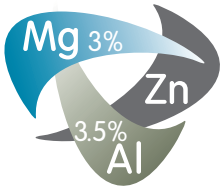
Certification of Magnelis® by DIBt

Breakthrough corrosion protection of Magnelis® certified by DIBt with a national technical approval for Germany



What is Magnelis®?

Magnelis® is an exceptional metallic coating which provides a breakthrough protection against corrosion. It's the best choice for a wide variety of applications in building, solar energy, heat and ventilation and power equipment, agriculture, road infrastructure applications, and many other fields.


National technical approval / General construction technique permit

Number: Z-30.11-51

Validity: 17 September 2019 – 17 September 2024

Applicant: ARCELORMITTAL FLAT CARBON EUROPE 24-26, Boulevard d'Avranches 1160 LUXEMBOURG LUXEMBURG

Subject of decision: Steel strips protected against corrosion by "Magnelis®", a metallic coating, to be used for the production of thin-walled, cold formed members

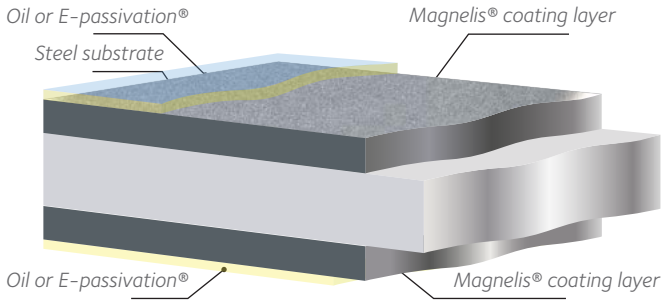
Translation authorised by DIBt

What is DIBt?

The Deutsches Institut für Bautechnik (DIBt) plays a pivotal role in the German construction sector. With its approvals and assessments, DIBt ensures the safety of construction work while fostering the development of innovative construction products and techniques.

In September 2019, DIBt granted ArcelorMittal's Magnelis® coating a national technical approval which states that:

- Magnelis® is certified for use on steels up to 6.0 mm thick
- Magnelis® can be used with uncoated edges up to 6.0 mm, if no aesthetical requirements. Magnelis® is the first coating to receive such an approval for thick gauges
- Magnelis® ZM310 (25 microns/side) can be used in Germany for permanent constructions in C4 environments
- The durability of Magnelis® is recognised for up to 50 years, depending on the environment and coating thickness.



Lifetime up to 50 years

The DIBt certification describes the expected lifetime of Magnelis®, depending on the coating thickness and environment where it will be utilised.

Table 1: Comparison of expected lifetimes (in years) by corrosion category for Magnelis® and other materials listed in DIN 55634-1 standard

		DIN 55634-1				DIBt national technical approval (Z-30.11-51)	
Corrosion category	Expected durability*	Z	ZA	AZ	ZM	Magnelis®	Expected durability (in years)
C2	High	Z350	ZA255	AZ75	ZM130	ZM120	24 to >50
C3	High	Z350	ZA400	AZ150	ZM250	ZM250	24 to 50
C4	Middle	Z600	ZA400	AZ150	ZM300	ZM250	13 to 25
	High	-	-	AZ185	ZM430	ZM310 ZM430	16 to 31 22 to 43
C5	Middle	-	-	AZ185	-	ZM250 ZM310 ZM430	6 to 13 8 to 16 11 to 22

** Middle = between 5 and 15 years. High = more than 15 years*

Magnelis® outperforms other ZM coated steels listed in the DIN 55634-1 standard in all considered environments. This is confirmed by DIBt in the Magnelis® national technical approval compared with the national technical approvals granted by DIBt for other coatings with a zinc-magnesium composition.

Compared to galvanised coatings, Magnelis® ZM120 can be used as a substitute for all coatings up to Z350. Magnelis® ZM250 can be used as substitute for galvanised coatings up to Z600.

Advantages of using Magnelis® in building applications:

- Improved durability, certified by DIBt
- No need for cut edge reprotection, certified by DIBt
- Excellent workability (bending, profiling, deep drawing, welding, painting)
- Compatibility with concrete
- Reduced maintenance costs
- 100% recyclable.

Cut-edge protection

After checking the self-healing effect of Magnelis® on cut edges, DIBt concluded that Magnelis® can be utilised with uncoated edges of up to 6.0 mm, if no aesthetical requirements. This is the only German national technical approval for a metallic coating which includes thick uncoated edges.

The following guidelines describe the appropriate coating thickness for each Magnelis® grade to protect cut-edges:

- **Magnelis® ZM120 protects cut edges on steels with a thickness up to 1.5 mm**
- **Magnelis® ZM250 protects cut edges on steels with a thickness up to 3 mm**
- **Magnelis® ZM310 protects cut edges on steels with a thickness up to 6.0 mm**

Note: Special provisions are included for profile legs which contribute to the load-bearing effect (or stabilisation) of members. If the legs are manufactured from metal sheets thicker than 3 mm, and have unprotected edges, DIBt recommends applying an allowance across the entire metal sheet thickness in the direction of the respective leg length. The recommended allowances are:

- 1 mm for a use in C2 environment
- 2 mm for a use in C3 to C5 environments.

Technical specifications*

Coating Designation		ZM70	ZM90	ZM120	ZM175	ZM200	ZM250	ZM310	ZM430
Coating mass (total both sides)	g/m²	70	90	120	175	200	250	310	430
Coating thickness	(µm/per side)	5	7	10	14	16	20	25	35
Aspect		MA or MB aspect*							
Surface treatment		C (E-Passivation® CrVI-free), O (oiled).							
Thickness		0.45 to 6.00 mm							
Width		Up to 1680 mm							
Steel grades									
DX51+ZM to DX57+ZM									
S220GD+ZM to S550GD+ZM									
S420GD-HyPer®+ZM, S450GD-HyPer®+ZM, S550GD-HyPer®+ZM									
HX260LAD+ZM up to HX700LAD+ZM									

* Contact us for detailed feasibility

The full version of the Magnelis® national technical approval is available from the DIBt website at https://www.dibt.de

The English version is avaible on the Magnelis® homepage

More information about Magnelis®

Visit the Magnelis® homepage at industry.arcelormittal.com/magnelis

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