

A large roll of metal strip is being processed in a factory. The roll is mounted on a yellow frame and is being fed into a machine. The machine has a sign that reads "COHEN PESSAN" and "FOR G9". The background shows a large industrial building with a glass roof.

# PRODUCT CATALOGUE 2022



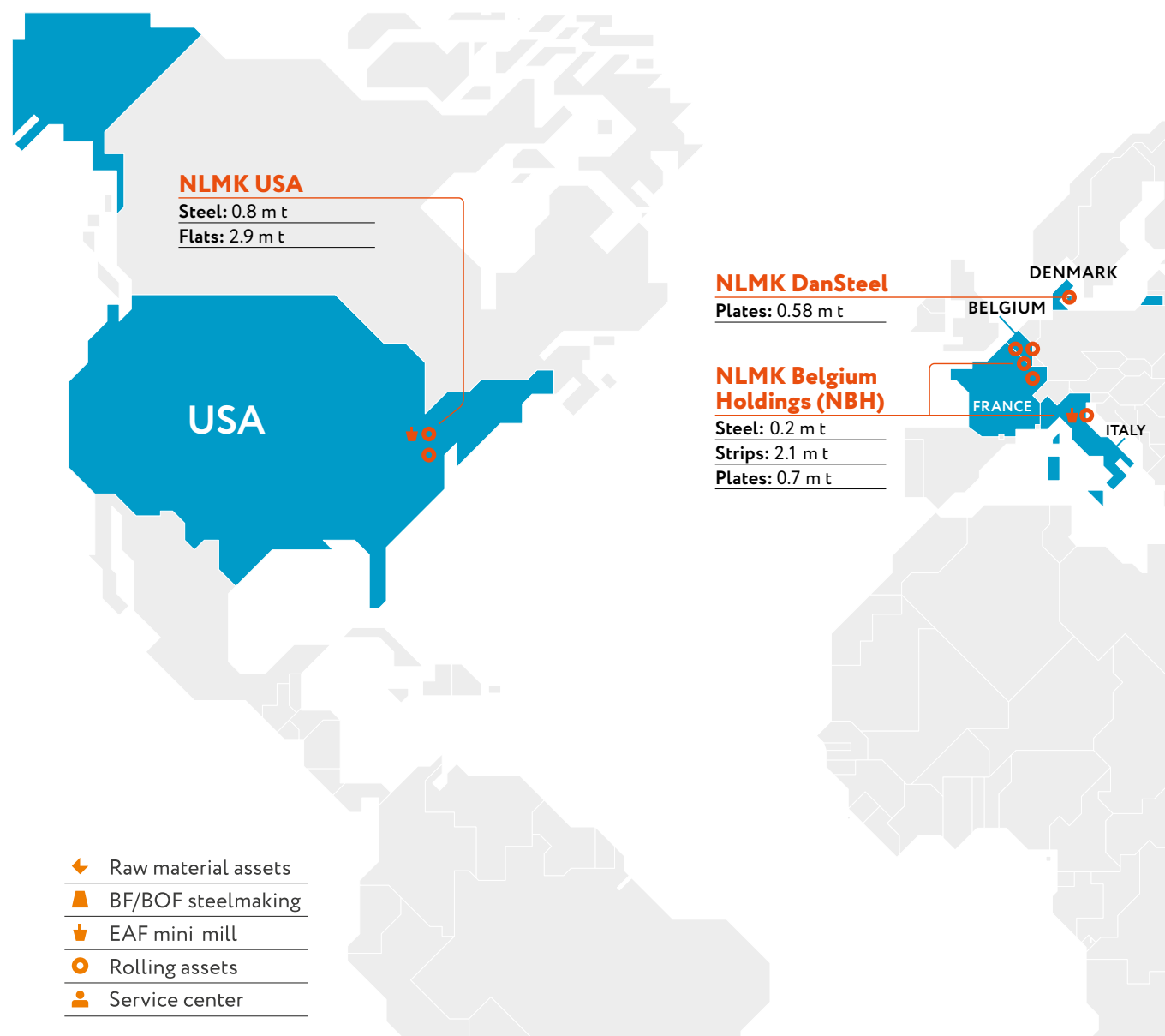




# AT A GLANCE

## NLMK GROUP

**>18**  
MILLION TONNES  
NLMK'S STEELMAKING  
CAPACITY



## 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, shipbuilding, 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 pre-painted 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.

## 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 strategic 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 cleanliness 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.





# CERTIFICATIONS



## 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)





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# MILD STEELS FOR COLD FORMING AND DRAWING

## HOT ROLLED STEELS

### 1. PRESENTATION

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

### 2. USE



Mild steels are extensively used in General industry and Building, as well as Automotive industry.

- Transmission pulleys
- Collars, joints and fasteners
- Deep drawn tanks, machine casings, oil sumps
- Rerolling
- Welded tubes and hollow sections
- Beams
- Complex parts to be made on stamping presses

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/m² 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.

### 3. QUALITY STANDARD

Mild steels are in compliance with EN 10111

#### 3.1. MECHANICAL PROPERTIES

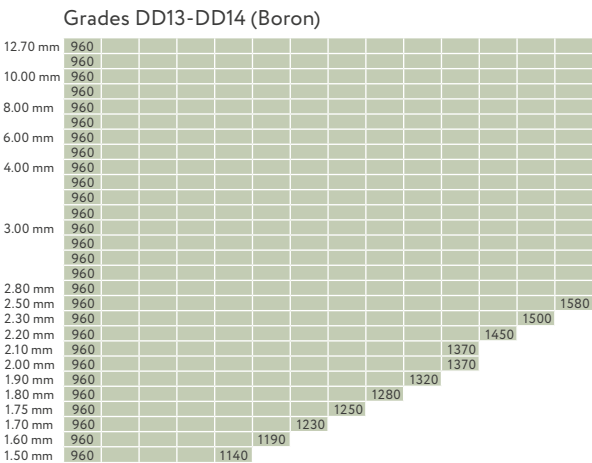
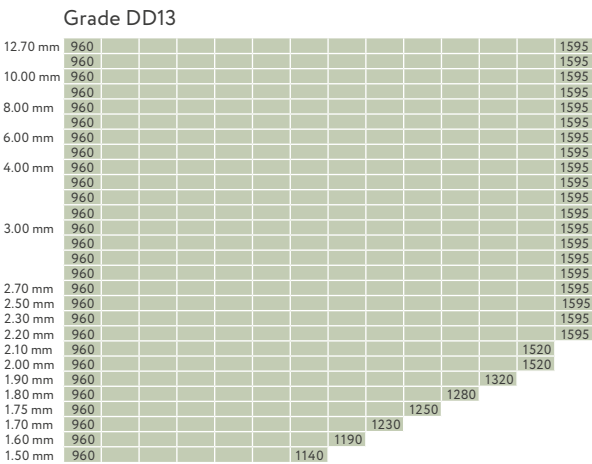
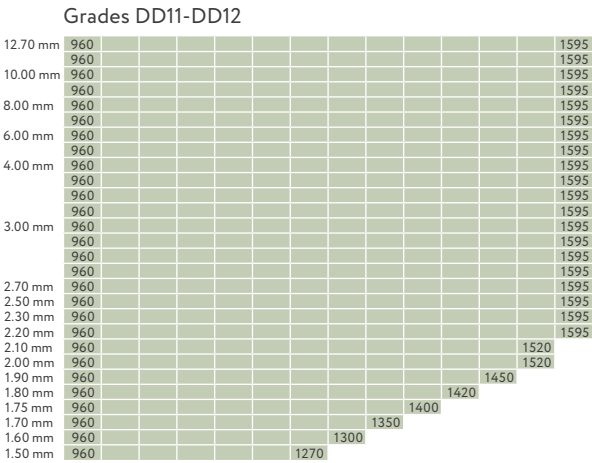
Grades	Yield Strength (MPa) min-max		Tensile Strength (MPa) min-max	Elongation L <sub>o</sub> = 80 mm 1.0 t 15			% min L <sub>o</sub> = 5.65√S <sub>o</sub>
	1 ≤ t < 2 mm	2 ≤ t ≤ 11 mm		N/mm²	1 ≤ t < 1.5 mm	1.5 ≤ t < 2 mm	
DD 11	170-360	170-340	≤440	22	23	24	28
DD 12	170-340	170-320	≤420	24	25	26	30
DD 13	170-330	170-310	≤400	27	28	29	33
DD 14	170-310	170-290	≤380	30	31	32	36

#### 3.2. 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

### 4. ROLLING PROGRAM

#### 4.1. RANGE OF SPECIFICATIONS



Standard range

#### 4.2. THICKNESS TOLERANCES

In compliance with European Standard EN 10051  
(for ½ ou ¾ EN - Please contact our Sales Department)

### 5. DELIVERY

	Black HR	Pickled HR
T/coil	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 EN10204	

### 6. STEEL PROCESSING

- **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.
- **WELDABILITY**  
Unless otherwise mentioned, low carbon steels are in compliance with usual welding processes.
- **FORMING**  
Unless otherwise mentioned, NLMK Hot rolled steels have due forming ability, as for drawing, bending and rolling.

# STRUCTURAL STEELS

# HOT ROLLED STEELS

## 1. PRESENTATION

Structural steels are Carbon-Manganese steels and have a guaranteed minimum Yield-, Tensile- and Impact-strength.

Besides the usual hot rolled steels, the range includes fine-grain steels (obtained by normalizing rolling “+ N”).

Structural steels are also available as rolled (+AR), normalized rolling (+N), suitable for cold forming (C).

They can also be in compliance with post-galvanizing (see table for Class 1 to Class 3).

