels. Our products are used in General Industry (profiling, furniture, laser cutting...), Construction (frameworks and light structures...), Automotive (equipment manufacturers and subcontractors) or in the Agricultural Sector (trailers...).

Most of the steel is supplied by road with just-in-time deliveries. The strength of our service centre lies in its proximity to the group's production companies and end customers.





Certificates list for NLMK Europe Strip Products

COMPANY	ISO 9001	IATF 16949	ISO 14001	ISO 45001
NLMK LA LOUVIÈRE	●	●	●	○
NLMK STRASBOURG	●	●	●	●
NLMK MANAGE	●	●	○	○

All certificates are available on our website or on request at the following e-mail: [strip@eu.nlmk.com](mailto:strip@eu.nlmk.com)



# 04 CONTACTS

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Belgium  
+32 64 51 92 11



strip@eu.nlmk.com  
www.eu.nlmk.com

## Production sites

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AND GROW TOGETHER

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