

## 1 Description and advantages

NLMK Europe proposes a large range of Advanced High Strength Steels (AHSS) dedicated for the automotive industry. Their use is recommended where high resistance is needed and to prevent accelerated fatigue in severe environments. They offer good formability properties. The high potential of these steels facilitates the development of innovative designs.

The **AHSS** steels proposed by NLMK Europe for the automotive industry include the following grades:

**- for cold forming:**

- DUAL PHASES steels (DP);
- FERRO BAINITIC steels (FB);
- High RESISTANCE steels (HR);
- High Strength low ALLOYED (HSLA);
- Extra deep drawing (DD) and IF.

**- for heat treatment:**

- HIGH CARBON steels;
- BORON steels;
- ALLOYED steels.

NLMK Europe proposes also **other steels** for specific use in the structure or as component:

- Steels for visible parts (MS/DD/RP/BH);
- DRYZINC for improved forming.

## 2 Product and service range

To meet all your requirements, Duferco proposes a very large range of products and services:

- Lingots and Heavy plates;
- Hot Rolled (HR) products;
- Cold Rolled (CR) products;
- Electro-Zinc (EZ) products;
- Hot Dip Galvanised (HDG) products;
- Organic coated products;
- Integrated Steel Service network.

## 3 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.

### Quality Certifications within the Group :

- ISO 9001 for La Louvière, Clabecq, Strasbourg & Beautor
- ISO TS 16949 for La Louvière, Strasbourg & Beautor
- ISO 14001 for DanSteel A/S, Strasbourg et Beautor
- ISO 18001 for Strasbourg





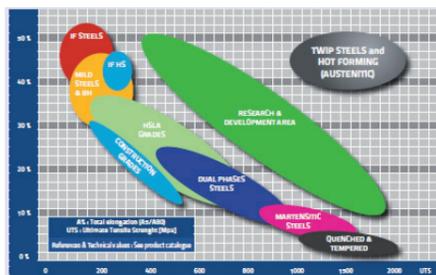
## ADVANCED HIGH STRENGTH STEELS (AHSS)

### Uses:

- recommended for **cold forming** applications;
- when energy absorption, fatigue and weight performance must be achieved.

### Grades:

- DP450 - DP500 - DP600;
- HR45 - HR55 - HR60;
- FB 590;
- S460MC - S500MC - S550MC;
- S600MC - S650MC - S700MC.



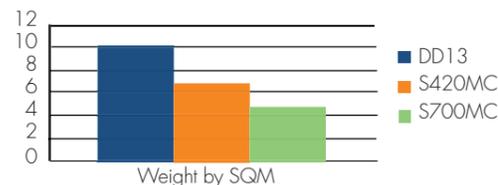
## HIGH STRENGTH LOW ALLOYED STEELS (HSLA)

### Uses:

- recommended for **cold forming** applications;
- when weight reduction and also higher resistance is needed.

### Grades:

- S315MC - S355MC - S420MC;
- HC340 - 380 - 420LA.



## MILD STEELS AND EXTRA DEEP DRAWING STEELS (MS/DD)

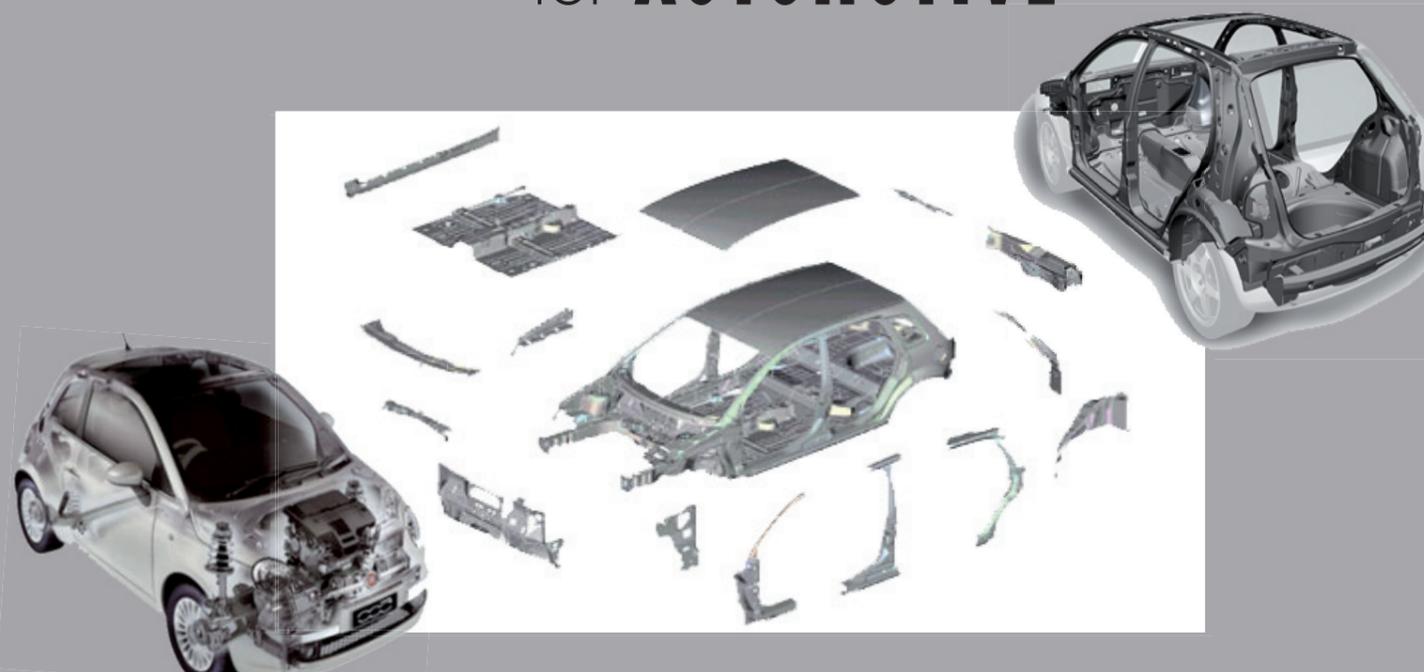
### Uses:

- when deformability is linked to extreme and severe design and/or applications.