Class	Elements in weight %		
	Si	Si + 2.5P	P
Class 1	≤ 0.030	≤ 0.090	-
Class 2	≤ 0.030	-	-
Class 3	0.14 ≤ Si ≤ 0.25	-	≤ 0.035

## 2. USE

Structural steels are extensively used in Mechanical and Building industries, particularly suitable to manufacture structures subject to high mechanical requests.

Typical uses are:

- Cranes, pylons, steel frames for buildings and other architectural works
- Structure of industrial equipment & welded mechanical assemblies
- Posts for public lighting & guardrails
- Welded tubes and beams for construction

The atmospheric corrosion resistant steels are particularly performing in:

- Industry (structures, chimneys, ventilation ducts)
- Railway transport (bogies, chassis)
- Marine environment (ships, harbour equipment, containers)



## 3. QUALITY STANDARD

In compliance with European Standard EN 10025-2 & “Construction Products Regulation” 305/2011/EU.

### 3.1. MECHANICAL PROPERTIES

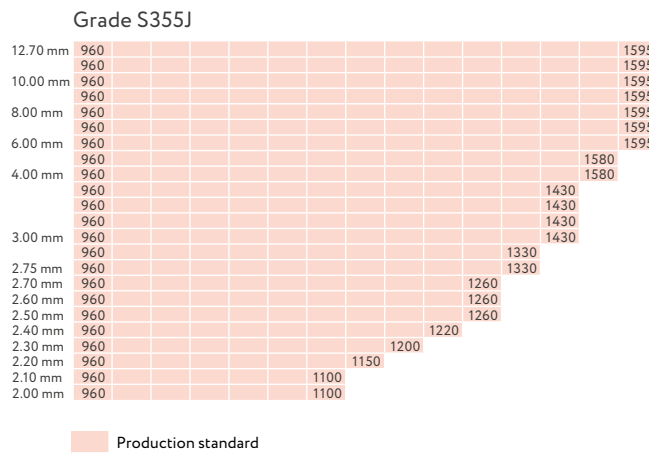
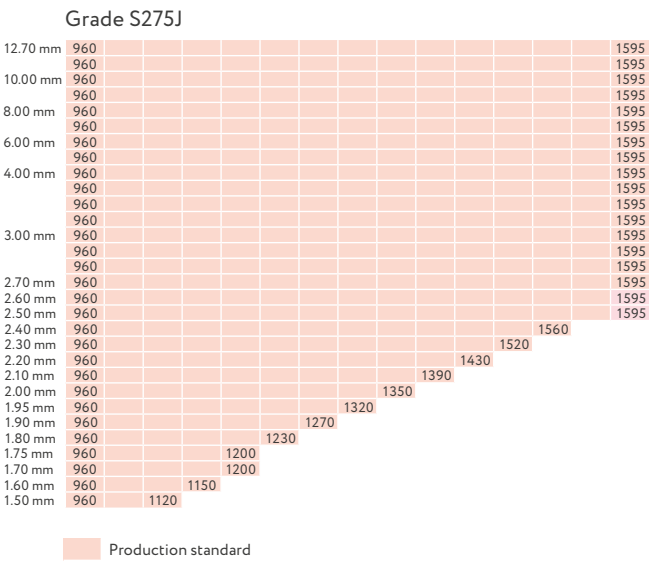
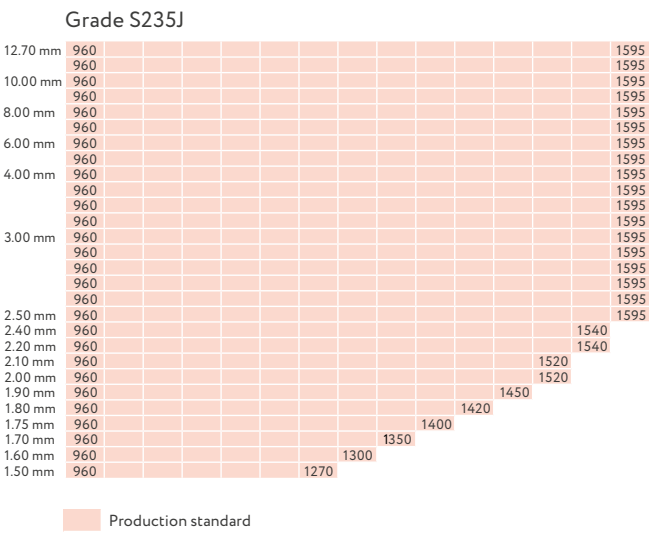
Grades	Yield Strength (MPa) min	Tensile Strength (MPa) min-max		L <sub>0</sub> =5.65V <sub>0</sub> Nominal Thickness						Impact Strength	
		<3	≥3	>1	>1.5	>2	>2.5	>3	Energy J min	Temp. °C	
			≤12.7	≤1.5	≤2	≤2.5	< 3	≤12.7			
S235JR	235	360-510	360-510	16	17	18	19	24	27	20	
S235JO	235	360-510	360-510	16	17	18	19	24	27	0	
S235J2	235	360-510	360-510	16	17	18	19	24	27	-20	
S275JR	275	430-580	410-560	14	15	16	17	21	27	20	
S275JO	275	430-580	410-560	14	15	16	17	21	27	0	
S275J2	275	430-580	410-560	14	15	16	17	21	27	-20	
S355JR	355	510-680	470-630	13	14	15	16	20	27	20	
S355JO	355	510-680	470-630	13	14	15	16	20	27	0	
S355J2	355	510-680	470-630	13	14	15	16	20	27	-20	
S355K2	355	510-680	470-630	13	14	15	16	20	40	-30	

### 3.2. CHEMICAL COMPOSITION

Grades	C% max	Si% max	Mn% max	P% max	S% max	N% max	Cu% max
S235JR	0.17	-	1.40	0.035	0.035	0.012	0.55
S235JO	0.17	-	1.40	0.030	0.030	0.012	0.55
S235J2	0.17	-	1.40	0.025	0.025	-	0.55
S275JR	0.21	-	1.50	0.035	0.035	0.012	0.55
S275JO	0.18	-	1.50	0.030	0.030	0.012	0.55
S275J2	0.18	-	1.50	0.025	0.025	-	0.55
S355JR	0.24	0.55	1.60	0.035	0.035	0.012	0.55
S355JO	0.20	0.55	1.60	0.030	0.030	0.012	0.55
S355J2	0.20	0.55	1.60	0.025	0.025	-	0.55
S355K2	0.20	0.55	1.60	0.025	0.025	-	0.55

## 4. ROLLING PROGRAM

### 4.1. RANGE OF SPECIFICATIONS



### 4.2. THICKNESS TOLERANCES

In compliance with European Standard EN 10051 (for ½ or ¾ EN - Please contact our Sales Department)





5. DELIVERY

	Black HR	Pickeld HR
T/Coils	max 25 t	
Kg/mm	max 18 kg	
Outside diameter	max 1900 mm	
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
Document / Certificates	in compliance with standard EN 10204 - 2004	

6. STEEL PROCESSING

- 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.
- WELDABILITY

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

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



# HIGH STRENGTH LOW ALLOY STEELS

## HOT ROLLED STEELS

### 1. PRESENTATION

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

**Asset:** high strength levels.

**Advantages:**

- improved weldability,
- good formability,
- forming on presses and automated lines,
- good resistance to fatigue and impact.

**Feature:** Thanks to high Yield strength, HSLA steels are particularly used when a weight reduction is required; in this case, they substitute themselves for conventional structural steels.

S235JR	S315MC	S355MC	S500MC
10.00 mm	8.50 mm	8.00 mm	7.00 mm
8.00 mm	6.80 mm	6.40 mm	5.60 mm
6.00 mm	5.10 mm	4.80 mm	4.20 mm
4.00 mm	3.40 mm	3.20 mm	2.80 mm
Weight and thickness reduction	15%	20%	30%

(Approximate values calculated using the yield strength of unbent steel. For units working in bending conditions or in compression, it must be recalculated considering static and dynamic factors).

### 2. USE



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
- **Lifting and handling equipment:** cranes, fork lifts, warehouse shelves
- **General Industry:** containers, concrete mixers, roll bars

### 3. QUALITY STANDARD

In compliance with the European standard EN 10149.2

#### 3.1. 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

#### 3.2. CHEMICAL ANALYSIS

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:**

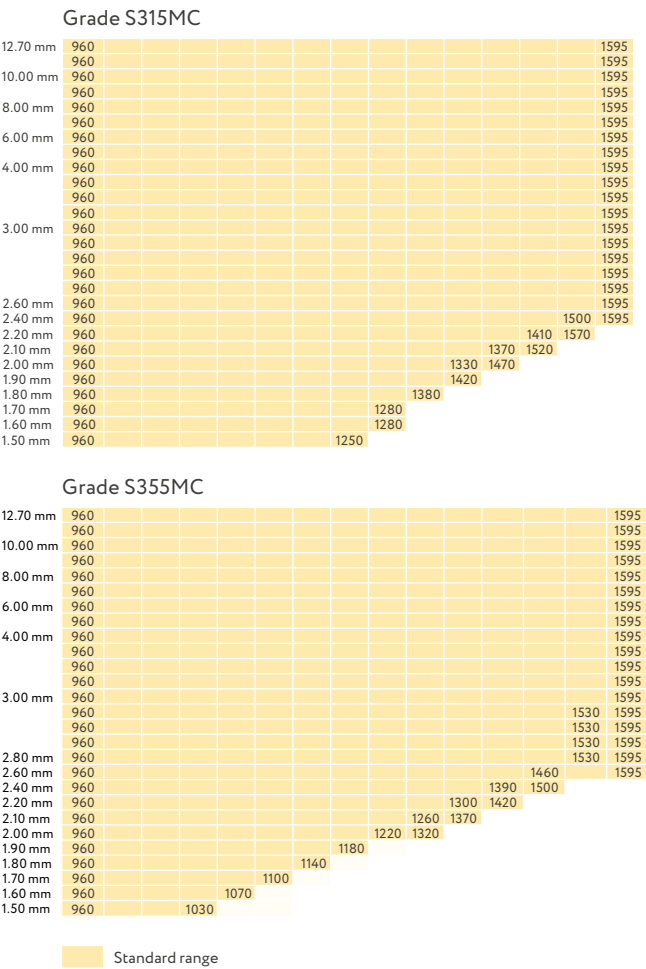
- Suitability for galvanising: Low Silicon.
- Impact strength: at -20°C / -40°C.

