

The harshest environments need the toughest skin protection

The best corrosion resistance performance; up to 10 times better than galvanized steel.

The best suited protection to withstand harshest environments

The most cost-effective alternative to the hot-dip galvanized process.

Magnelis®

ArcelorMittal



MEKOMAG

Mekomag is made with ArcelorMittal's Magnelis® self-healing metallic coated steel.

What is MekoMag?

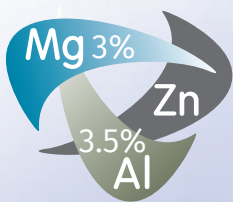
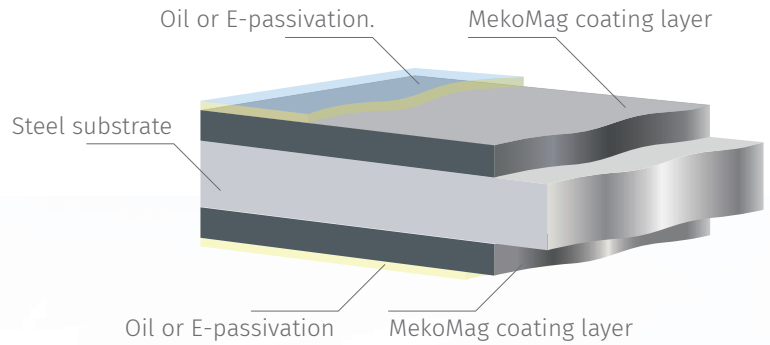
MekoMag is an exceptional metallic coating that provides a breakthrough in corrosion protection. MekoMag is also the best choice for a wide variety of applications.

Thanks to its unique composition, MekoMag provides an unprecedented level of surface and cut-edge protection, even in the most hostile environments.

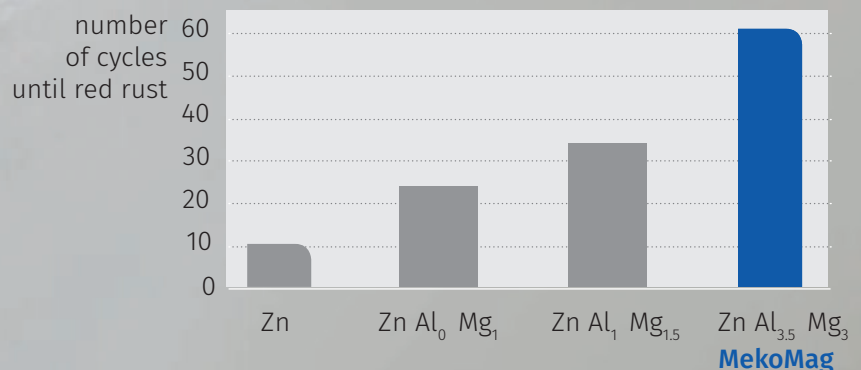
MekoMag is produced on a classic hot dip galvanising line, but the molten bath has a unique chemical composition including zinc, 3.5% aluminum and 3% magnesium.

MekoMag is an exceptional, new metallic steel coating providing surface protection in a variety of applications against long-term wear and tear.

MekoMAG has a naturally dark grey aspect. It is available with an environmentally friendly E-passivation® or it can be oiled on request.



Corrosion resistance in cyclic test for different Zn, Al, Mg compositions



10 µm of coating submitted for an alternated cycling of 8 hours fog cycle (5% NaCl) / dry cycle / humidity cycle
Source: ArcelorMittal R&D

MekoMag examples of applications

The chemical composition of MekoMag has been optimized to provide the best corrosion-resistance results.

MekoMag 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, MekoMag which is produced from ArcelorMittal's MekoMag provides significantly superior performance than alternative European products.

MekoMag has (space is also too much in catalog catches the eye) a natural dark grey, spangle-free smooth aesthetic aspect. Also available with a standard environmentally friendly E-Passivation® (translucent CrVI-free temporary protection) or can be oiled on request.