### Grades:

- DD11 - 12 - 13 - 14;
- DC01 - 04 - 05 - 06 - 07 + IF Grades;
- Rephosphorised;
- Bake Hardening.

# INNOVATION IN STEEL for **AUTOMOTIVE**



## AUTOMOTIVE APPLICATIONS

### B.I.W. (Body in White)

### Doors and closures

### Security parts

### Powertrain & Braking systems

### Wheels

### Seats

### Mechanisms

A.B.C. Pillars : DP450/500/600/800

Floors / Tunnels : H320 LAD / DP 600

Reinforces / Structures : H280LAD/H320LA/LAD

Panels : BH220/RP220/RP260

Closure : H320LA/LAD

Side impact beams : DP600/800/1000

Bumpers : DP600/DP800

Powertrain : S355MC, S500MC, FE590FB

Braking systems : S275JR, S420MC, S500MC

HR45/HR50/HR60

Seatracks : S420MC/S460MC/S550MC

Structures : H380LA/ H400LA

Clutches : 51CrV4, C75

Articulations : S420MC/S550MC

Closures : S700MC

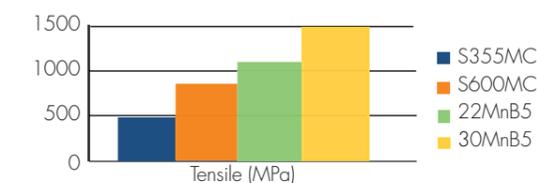
## CARBON, BORON AND ALLOYED STEELS

### Uses:

- recommended for **heat treatment** operations and **hot forming** applications;
- when extreme resistance to wear and also energy absorption must be reached.

### Grades:

- C40 - 45 - 50 - 55 - 60;
- 20 - 30 - 38MnB5;
- 27 - 33 - 39 MnCRB5;
- 25 - 34 - 42 - 50 CRMO4;
- 51CRV4.

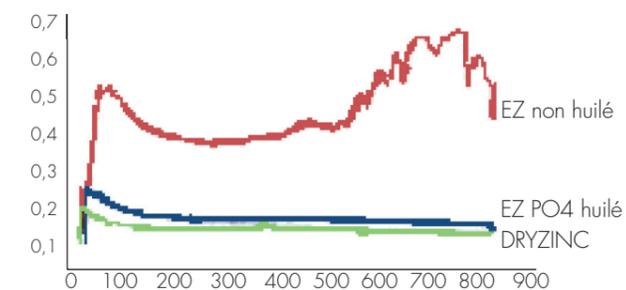


## SPECIFIC PRODUCTS : DRYZINC

Technical innovation for improved production costs and feasibility. Dryzinc has been specially developed for improving feasibility of difficult designed part and tested and approved by major company in Europe.

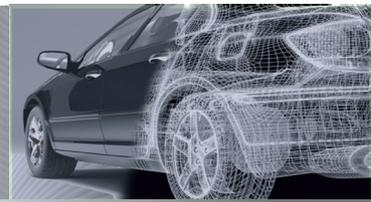
- Dryzinc for improved deformation of our steel range.

### Coefficient of friction as a tool



DRYZINC allows the right grade at the right place for deep drawing operations.





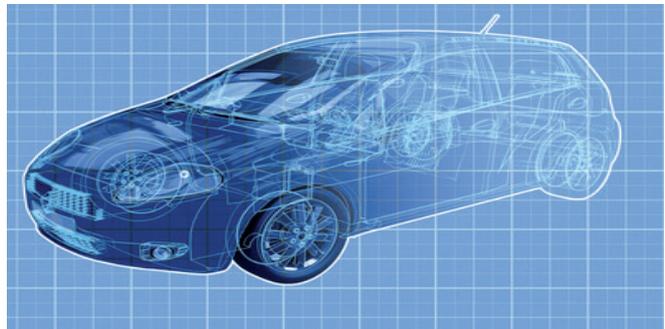
### 3 Technical information

As the workability differs from steel to steel, it is recommended to observe elementary precautions and to strictly follow the instruction given in the norms and in the technical guides before using advanced techniques for cutting, welding, forming, ...

Use and processing of Advanced High Strength Steels (AHSS) in substitution of conventional mild or low alloyed steels is subjected to prior analysis, such as static and dynamic calculations or energy absorption simulations.

Specific material as Dual Phases are subjected to work hardening (Wh0.2) during forming operations. Others as BH220 are subjected to Bake Hardening effect during painting.

Our technical experts are at your disposal for any demand or requirement. Read more about technical aspects in the individual product datasheets available via our website or through our sales representatives.



### 5 Contacts

Our experts stay at your disposal to propose you the right answer to your needs. Don't hesitate to contact them at the sales and production headquarters:

#### NLMK Coating S.A.

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Email : strip@eu.nlmk.com  
Internet : www.eu.nlmk.com

### 4 Network



Thanks to an proven and well established production and distribution network, we bring you the global solution for your global activities.

Moreover, we can reply on of a precise and ponctuous delivery wherever you want in Europe and in the rest of the world.

Note : the current information is subject to change without prior notice.

You can also contact directly the company of your choice:

#### Plate

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#### Distribution & transformation network

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