> Please contact our Sales Department

### 4. ROLLING PROGRAM

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

#### 4.1. RANGE OF SPECIFICATIONS

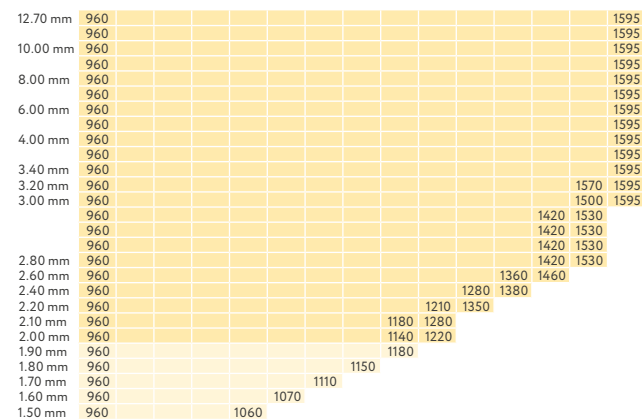




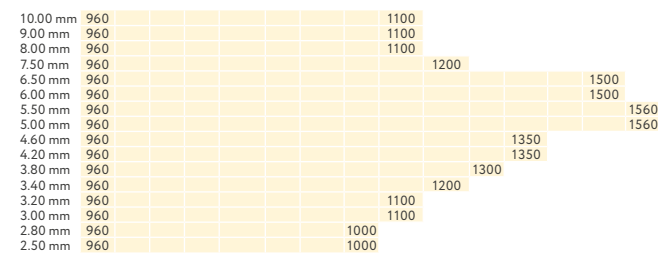
# HIGH STRENGTH LOW ALLOY STEELS

## HOT ROLLED STEELS

Grade S420MC



Grade S600MC

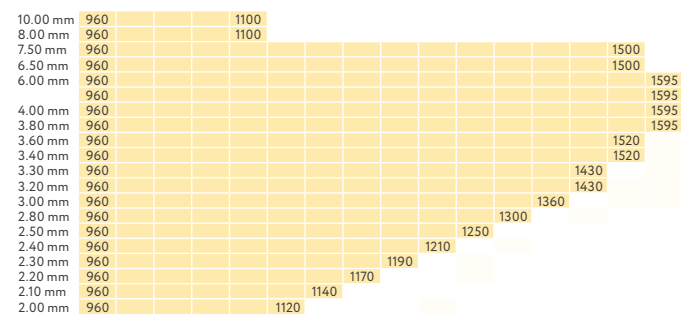


Standard range  
Extended range subject to mill approval

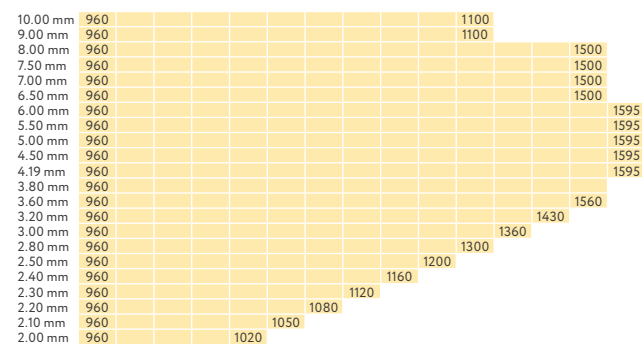
## 4.2. THICKNESS TOLERANCES

In compliance with European Standard EN 10051  
(for ½ or ¾ EN - Please contact our Sales Department)

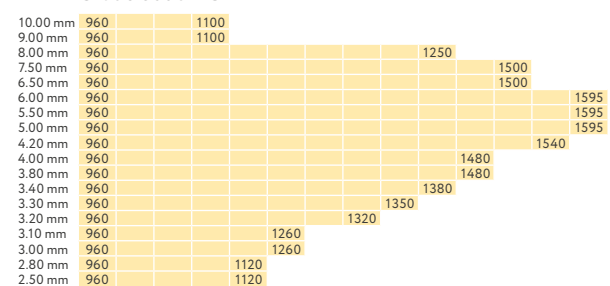
Grade S460MC



Grade S500MC



Grade S550MC



## 7. NAMING - ACCORDING TO OTHER STANDARDS

Corresponding specification		Former corresponding specification			
Grades	Steel Number	EU 149 part 2	SEW 092 <sup>a</sup>	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.

	LAC Noir	LAC DKP
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	

## 6. STEEL PROCESSING

- 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.

- WELDABILITY

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

- FORMING

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



# DUAL PHASE STEELS

# HOT ROLLED STEELS

## 1. PRESENTATION

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

**Asset:** the very best compromise between resistance and drawability

**Advantages:**

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

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

## 2. USE

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

They are widely used for wheels construction and light mechanical engineering.



## 3. QUALITY STANDARD

### 3.1. MECHANICAL PROPERTIES

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

Norm	Grade	Yield Strength (MPa)	Tensile Strength (MPa)	Elongation		n <sub>e-6</sub>	n <sub>10-20/Ag</sub>	B <sub>H<sub>2</sub></sub> (MPa)
				A80 <sup>1</sup> mm (%)	A5 mm (%) t ≥ 3 mm			
VDA 239-100	HR330Y580T-DP-UC	330-450	580-680	≥ 19	≥ 23	≥ 0.16	≥ 0.13	≥ 30

Norm	Grade	Yield Strength (MPa)	Tensile Strength (MPa)	Elongation		n <sub>10</sub> <sup>1</sup> UE
				A80 <sup>1</sup> mm (%)	A5 mm (%) t ≥ 3 mm	
EN 10338	HDT580X	330-450	≥ 580	≥ 19	≥ 23	≥ 0.13

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

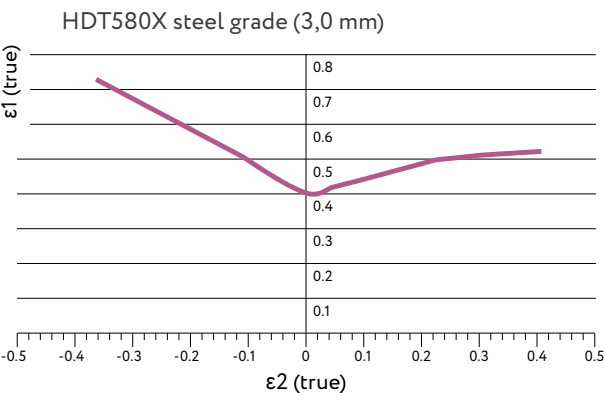


### 3.2. CHEMICAL COMPOSITION

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

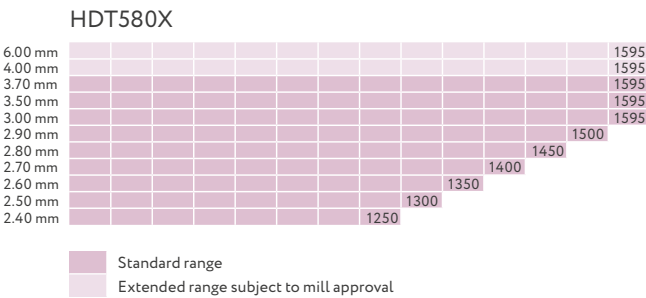
Norm	Grade	C% max	Si% max	Mn% max	P% max	S% max	Al <sub>total</sub>	Cr%+Mo% max	Nb%+Ti% max	B% max	Cu% max
VDA 239-100	HR330Y580T-DP-UC	0.14	1.00	2.20	0.060	0.010	0.015-0.100	1.40	0.15	0.005	0.20

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



## 4. ROLLING PROGRAM

### 4.1. RANGE OF SPECIFICATIONS



### 4.2. THICKNESS TOLERANCES

In compliance with European Standard EN 10051 (for ½ or ¾ EN - Please contact our Sales Department)

## 5. DELIVERY

	BLACK HR	PICKLED HR
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
Document / Certificates	in compliance with standard EN 10204	

## 6. STEEL PROCESSING

- **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.
- **WELDABILITY**  
Unless otherwise mentioned, low carbon steels are in compliance with usual welding processes.
- **FORMING**  
Unless otherwise mentioned, NLMK Hot rolled steels have due forming ability, as for drawing, bending and rolling.

## 7. 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.



# HIGH RESISTANT STEELS FOR COLD FORMING

## HOT ROLLED STEELS

### 1. PRESENTATION

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

**Asset:** the very best compromise between high resistance and weight-reducing needs

**Advantages:**

- Guaranteed tensile strength from 440 to 560 MPa
- Outstandingly improved ductility
- Improved fatigue resistance

**Naming:** HR45, HR60

### 2. 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.

### 3. QUALITY STANDARD

#### 3.1. 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>
	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>150mm</sub> %	MPa
HR330Y450T-FB-UC	300 - 400	450 - 550	≥ 27	≥ 25	≥ 24	≥ 26	≥ 30
HR440Y580T-FB-UC	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>s</sub> Thickness ≥ 3 mm	
Steel name	Steel number	MPa <sup>a</sup>	MPa <sup>a</sup> min.	% min.	% min.	min.
Ferritic-bainitic steel (F)						
HDT450F	1.0961	300 - 420	450	24	27	
HDT580F	1.0994	460 - 620	580	25	17	

#### 3.2. 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

### 4. 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:**

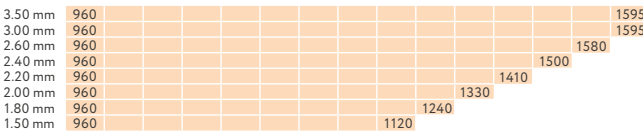
- Double side
- Hot dipped galvanized: from 40 up to 70 g/m<sup>2</sup>/Side

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).

