

STEEL SPECIFICATION

# Magnelis®

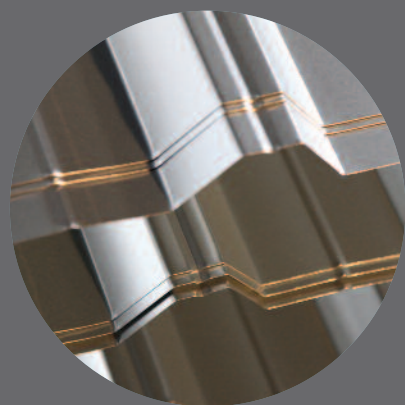
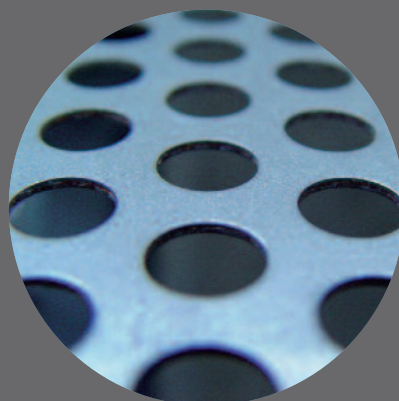
Exceptional protection – even on cut edges – in the harshest environments



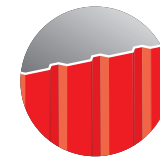
ArcelorMittal

Magnelis® is simply an exceptionally versatile metallic coated steel. It provides amazing levels of surface and cut-edge corrosion protection even in the most hostile of environments.

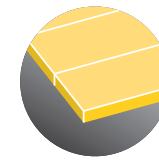
- excellent corrosion resistance – at least 3 times better than galvanised steel in external applications
- excellent forming behaviour thanks to a lower friction coefficient to galvanised steel and very good adhesion of Magnelis® coating
- complete edge protection from the self-healing properties of Magnelis® on cut edges
- more cost-effective than batch galvanised steels, due to simple manufacture
- lower zinc run-off than galvanised steel: better for the environment
- up to 20 years warranty for roofing and cladding in marine environments and up to 25 years for inland applications (more than 2000 m from the coast)



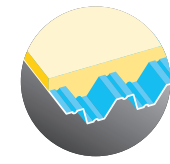
# Magnelis®



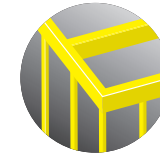
Profiled sheets



Decking



Composite flooring



Framing



Rainwater systems

The remarkable corrosion resistance of Magnelis® allows it to be used across a range of structural applications (light steel framing, ventilated facade supports, composite floors, solar system supports), but also for roofing and cladding in corrosive environments such as coastal buildings, agricultural buildings and water transport systems.

For civil engineering applications, Magnelis® offers a cost effective substitute for batch galvanised steel and in the transport sector Magnelis® is widely used for safety barriers, lighting poles, road signs, sound barrier fences and many other items.

In fact, wherever it's used, Magnelis®, guarantees tough, good-looking, cost-effective, long-life solutions.

Magnelis® is an exceptional, metallic coated steel product providing surface protection in a variety of applications against long-term wear and tear. Tough, self-healing and cost-effective, it offers superior corrosion resistance and versatility in a surprising range of constructions.

Left Photography: © ETIENjones/Shutterstock.com

Right Photography: © DSBfoto/Shutterstock.com



Project: Private housing, Montpellier, France Courtesy of: Profil du Futur  
Photography: © Christophe Demonfaucou



Project: Centre de Maintenance Cargolux, Luxembourg-Findel Architect: © Jean-Luc Dupanloup, chef de projets, Jean-François Schmit Architectes Photography: © Gaston Bergeret



### Applications

Magnelis® has a wide range of applications:

- Light steel framing structures
- Rainwater systems
- Composite floors
- Purlins
- Structures for solar systems
- Roof structures, particularly for harsh environments such as marine and agricultural

### Aesthetics

Magnelis® has a natural dark grey, spangle-free smooth aspect. Magnelis® is available with a standard environmentally friendly E-Passivation® (translucent CrVI-free temporary protection) or can be oiled on request.