Eco friendly



Self repairing protection for cut edges



An alternative to the post-galvanizing process and to aluminium or stainless.

Superior corrosion resistance in Chloride and ammonia environments.



MekoMag Key Benefits

Superior corrosion resistance

Nothing offers better protection than MekoMag in chloride or ammonia environments. Due to its unique chemical composition, MekoMag provides superior corrosion resistance than standard hot dip galvanised steel.

The destruction of coating that occurs in an ammonia environment is seven times less with MekoMag than with a standard zinc coating. In addition, MekoMag guarantees a longer-lasting, active coating protection over time.

Over an eight-month period, a range of metallic coated products were submitted to salt spray tests. The results clearly highlighted the superior corrosion resistance performance of MekoMag over other metallic coatings. No red rust was observed on the MekoMag sample.

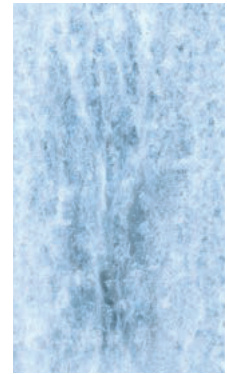
Self-repairing protection on cut edges

In addition to being fortified by a cathodic protection equivalent to zinc coating, MekoMag protects exposed cut edges with a thin zinc-based protective film with magnesium, which prevents corrosive reactions. The nature of this film varies depending on the environment and the properties according to the aluminium and magnesium content.

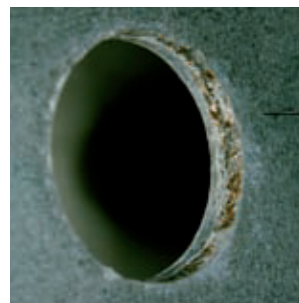
MekoMag versus pre-galvanised
(salt spray test)



Hot dip galvanised 20 µm
after 6 weeks



MekoMag 20 µm
after 34 weeks

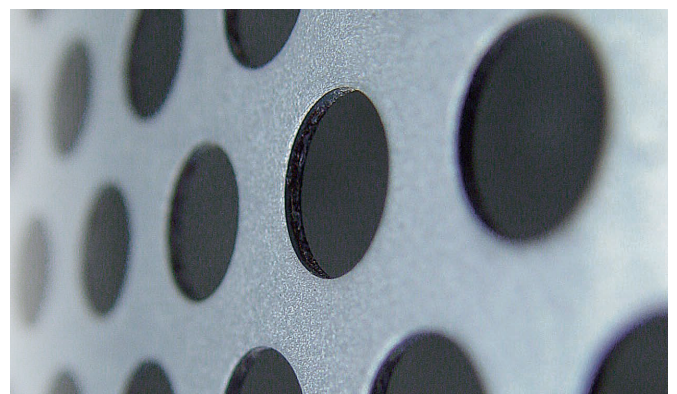


6 months
30-40% red rust
60% white rust



16 months
10% red rust
70% white rust

Outdoor exposure over different time periods of Mognelis® ZM310 with 2 mm thickness in Brest (France)
Marine category C5-M (the most severe) Institut Français de la Corrosion



An alternative to hot dip-galvanizing and other metals

MekoMag provides a real advantage over hot dip-galvanized products (with a ZM 310 g/m² coating) and even over high value products such as stainless and aluminium. Depending on the environment to which it is exposed, MekoMag delivers a significant coating weight reduction of 2 to 4 times less than hot dip-galvanized products, while performing significantly better in terms of corrosion resistance and cost-effectiveness.