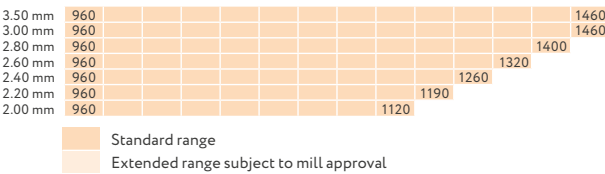
### 5. ROLLING PROGRAM

#### 5.1. RANGE OF SPECIFICATIONS

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



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



#### 5.2. THICKNESS TOLERANCES

In compliance with European Standard EN 10051 (for ½ or ¾ EN - Please contact our Sales Department)

### 6. DELIVERY

	Black HR	Pickled HR
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	

### 7. STEEL PROCESSING

- **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.
- **WELDABILITY**  
Unless otherwise mentioned, low carbon steels are in compliance with usual welding processes.
- **FORMING**  
Unless otherwise mentioned, NLMK Europe-Strip Products Hot rolled steels have due forming ability, as for drawing, bending and rolling.

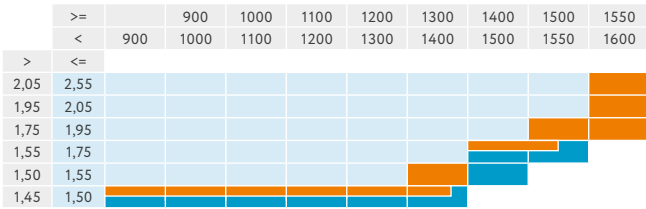


# NEW DEVELOPMENTS IN CAPABILITIES

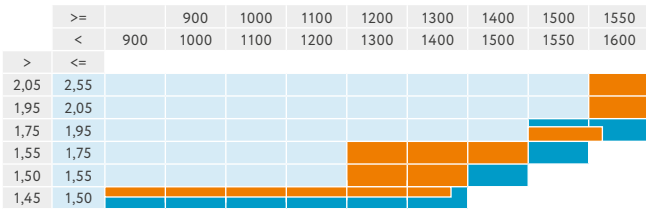
## HOT ROLLED STEELS

### PHASE 1

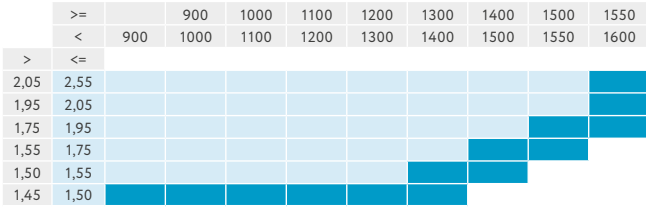
DD11, DD12



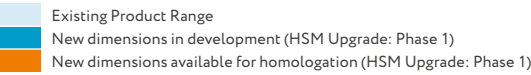
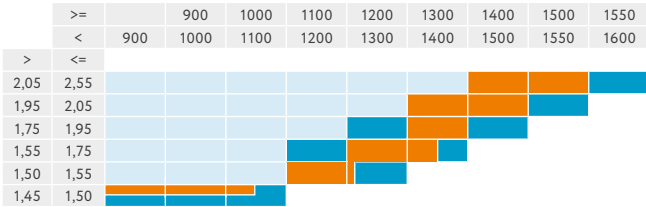
DD13, DD14



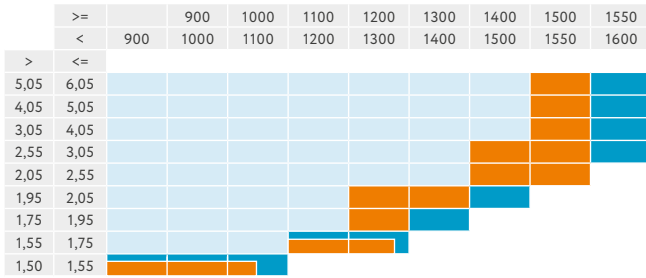
S235J



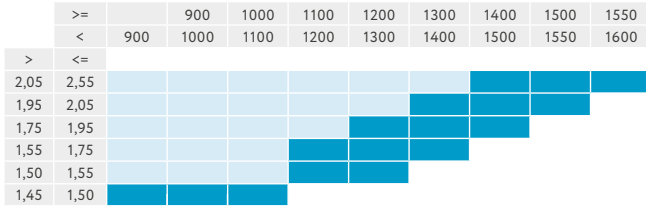
S275J



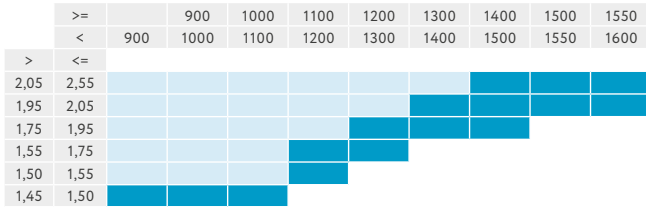
S355J



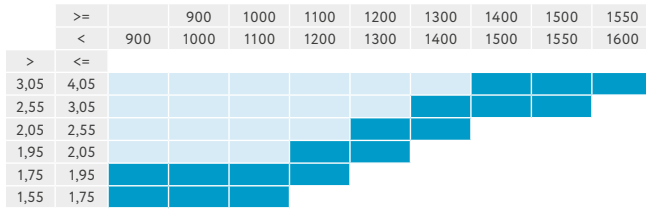
S315MC



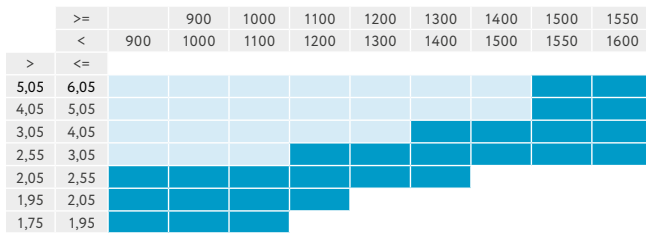
S355MC



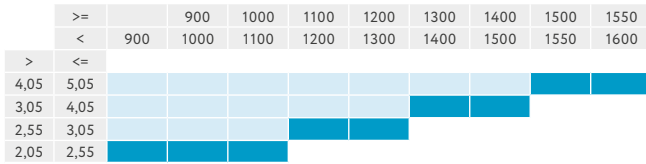
S420MC, S460MC, HR60



S500MC, S550MC



S600MC



New dimensions after first phase of our Hot Strip Mill Transformation (La Louvière - Belgium).  
Please contact our Technical Support Team if you have any questions or require further information.





# HOT DIP GALVANIZED STEELS

## 1. PRESENTATION

Galvanized steels are Hot rolled or Cold rolled steels, annealed and roll-coated through a melting bath of Zinc. Zinc coating protects steel from corrosion.

### Characteristics

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.

- NLMK Strasbourg supplies a wide variety of hot dip galvanized steels, especially designed for cold-forming as drawing, bending, profiling:
- Dual Phase steels (DP)
- Cold Rolled High Strength Low Alloy Steels
- Cold Rolled High Strength IF Steels
- Structural steels
- Non-alloy mild steels

## 2. USE

Galvanized steels, traditionally used for industrial applications, are nowadays extensively used in Automotive sector.

Steel Family	Grades	Applications	Properties
Dual Phase steels (DP)	DP500 DP600	Automotive: White box, tunnels, ABC, anti-intrusion bars, beams, structural components.  Industry: Skips, containers, uprights, open profiles.	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	Automotive: Box reinforcement, structural elements, beams.  Industry: Light profiles for shelving and storage, mechanisms, components exposed to saline environments.	Weight reduction, fatigue and impact resistance.
Cold Rolled High Strength IF Steels	DX51D-DX52D DX53D to DX57D HX220YD, HX260YD	Automotive: Components requiring deep drawing, radiators, filters, casings.  Industry: Electrical household appliances, profiles, electrical cabinets, equipment.	Suitable for cold forming according to the degree of the component to be produced including hydroforming.
Structural steels	S220GD S250GD S280GD S320GD S350GD	Industry: Construction, agriculture, silos and trailers, swimming pools, metal shelving, protective housings, profiles.	Resistance to static load <= suitable for cold forming.



## 3. QUALITY STANDARD

Substrate steel grades 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	HX260LAD-Z	CR270LA-GI
	HX300LAD-Z	CR300LA-GI
	HX340LAD-Z	CR340LA-GI
Cold Rolled High Strength IF Steels	HX380LAD-Z	CR380LA-GI
	HX220YD-Z	CR210IF-GI
Mild and IF Steels	HX260YD-Z	CR240IF-GI
	DX52D-Z	CR1-GI
	DX53D-Z	CR2-GI
	DX54D-Z	CR3-GI
	DX56D-Z	CR4-GI
	DX57D-Z	CR5-GI

## 4. MECHANICAL PROPERTIES

### 4.1. COLD ROLLED STEELS

#### 4.1.1. DUAL PHASE STEELS (DP)

Grades	Rp <sub>0.2</sub> MPa min-max	R <sub>m</sub> MPa min	A <sub>80</sub> % min	n <sub>10-UE</sub> min	B <sub>H2</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.