### Performance

Magnelis® is produced on a classic industrial hot dip galvanising line, but dipped in a molten bath with a unique metallic chemical composition of zinc with 3.5% aluminium and 3% magnesium. The 3% magnesium is crucial as it creates a stable and durable layer across the entire surface and gives a far more effective corrosion protection than coatings with a lower magnesium content. As such, ArcelorMittal's Magnelis® offers significantly superior performance than alternative European products.

### Superior corrosion resistance

The destruction of coating that occurs in an ammonia-rich environment is seven times less with Magnelis® than with a standard zinc coating.

In addition, Magnelis® guarantees a longer-lasting, active coating protection over time. In highly alkaline environments (pH between 10 and 13), Magnelis® demonstrates superior corrosion resistance compared to other metallic coatings.

### Self-healing properties

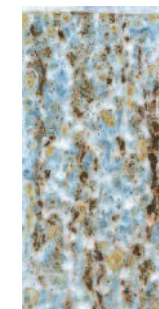
The secret of Magnelis® lies in the thin, zinc-based protective film (containing magnesium and aluminium) that is formed across the entire metal surface and that gives Magnelis® its self-healing property.

Magnelis® makes it almost impossible for the environment to penetrate. It blocks corrosion, and not only at the surface, but also on the uncoated edges, where a Magnelis® film will gradually produce specific compounds which gradually cover and seal the unprotected surface, preventing any corrosion.

### Salt spray test



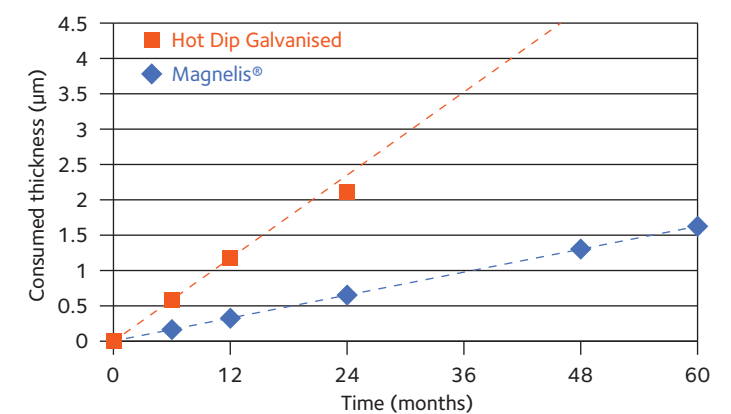
Hot dip galvanized  
20µm after 6 weeks



Post galvanized 85µm  
after 12 weeks



Magnelis® 20µm  
after 34 weeks



Corrosion rate of Magnelis® versus galvanized product. Outdoor exposure tests for 5 years in Brest, France, in a high-chloride environment-site C5M (steel).

**Technical data**

Product	Magnelis®
Thickness	0.45 mm to 6.00 mm
Max. coil width (dependent on thickness)	Up to 1680 mm
Metallic coating thickness	From ZM90 (7 µm) to ZM310 (25 µm)
Fire performance class	European standard (EN 13501-1) A1 French standard (FD P92-507) M0 British standard (BS 476) AA
Warranty	Up to 25 years

Certifications and compliance DIBt Z-30.11-51, CSTB, SP (SITAC)  
Full technical details are available online. Scan the QR code below.

**Warranty**

Up to 25 years for ZM310:  
 • inland roofing and facade applications (more than 2000 m from the coast)  
 • solar structure applications  
 • light structural components - dependent on application and environment

Up to 20 years:  
 • roofing and facade applications in marine environments

We are able to grant warranties for specific applications or environments. Please consult ArcelorMittal for further details.



**How to specify this material**

Metallic coated steel, coating made from zinc, 3.5% aluminium, 3% magnesium, thickness coating from 7 µm to 25 µm depending on the environment (Magnelis® by ArcelorMittal or equivalent).