Environmentally responsible

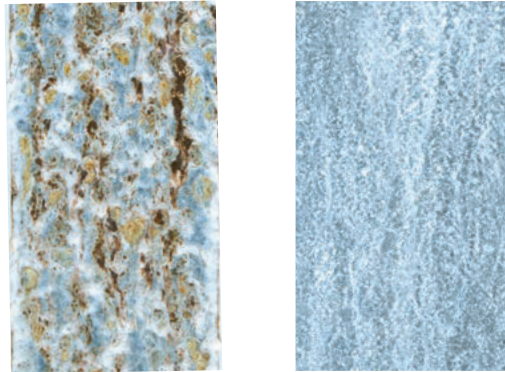
The application of MekoMag ensures the preservation of natural resources since it uses less zinc than pure zinc coatings. MekoMag reduces the zinc runoff in soils, considerably.

MekoMag has excellent workability

Thanks to its highly resistant, adherent metallic layer, MekoMag can be formed in a variety of methods, including bending, drawing, profiling etc. By decreasing the amount of metallic coating, while safeguarding corrosion resistance levels, spot welding is consequently improved.

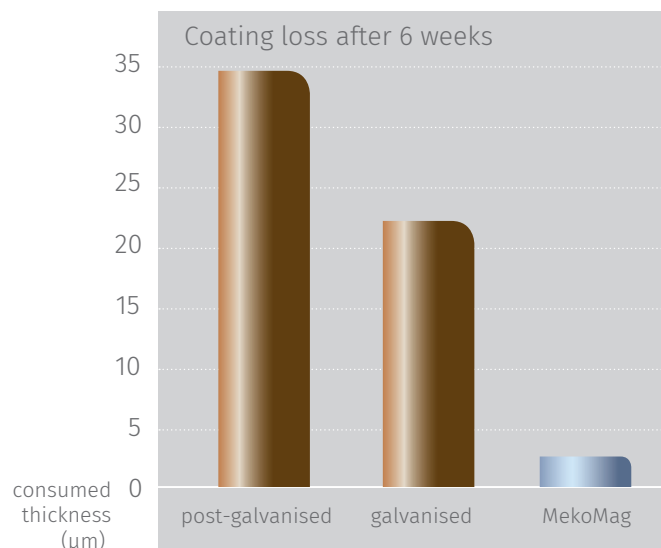
A protective oxide barrier covers the weld, also prevents the development of red rust. Thinner coating facilitates processing and delivers substantial savings. MekoMag performs three times better than standard galvanized steel, reduces powdering effect and loses less coating weight in processing tools.

MekoMag versus post-galvanised (salt spray test)



Post-galvanised 85 µm after 12 weeks

MekoMag 20 µm after 12 weeks



These are results from a 3CT (VDA 621-415) cyclic corrosion test. Source: ArcelorMittal R&D



Technical specifications

MekoMag is applied to the steel on a continuous hot dip galvanising line. The steel strip is dipped into a molten bath of MekoMag which includes zinc, 3.5% aluminium, and 3% magnesium.

By closely controlling the process conditions, ArcelorMittal is able to ensure the optimal properties of the final product.

MekoMag can be applied to a very wide range of steel grades. These include steels for cold forming and deep drawing applications, as well as structural and high strength, low alloy steels.

Steel thickness can range from 0.45 to 6 mm, while the coating can be from 5 to 35µ m/per side (ZM430).

| Coating Designation | | ZM70 | ZM90 | ZM120 | ZM175 | ZM200 | ZM250 | ZM310 | ZM430 | ZM620 |
|---------------------------------|---|------|------|-------|-------|-------|-------|-------|-------|-------|
| Coating Mass (total both sides) | g/m ² | 70 | 90 | 120 | 175 | 200 | 250 | 310 | 430 | 620 |
| Coating Thickness | (µm/per side) | 5 | 7 | 10 | 14 | 16 | 20 | 25 | 35 | 50 |
| Aspect | MA and 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 to DX57 + ZM
S220 GD to S550 GD + ZM
S420GD-HyPer® + ZM, S450GD-HyPer® + ZM and S550GD-HyPer® + ZM
HX260 LAD up to HX700 LAD + ZM

* Contact us for detailed feasibility

** Higher thicknesses available on request