### 4.1.2. COLD ROLLED HIGH STRENGTH LOW ALLOY STEELS

Grades	Rp <sub>0.2</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.

### 4.1.3. COLD ROLLED HIGH STRENGTH IF STEELS

Grades	R <sub>e</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.

### 4.1.4. MILD STEELS AND IF STEELS

Grades	Rp <sub>0.2</sub> MPa min-max	R <sub>m</sub> MPa min-max	A <sub>80</sub> % <sup>1</sup> min	r <sub>min</sub>	n <sub>min</sub>
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.

### 4.1.5. STRUCTURAL STEELS

Grades	Rp <sub>0.2</sub> MPa min	R <sub>m</sub> MPa min	A <sub>80</sub> % <sup>1</sup> min
S 220 GD	220	300	20
S 250 GD	250	330	19
S 280 GD	280	360	18
S 320 GD	320	390	17
S 350 GD°	350	420	16

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

° Cold rolled substrate only.



# HOT DIP GALVANIZED STEELS



## 5. COATING

**5.1. 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	≥ 0.70 mm and ≤2.00 mm
> 100 g/m² and ≤275 g/m²	≥ 0.34 mm and ≤2.50 mm
> 275 g/m² and ≤350 g/m²	≥ 0.45 mm and ≤2.00 mm for appearance A ≥ 0.50 mm and ≤0.80 mm for appearance B
> 350 g/m² and ≤450 g/m²	≥ 0.50 mm and ≤2.50 mm for appearance A

Option of differential zinc mass( outer side ≠ inner side) please contact our Sales Department.  
For products with hot rolled material, mass of zinc from 100 to 450 g/m² in MA and MB.

**5.2. SURFACE**  
Minimized spangle ONLY

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

**5.3. TREATMENTS**

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

## 6. 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: please contact our Sales Department

## 7. 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

> Please contact our Sales Department

## 8. 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.

> Please contact our Sales Department



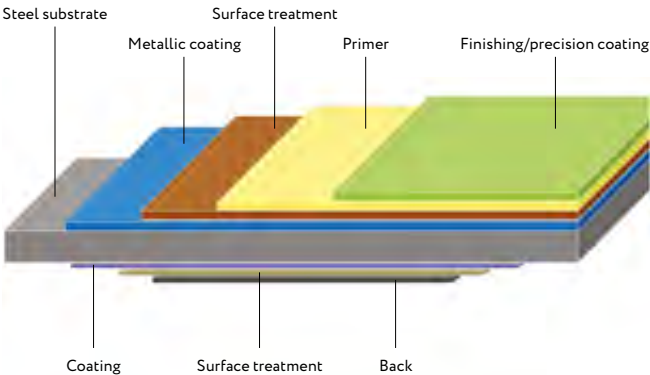
# ORGANIC COATED STEEL GUIDE & RECOMMENDATIONS

## PRE-PAINTED STEELS

### 1. PRESENTATION

**Organic steel - also called “pre-painted”- consists of:**

- substrate, cold rolled steel or metallic coated steel
- surface treatment
- “primer” paint layer
- “finishing” paint layer - also called “precision coating” or “front coating”



#### ADVANTAGES

##### Ecological

- NLMK Coating steel mill has been built in compliance with environmental legislations, ensuring nature protection and sustainability:
  - Liquid effluents are collected in due containers and appropriately recycled, solvents are entirely burnt
  - All paints and surface treatments are free of chromium and heavy metals

##### Economic

- Quicker, safer and easier than post-painting
- Simplified industrial process (continuous line), cheaper than individual post-painting equipment

##### Technic

- Controlled quality on line > constant layer thickness
- Wide range of colours, glosses and aspects (varnish, metallic, granular...)

### 2. USE

Our organic coated steels are priory suitable for the Building markets (construction and equipment)

- Cladding & roofing, sectional doors, ceilings, lights...

They are also extensively used in General Industry, as

- Metallic furniture, appliance framing, shutters



#### HOW TO SELECT

There is no single organic coated steel, which would be convenient for each or any application; the choice is as wide as the variety of combinations (substrates, colours, layer thickness, gloss, aspect...), allowing the accurate product performance and leading up to your personal taste!

**Criteria or constraints for choosing the adequate organic coated steel are:**

- Aesthetic (gloss, aspect, UV resistant...)
- Process (forming ability, painting adhesion, surface hardness...)
- Quality in use (corrosion-, fire-, heat-, chemical resistant; food industry compliance...)
- Legislations (architecture, environment, technic...)

### 3. QUALITY STANDARDS

#### Available steel grades

- Mild steels: DX 51D in compliance with EN 10346
- Structural steels: S220 to S350GD, in compliance with EN 10346
- Resins-compliant with NF P34-301, EN 10169 and EN 13523
- Organic coated steel - compliant with EN 10169
- Solvents, liquids dissolving resins et reducing (diluting) the viscosity of the paint
- Additives, influencing the drying, hardness, sliding

**“Binders” are intrinsically essential and classified in two groups**

- Thermo-hardener, for Polyester system, PUR
- Thermo-plastic, for PVDF system

#### Polyester advantages

Gloss; corrosion-, heat- and UV- resistant

#### PVDF, PUR advantages

Colour durability; screen against corrosion

### 4. COATING

**Paint results from the complex mix of 4 components**

- Resins, giving paint it's properties
- Pigments, giving the colour, and Loads, modulating gloss, hardness and permeability

#### 4.1. BUILDING MARKETS - OUTDOOR USE

Organic coated	Corrosion Z225 min			UV	Urban & industrial			Marine				Special
	DIN 55928 -8	XP 34-301	EN 10169	EN 10169	Rural unpolluted	Normal	Severe	20 to 10 km	10 to 3 km	Seaside (3 to 1 km)	Mixed	
Polyester 25 µm	III	III	RC3	RUV3	A	A	C	B	C	C	C	C
Grained Polyester 25 µm	III	III	RC3	RUV3	A	A	C	B	C	C	C	C
Matt Polyester 25 µm	III	III	RC3	RUV3	A	A	C	B	C	C	C	C
THD 25 µm	III	III	RC3	RUV4	A	A	C	B	C	C	C	C or B
THD Thermal 25 µm	III	III	RC3	RUV4	A	A	C	B	C	C	C	C or B
PVDF 25 µm	III	IV	RC3	RUV4	A	A	C	B	B	C	C	C or B
Matt Polyester 35 µm	III	V	RC4	RUV3	A	A	B	A	A	A	B	C or B
THD 35 µm	III	VI	RC4	RUV4	A	A	B	A	A	A	B	A or B
THD Thermal 35 µm	III	VI	RC4	RUV4	A	A	B	A	A	A	B	A or B
PVDF 35 µm	III	VI	RC4	RUV4	A	A	B	A	A	A	B	A or B
TTHD 55µm	III	VI	RC5	RUV4	A	A	B	A	A	A	B	A or B

A = Adapted B = Acceptable / On consultation C = Not recommended

#### 4.2. BUILDING MARKETS - INDOOR USE

Organic coated	Humidity			Not aggressive			Slightly aggressive	Aggressive	Very aggressive
	DIN 55928 -8	XP 34-301	EN 13523-26	Low humidity	Average humidity	High humidity	Humid	Very humid	Saturated
Mono 15 µm	II	II	CPI2	A	B	C	C	C	C
Polyester 25 µm	III	III a	CPI3	A	A	B	C	C	C
Grained Polyester 25 µm	III	III a	CPI3	A	A	B	C	C	C
Matt Polyester 25 µm	III	III a	CPI3	A	A	B	C	C	C
THD 25 µm	III	III a	CPI3	A	A	B	C	C	C
PVDF 25 µm	III	III a	CPI3	A	A	B	C	C	C
Matt Polyester 35 µm	III	III a	CPI4	A	A	A	B	C	C
THD 35 µm	III	III a	CPI4	A	A	A	B	C	C
PVDF 35 µm	III	IV b	CPI4	A	A	A	B	C	C
TTHD 55 µm	III	IV b	CPI5	A	A	A	A	B	C