**Flooring**

Composite floor systems, made with steel, serve as self-supporting formwork, resisting construction loads and concrete weight.

They are flexible and adaptable to any kind of new construction or renovation and can be used for floors in offices, housing, car parks, hospitals etc., allowing large spans and reduced floor thicknesses while maximising interior spaces.

Metallic coated steel, Magnelis®, with its excellent corrosion performance when in contact with concrete or in high alkaline atmosphere, is the ideal solution for durable, long-lasting flooring.

Photography: © 06photo/Shutterstock.com



**Framing for buildings**

Lightweight steel sections can be rapidly assembled off-site or on site to form structural internal and external wall panels or entire building frameworks. These can be combined with structurally efficient floor and roof solutions and provide stability and integrity to the building, eliminating the need for a steel or concrete primary frame.

Magnelis® will last much longer than steel with traditional coatings such as hot dip galvanised. Proven by outdoor tests, Magnelis® offers excellent protection, even for edges and perforations thanks to its inbuilt self-healing properties.

Photography: Courtesy of Profil du Futur



**Framing for photovoltaic systems**

To ensure adequate return on their investment, developers of photovoltaic installations need the supporting structure to remain viable for as long as possible.

The unique composition of the Magnelis® coating guarantees the integrity of steel solar structures. Thanks to the presence of 3% magnesium, the coating protects the steel for up to 25 years in normal locations.

Photography: © Moomsabuy/Shutterstock.com

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**Customer:** Marley Eternit



## Declaration concerning the classification of fire reaction of Magnelis ® steel product under the Construction Product Regulation

### Flat carbon steel production centers:

ArcelorMittal Atlantique et Lorraine SAS, ArcelorMittal Belgium S.A., ArcelorMittal Bremen GmbH, ArcelorMittal Dudelange S.A., ArcelorMittal Eisenhüttenstadt GmbH, ArcelorMittal España S.A., ArcelorMittal Galati SA, ArcelorMittal Méditerranée SAS, ArcelorMittal Ostrava a.s., ArcelorMittal Piombino S.p.a., ArcelorMittal Poland S.A., ArcelorMittal Sestao S.A., ArcelorMittal Skopje, ArcelorMittal Tailored Blanks, ArcelorMittal Technotron s.r.o.

The Commission Delegated Regulation (EU) 2016/364 establishes classes of reaction to fire performance for construction products, in the framework of the Construction Product Regulation pursuant to Regulation (EU) No 305/2011 of the European Parliament and of the Council. The decision 96/603/EC, amended by the decision 2000/605/EC, establishes the list of construction products pertaining to the (Euro)classes "No contribution to fire" A1 and A1<sub>FL</sub><sup>1</sup> without prior testing (products equivalent to incombustible products). See appendix in page 2.

Accordingly, Magnelis ®, as a metallic coated steel, is classified in the Euroclasses A1 and A1<sub>FL</sub> without testing.

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<sup>1</sup> FL: specific classification of construction products for floors

## APPENDIX

### List of materials to be considered as reaction to fire Classes A1 or A1<sub>FL</sub> provided for in Regulation (EU) 2016/364 without the need for testing (extraction)

#### General notes

Products should be made only from one or more of the following materials if they are to be considered as Classes A1 or A1<sub>FL</sub> without the need for testing. Products made by gluing one or more of the following materials together will be considered Classes A1 or A1<sub>FL</sub> without testing provided that the glue does not exceed 0,1 % by weight or volume (whichever is the lower).

Panel products (e.g. of insulating material) with one or more organic layers, or products containing organic material which is not homogeneously distributed (with the exception of glue) are excluded from the list.

**Products made by coating one of the following materials with an inorganic layer (e.g. coated metal products) may also be considered as Classes A1 or A1<sub>FL</sub> without the need for testing.**

Material	Comments
Iron, Steel and stainless steel	Not in finely divided form
Copper and copper alloys	
Zinc and zinc alloys	
Aluminium and aluminium alloys	
Lead	