A = Adapted B = Acceptable / On consultation C = Not recommended



# ORGANIC COATED STEEL GUIDE & RECOMMENDATIONS

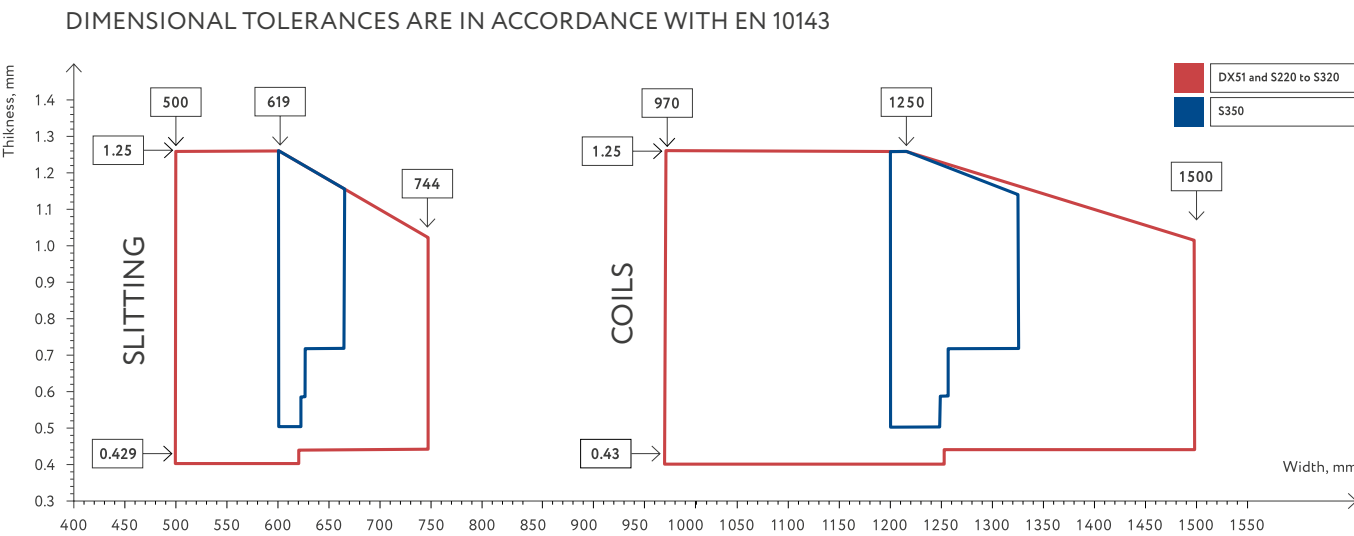
## PRE-PAINTED STEELS

### 4.3. INDUSTRY

Organic coated	Corrosion & UV				Not aggressive			Slightly aggressive	Aggressive	Very aggressive
	DIN 55928 -8	XP 34-301	EN 13523-26	EN 13523-21	Low Humidity	Average Humidity	High Humidity	Humid	Very humid	Saturated humid
Polyester 20-30 µm	II	II	RC2	RUV1	A	A	A	A	B	C
Granular Polyester 25 µm	III	III	RC2 /RC3	RUV3	A	A	A	A	B	C
Varnish Polyester	III	III	RC3	RUV3	A	A	A	A	B	C

A = Adapted    B = Acceptable / On consultation    C = Not recommended

### 5. TYPE OF COATINGS & RANGE OF DIMENSIONS



#### ORGANIC COATED STEEL PERFORMANCES

- **Performances depend on:**
  - **Substrate steel grade:** according to forming constraints (for example, bending or profiling), the adequate steel grade is Mild steel or Structural steel.
  - **Substrate metallic coating:** substrates for building use, any general outdoor use or demanding-atmosphere use, are hot dipped galvanized; Zinc-type (pure or alloyed) as well as Zinc-mass are linked to the organic coated steel end-use conditions (revert to Data Sheet Galvanized steels).

We highly recommend to use cold rolled substrate for indoor applications only, where steel do not need corrosion resistance ability.

- **Organic coating (the paint):** linked to the quality in use, coating is made of a single layer ("Monolayer") or two layers (Primer + Finishing).

Paint is usually coated on the top side, optionally on the reverse side, or even on both sides. Reverse side is commonly Backcoat coated only or compatible with glue, PUR...

NB: NLMK Strasbourg supplies **food-industry compliant paints** (for Polyester, PVDF and PU systems).

#### AESTHETIC IS MADE OF

- **Colour:** available from colour chart (Ex: RAL) or customized + metallic color + pearly paint

NB: metallic and pearly finishes can be provided for VHD, PVDF and PUR systems

- **Gloss:** Gardner gloss scale ranks from 5 up to 50 GU (gloss unit), in other words from matte not radiant up to high luminance paint
- **Texture:** smooth, grained, structured

### 6. DELIVERY

Coils	
T/Coils	17.3 t max
Outside diameter	1800 mm max
Inside diameter	508 mm
Section	1520 mm²
Axis	horizontal
Strapping	radial & circumferential
Label	1 inside/ 1 outside
Packaging on request	- rolled-up on cardboard - paper or metallic wrapped - wooden cradle
Protection	-
Certificate	in compliance with EN 10204

#### Sheets & Narrow Strips

> Please contact our Sales Department

### 7. STEEL PROCESSING

The Organic coated steels processing ability depends on the substrate's steel grade.

However, the organic finish coat type and thickness, as well as substrate's properties, might prevent from cutting, forming or welding at usual technical terms.

> Please contact our Sales Department



1. PRESENTATION

Galvanized steel coated with a painting system (nominal thickness of 25 µm) consisting of a primer coat and a polyester finish coat.

Wide range of colours and glosses available, except metallic finishes.

MAJOR PERFORMANCES

	DIN 55928-8	XP 34-301	EN 10169
Corrosion Resistance	III	III	RC3 RC2 for Z100
Photochemical resistance (UV)		III	RUV3

2. USE

Suitable for indoor and outdoor use in Building markets, in normal weather situation.

Ex: cladding and ruffing



3. QUALITY STANDARDS

3.1. ORGANIC COATING  
In compliance with EN 10169

NB: according to it's environment protection policy, NLMK supplies coatings and surface treatments free of chromium and heavy metals.

3.2. MECHANICAL PROPERTIES  
Defined by the substrate's steel grade and it's corresponding norm

- Available steel grades
- DX 51, S220 to S350GD in compliance with EN 10346

4. COATING

4.1. SUBSTRATE'S METALLIC COATING

- Double-sided, in compliance with EN 10346
- Zinc mass:** indoor use: Z100  
outdoor use: Z225 - Z275

4.2. FINISH ORGANIC COATING

- Conventional:** Top side finish coat
- Optional:** double-sided
- Backcoat on reverse side

Properties	Test standard	Criteria	Guarantee	Comments
Thickness	EN-13523-1	P34301 or EN-10169	25 µm	
Specular gloss	EN-13523-2	P34301 or EN-10169	20 to 50 GU	GU = Gloss unit
Bending adhesion	EN-13523-7	P34301 or EN-10169	2 T	
CLEMEN Hardness	ISO 1518		> 1500 g	
Flexibility	EN 13523-7		3 T	
Salt Spray Test	EN-13523-8	EN-10169	360 h	240 h on Z100
UV Resistance	EN-13523-10	DELTA E <=5 Gloss retention>30%	2000 h	
Fire Resistance	CSTB		M0	
Heat Resistance			80°C	
Tropical Test	EN-13523-26	ISO 6270-1	1000 h	-

5. DELIVERY

Coils

T/Coils	17.3 t max
Outside diameter	1800 mm max
Inside diameter	508 mm
Section	1520 mm²
Axis	horizontal
Strapping	radial & circumferential
Label	1 inside/ 1 outside
Packaging on request	- rolled-up on cardboard - paper or metallic wrapped - wooden cradle
Protection	-
Certificate	in compliance with EN 10204

Sheets & Narrow Strips

> Please contact our Sales Department

6. STEEL PROCESSING

The Organic coated steels processing ability depends on the substrate's steel grade.

However, the organic finish coat type and thickness, as well as substrate's properties, might prevent from cutting, forming or welding at usual technical terms.

> Please contact our Sales Department



1. PRESENTATION

Galvanized steel coated with a painting system consisting of a light Polyester layer (thickness max 15 µm).

MAJOR PERFORMANCES

	DIN 55928-8	XP 34-301	EN 10169
Corrosion Resistance	II	II	RC2
Photochemical resistance		II	RUV1

2. USE

Low-cost system, suitable for:

- Indoor Building applications
- Outdoor Industry and Building markets, free of guarantee

Ex: indoor cladding, shutters, construction works barriers



3. QUALITY STANDARDS

3.1. ORGANIC COATING  
In compliance with EN 10169

NB: according to it's environment protection policy, NLMK supplies coatings and surface treatments free of chromium and heavy metals.

3.2. MECHANICAL PROPERTIES  
Defined by the substrate's steel grade and it's corresponding norm

- Available steel grades
- DX 51, S220 to S350GD in compliance with EN 10346

4. COATING

4.1. SUBSTRATE'S METALLIC COATING

- Double-sided, in compliance with EN 10346
- Zinc mass: Z100 min

4.2. FINISH ORGANIC COATING

- Conventional: Top side finish coat
- Optional: double-sided

Properties	Test standard	Criteria	Guarantee	Comments
Thickness	EN-13523-1	P34301 or EN-10169	15 µm	
Specular gloss	EN-13523-2	P34301 or EN-10169	20 to 50 GU	GU = gloss unit
Bending adhesion	EN-13523-7	P34301 or EN-10169	2 T	
CLEMEN Hardness	ISO 1518		> 1500 g	
Flexibility	EN 13523-7		3 T	
Salt Spray Test	EN-13523-8	EN-10169	240 h	
Fire Resistance	CSTB		M0	
Tropical Test	EN-13523-26	ISO 6270-1	500 h	-

5. DELIVERY

Coils

T/Coils	12t max (risk of ovalization)
Outside diameter	1800 mm max
Inside diameter	508 mm
Section	1520 mm²
Axis	horizontal
Strapping	radial & circumferential
Label	1 inside/ 1 outside
Packaging on request	- rolled-up on cardboard - paper or metallic wrapped - wooden cradle
Protection	-
Certificate	in compliance with EN 10204

Sheets & Narrow Strips

> Please contact our Sales Department

6. STEEL PROCESSING

The Organic coated steels processing ability depends on the substrate's steel grade.

However, the organic finish coat type and thickness, as well as substrate's properties, might prevent from cutting, forming or welding at usual technical terms.

> Please contact our Sales Department



# GRAINED COATING

# PRE-PAINTED STEELS

## 1. PRESENTATION

Galvanized steel coated with a painting system (nominal thickness of 25 µm), consisting of a primer coat and a Polyester finish coat containing micro-leads of polyamid.

**Characteristics**

- **Aesthetic:** granular touch and aspect
- **Technic:** stronger surface hardness

**MAJOR PERFORMANCES**

	DIN 55928-8	XP 34-301	EN 10169
Corrosion Resistance	III	III	RC3 RC2 for Z100
Photochemical resistance		III	RUV3

## 2. USE

Especially designed for indoor and outdoor uses in both industrial and building markets.

Ex: sectional doors, cold-room panels, metallic furniture, appliance framing



## 3. QUALITY STANDARDS

### 3.1. ORGANIC COATING

In compliance with EN 10169

NB: according to it's environment protection policy, NLMK supplies coatings and surface treatments free of chromium and heavy metals.

### 3.2. MECHANICAL PROPERTIES

Defined by the substrate's steel grade and it's corresponding norm

**Available steel grades**

- DX 51, S220 to S350GD in compliance with EN 10346

## 4. COATING

### 4.1. SUBSTRATE'S METALLIC COATING

- Double-sided, in compliance with EN 10346
- **Zinc mass:** inside use: Z100 min  
outside use: Z225 - Z2275

### 4.2. FINISH ORGANIC COATING

- **Conventional:** Top side finish coat
- **Optional:** double-sided
- Primer layer on reverse side

Properties	Test standard	Criteria	Guarantee	Comments
Thickness	EN-13523-1	P34301 or EN-10169	25 µm	
Specular gloss	EN-13523-2	P34301 or EN-10169	30 GU	GU = Gloss unit
Abrasion Resistance	EN-13523-16	CS10/500g/1000T	50 mg	
Bending adhesion	EN-13523-7	P34301 or EN-10169	0.5 T	
CLEMEN Hardness	ISO 1518		> 1500 g	
Flexibility	EN 13523-7		1.5 T	
Salt Spray Test	EN-13523-8	EN-10169	360 h	240 h on Z100
UV Resistance	EN-13523-10	DELTA E <=3 Gloss retention >50%	2000 h	
Fire Resistance	CSTB		M0	
Heat Resistance			80°C	
Tropical Test	EN-13523-26	ISO 6270-1	1000 h	-

## 5. DELIVERY

**Coils**

T/Coils	12 t max (risk of ovalization)
Outside diameter	1800 mm max
Inside diameter	508 mm
Section	1520 mm²
Axis	horizontal
Strapping	radial & circumferential
Label	1 inside/ 1 outside
Packaging on request	- rolled-up on cardboard - paper or metallic wrapped - wooden cradle
Protection	-
Certificate	in compliance with EN 10204

**Sheets & Narrow Strips**

> Please contact our Sales Department

## 6. STEEL PROCESSING

The Organic coated steels processing ability depends on the substrate's steel grade.

However, the organic finish coat type and thickness, as well as substrate's properties, might prevent from cutting, forming or welding at usual technical terms.

> Please contact our Sales Department



# POLYESTER FOR GENERAL INDUSTRY

PRE-PAINTED STEELS

## 1. PRESENTATION

Galvanized steel coated with a painting system (nominal thickness of 20 to 30 µm), consisting of a primer coat and a Polyester finish coat.

### Characteristics

- **Aesthetic:** extensive range of glosses (10 GU to 50 GU)
- **Technic:** wide forming ability

### MAJOR PERFORMANCES

	DIN 55928-8	XP 34-301	EN 10169
Corrosion Resistance	II	II	RC2
Photochemical Resistance			RUV1

## 2. USE

Dedicated to usual manufacturing, as suitable for a large variety of applications: metal furniture, lights, electrical devices

## 3. QUALITY STANDARDS

### 3.1. ORGANIC COATING

In compliance with EN 10169

NB: according to it's environment protection policy, NLMK supplies coatings and surface treatments free of chromium and heavy metals.

### 3.2. MECHANICAL PROPERTIES

Defined by the substrate's steel grade and it's corresponding norm

#### Available steel grades

- DX 51, S220 to S350GD in compliance with EN 10346

## 4. COATING

### 4.1. SUBSTRATE'S METALLIC COATING

- Double-sided, in compliance with EN 10346
- **Zinc mass:** Z100 - Z140

### 4.2. FINISH ORGANIC COATING

- **Conventional:** Top side finish coat
- **Optional:** double-sided
- Primer layer on reverse side

Properties	Test standard	Criteria	Guarantee	Comments
Thickness	EN-13523-1	P34301 or EN-10169	20 to 30 µm	
Specular gloss	EN-13523-2	P34301 or EN-10169	10 to 50 GU	GU = Gloss unit
Bending adhesion	EN-13523-7	P34301 or EN-10169	0 to 1 T	
Flexibility	EN 13523-7		2 T	
Pencil hardness	EN-13523-4	H	-	-
Salt Spray Test	EN-13523-8		240 h	

## 5. DELIVERY

### Coils

T/Coils	17.3 t max
Outside diameter	1800 mm max
Inside diameter	508 or 610 mm
Section	1520 mm²
Axis	horizontal
Strapping	radial & circumferential
Label	1 inside/ 1 outside
Packaging on request	- rolled-up on cardboard - paper or metallic wrapped - wooden cradle
Protection	-
Certificate	in compliance with EN 10204

### Sheets & Narrow Strips

> Please contact our Sales Department

## 6. STEEL PROCESSING

The Organic coated steels processing ability depends on the substrate's steel grade.

However, the organic finish coat type and thickness, as well as substrate's properties, might prevent from cutting, forming or welding at usual technical terms.

> Please contact our Sales Department



# MATT POLYESTER

## PRE-PAINTED STEELS

### 1. PRESENTATION

Galvanized steel coated with a painting system (nominal thickness of 25 up to 35 µm), consisting of a primer coat and a matt polyester finish coat (gloss ≤ 5 GU).

#### Characteristics

- **Aesthetic:** reduced steel appearance (10 GU to 50 GU)
- **Technic:** good UV resistance

#### MAJOR PERFORMANCES

Polyester 25 µm

	DIN 55928-8	XP 34-301	EN 10169
Corrosion resistance	III	III	RC3
Photochemical resistance		III	RUV3

Polyester 35 µm

	DIN 55928-8	XP 34-301	EN 10169
Corrosion resistance	III	V	RC4
Photochemical resistance		V	RUV3

### 2. USE

Especially designed for outdoor Building markets, particularly roofing systems.

Examples: tiles profile sheets



### 3. QUALITY STANDARDS

#### 3.1. ORGANIC COATING

In compliance with EN 10169

NB: according to it's environment protection policy, NLMK supplies coatings and surface treatments free of chromium and heavy metals.

#### 3.2. MECHANICAL PROPERTIES

Defined by the substrate's steel grade and it's corresponding norm

#### Available steel grades

- DX 51, S220 to S350GD in compliance with EN 10346

### 4. COATING

#### 4.1. SUBSTRATE'S METALLIC COATING

- Double-sided, in compliance with EN 10346
- **Zinc mass:** Z225 - Z275

#### 4.2. FINISH ORGANIC COATING

- **Conventional:** Top side finish coat
- **Optional:** double-sided
- Primer layer on reverse side

Properties	Test standard	Criteria	Guarantee	Comments
Thickness	EN-13523-1	P34301 or EN-10169	25 to 35 µm	
Specular gloss	EN-13523-2	P34301 or EN-10169	≤ 5 GU	GU = Gloss unit
Bending adhesion	EN-13523-7	P34301 or EN-10169	0.5 T	
CLEMEN Hardness	ISO 1518		> 1500 g	
Flexibility	EN 13523-7		2 T	
Salt Spray Test	EN-13523-8	EN-10169	360 h	
UV Resistance	EN-13523-10	DELTA E ≤3 gloss retention>80%	2000 h	
Fire Resistance	CSTB		M0	
Tropical Test	EN-13523-26	ISO 6270-1	2500 h	-

### 5. DELIVERY

#### Coils

T/Coils	7 t max (risk of ovalization)
Outside diameter	1800 mm max
Inside diameter	508 mm
Section	1520 mm²
Axis	horizontal
Strapping	radial & circumferential
Label	1 inside/ 1 outside
Packaging on request	- rolled-up on cardboard - paper or metallic wrapped - wooden cradle
Protection	-
Certificate	in compliance with EN 10204

#### Sheets & Narrow Strips

> Please contact our Sales Department

### 6. STEEL PROCESSING

The Organic coated steels processing ability depends on the substrate's steel grade.

However, the organic finish coat type and thickness, as well as substrate's properties, might prevent from cutting, forming or welding at usual technical terms.

> Please contact our Sales Department

# POLYVINYLIDENE FLUORIDE (PVDF)

## PRE-PAINTED STEELS

### 1. PRESENTATION

Galvanized steel coated with a painting system (nominal thickness of 25 to 35 µm), consisting of a primer coat and a Polyvinylidene Fluoride finish coat.

Available range of selected colours, standard gloss 30 GU only.

#### Characteristics

- **Aesthetic:** very long-term colour stability
- **Technic:** strong corrosion and UV resistance, good forming ability

#### MAJOR PERFORMANCES

PVDF 25 µm

	DIN 55928-8	XP 34-301	EN 10169
Corrosion resistance	III	IV	RC3
Photochemical resistance		IV	RUV4

PVDF 35 µm

	DIN 55928-8	XP 34-301	EN 10169
Corrosion resistance	III	VI	RC4
Photochemical resistance		VI	RUV4

### 2. USE

Particularly designed for the Building markets in strong demanding environments, as chemical industry (SO<sub>2</sub> atmosphere).

Environmental prior audit might be required  
> Please contact our Sales Department

Examples: cladding and roofing

### 3. QUALITY STANDARDS

#### 3.1. ORGANIC COATING

In compliance with EN 10169

NB: according to it's environment protection policy, NLMK supplies coatings and surface treatments free of chromium and heavy metals.

#### 3.2. MECHANICAL PROPERTIES

Defined by the substrate's steel grade and it's corresponding norm

#### Available steel grades

- DX 51, S220 to S350GD in compliance with EN 10346

### 4. COATING

#### 4.1. SUBSTRATE'S METALLIC COATING

- Double-sided, in compliance with EN 10346
- **Zinc mass:** Z225 - Z275

#### 4.2. FINISH ORGANIC COATING

- **Conventional:** Top side finish coat
- Primer layer on reverse side

Properties	Test standard	Criteria	Guarantee	Comments
Thickness	EN-13523-1	P34301 or EN-10169	25 to 35 µm	
Specular gloss	EN-13523-2	P34301 or EN-10169	30 GU	GU = Gloss unit
Bending adhesion	EN-13523-7	P34301 or EN-10169	0.5 T	
Pencil Hardness	EN-13523-4	-	H8H	-
Flexibility	EN 13523-7		2 T	
Salt Spray Test	EN-13523-8	EN-10169-2	360 h	
UV Resistance	EN-13523-10	DELTA E <=3 Gloss retention >80%	2000 h	
Fire Resistance	CSTB		M0	
Tropical Test	EN-13523-26	ISO 6270-1	1000 h	-

### 5. DELIVERY

#### Coils

T/Coils	17.3 t max
Outside diameter	1800 mm max
Inside diameter	508 mm
Section	1520 mm²
Axis	horizontal
Strapping	radial & circumferential
Label	1 inside/ 1 outside
Packaging on request	- rolled-up on cardboard - paper or metallic wrapped - wooden cradle
Protection	-
Certificate	in compliance with EN 10204

#### Sheets & Narrow Strips

> Please contact our Sales Department

### 6. STEEL PROCESSING

The Organic coated steels processing ability depends on the substrate's steel grade.

However, the organic finish coat type and thickness, as well as substrate's properties, might prevent from cutting, forming or welding at usual technical terms.

> Please contact our Sales Department



# VERY HIGH DURABILITY (VHD)

## PRE-PAINTED STEELS

### 1. PRESENTATION

Galvanized steel coated with a painting system (nominal thickness of 25 to 35 µm), consisting of a primer coat and a Polyester finish coat.

#### Characteristics

- **Aesthetic:** long-term colour stability. Wide range of metallic colours.
- **Technic:** good corrosion resistance, wide forming ability.

#### MAJOR PERFORMANCES

VHD 25 µm

	DIN 55928-8	XP 34-301	EN 10169
Corrosion resistance	III	III	RC3
Photochemical resistance (UV)		III	RUV4

VHD 35 µm

	DIN 55928-8	XP 34-301	EN 10169
Corrosion resistance	III	VI	RC4
Photochemical resistance (UV)		III	RUV4

### 2. USE

Especially designed for outdoor Building markets in demanding environments, as strong insulation, medium rate of humidity ...

Ex: roofing and cladding in Overseas Territories



### 3. QUALITY STANDARDS

#### 3.1. ORGANIC COATING

In compliance with EN 10169

NB: according to it's environment protection policy, NLMK supplies coatings and surface treatments free of chromium and heavy metals.

#### 3.2. MECHANICAL PROPERTIES

Defined by the substrate's steel grade and it's corresponding norm

#### Available steel grades

- DX 51, S220 to S350GD in compliance with EN 10346

### 4. COATING

#### 4.1. SUBSTRATE'S METALLIC COATING

- Double-sided, in compliance with EN 10346
- **Zinc mass:** Z225 - Z275

#### 4.2. FINISH ORGANIC COATING

- **Conventional:** Top side finish coat
- **Optional:** double-sided
- Primer layer on reverse side

Properties	Test standard	Criteria	Guarantee	Comments
Thickness	EN-13523-1	P34301 or EN-10169	25 to 35 µm	
Specular Gloss	EN-13523-2	P34301 or EN-10169	20 to 50 GU	GU = Gloss unit
Bending adhesion	EN-13523-7	P34301 or EN-10169	0.5 T	
Pencil Hardness	EN-13523-4	-	HBH	-
Flexibility	EN 13523-7		2 T	
Tropical test	EN-13523-26	1500 h	-	-
Salt Spray Test	EN-13523-8	EN-10169	360 h	
UV Resistance	EN-13523-10	DELTA E <=3 Gloss retention >80%	2000 h	
Fire Resistance	CSTB		M0	
Heat Resistance			80°C	

### 5. DELIVERY

#### Coils

T/Coils	17.3 t max
Outside diameter	1800 mm max
Inside diameter	508 mm
Section	1520 mm²
Axis	horizontal
Strapping	radial & circumferential
Label	1 inside/ 1 outside
Packaging on request	- rolled-up on cardboard - paper or metallic wrapped - wooden cradle
Protection	-
Certificate	in compliance with EN 10204

#### Sheets & Narrow Strips

> Please contact our Sales Department

### 6. STEEL PROCESSING

The Organic coated steels processing ability depends on the substrate's steel grade.

However, the organic finish coat type and thickness, as well as substrate's properties, might prevent from cutting, forming or welding at usual technical terms.

> Please contact our Sales Department

# VERY VERY HIGH DURABILITY (VVHD)

## PRE-PAINTED STEELS

### 1. PRESENTATION

Galvanized steel coated with a painting system (nominal thickness 55 µm), consisting of a primer coat and a polyurethane finish coat containing micro-leads of polyamid.

Wide range of colours, including metallic finishes.

#### Characteristics

- **Aesthetic:** long-term colour stability.
- **Technic:** strong corrosion and UV resistance; wide forming ability

#### MAJOR PERFORMANCES

	DIN 55928-8	XP 34-301	EN 10169
Corrosion resistance	III	VI	RC5
Photochemical resistance		VI	RUV4

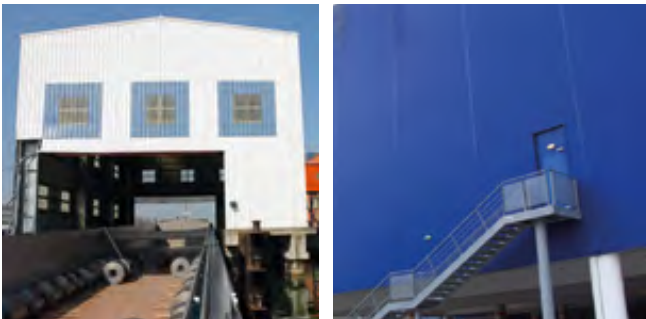
### 2. USE

Especially designed for the building markets in high-demanding environments, as Heavy Industry and/or marine atmosphere.

Environmental prior audit might be recommended.

> Please contact our Sales Department

Ex: cladding and roofing of seaport-warehouses, steel mills.



### 3. QUALITY STANDARDS

#### 3.1. ORGANIC COATING

In compliance with EN 10169

NB: according to it's environment protection policy, NLMK supplies coatings and surface treatments free of chromium and heavy metals.

#### 3.2. MECHANICAL PROPERTIES

Defined by the substrate's steel grade and it's corresponding norm

#### Available steel grades

- DX 51, S220 to S350GD in compliance with EN 10346

### 4. COATING

#### 4.1. SUBSTRATE'S METALLIC COATING

- Double-sided, in compliance with EN 10346
- **Zinc mass:** Z225 - Z275

#### 4.2. FINISH ORGANIC COATING

- **Conventional:** Top side finish coat
- **Optional:** double-sided
- Primer layer on reverse side

Properties	Test standard	Criteria	Guarantee	Comments
Thickness	EN-13523-1	P34301 or EN-10169	55 µm	
Specular gloss	EN-13523-2	P34301 or EN-10169	20 to 35 GU	GU = Gloss unit
Abrasion Resistance	EN-13523-16	CS10/500g/1000T	15 to 50 mg	Depending on colour
Bending adhesion	EN-13523-7	P34301 or EN-10169	0.5 T	
CLEMEN Hardness	ISO 1518		> 2500 g	
Flexibility	EN 13523-7		1.5 T	
Tropical test	EN-13523-26	1500 h	-	-
Salt Spray Test	EN-13523-8	EN-10169	500 h	
UV Resistance	EN-13523-10	DELTA E <=3 Gloss retention >80%	2000 h	
Fire Resistance	CSTB		M0	
Heat Resistance			80°C	

### 5. DELIVERY

#### Coils

T/Coils	17.3 t max
Outside diameter	1800 mm max
Inside diameter	508 mm
Section	1520 mm²
Axis	horizontal
Strapping	radial & circumferential
Label	1 inside/ 1 outside
Packaging on request	- rolled-up on cardboard - paper or metallic wrapped - wooden cradle
Protection	-
Certificate	in compliance with EN 10204

#### Sheets & Narrow Strips

> Please contact our Sales Department

### 6. STEEL PROCESSING

The Organic coated steels processing ability depends on the substrate's steel grade.

However, the organic finish coat type and thickness, as well as substrate's properties, might prevent from cutting, forming or welding at usual technical terms.

> Please contact our Sales Department



# 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



## 1. 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 - 10 mm	0,5 - 3 mm
Width	950 - 2.000 mm	500 - 1.600 mm
Length	1000 - 12.000 mm	1000 - 6.100 mm
Product	Hot Rolled Steels	Hot Rolled & Hot Dip Galvanized Steels
Production Capacity	120.000 tpa	50.000 tpa

## 2. 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 mm	2,5 - 8 mm
Width	50 - 1.845 mm	78 - 1.600 mm
Product	Hot Rolled & Hot Dip Galvanized Steels	
Production Capacity	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), HSLA (high yield strength) steels, hot-dip galvanized and pre-painted steels. Our Service Centre serves end-users in the Automotive, General Industry and Construction segments, as well as customers in Distribution segment.

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.



# CONTACTS

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LET'S CREATE OUR FUTURE  
LET'S GROW TOGETHER

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