

ZM EcoProtect® and ZM PrimeProtect®
Premium corrosion protection
inside and out



ThyssenKrupp Steel Europe
Thinking the future of steel



ThyssenKrupp

Premium protection built-in. ZM EcoProtect® and ZM PrimeProtect® bring new levels of quality to inner and outer automotive parts. The hot-dip zinc-magnesium coatings give steel **enhanced corrosion protection**, even with lower coating weights. This **reduces costs** and at the same time **saves valuable zinc resources**. Thanks to superior surface technology the new zinc-magnesium coating can also be used on exposed body parts to provide highly effective corrosion protection. ZM EcoProtect® offers ThyssenKrupp Steel Europe's customary **superior outer skin quality**, while ZM PrimeProtect® impresses with even better paintability, meeting the highest requirements even in filler-less painting. Lower friction means **improved formability**. And not least, **reduced abrasion** means **less time spent on tool cleaning** in the press shop.

EXTREMELY IMPRESSIVE. OUTSIDE AND IN.

ZM EcoProtect® and ZM PrimeProtect® combine outstanding outer skin performance and premium corrosion protection.

OUTER

INNER

ZM EcoProtect®

is ideal for inner parts and high-quality surfaces, including in mixed use with conventionally hot-dip galvanized parts.



ZM PrimeProtect®

meets the highest demands on paintability and allows filler-less painting.

■ ZM EcoProtect® is ideal for parts in corrosion-sensitive areas such as floors and sills, and also for body parts where corrosion protection at cut edges is highly important. ZM EcoProtect® is also the number one choice for chassis parts in corrosion-critical areas, above all as a cost-effective alternative to batch-galvanized parts. In addition, the outstanding visual appearance of ZM EcoProtect® makes it highly suitable for use in outer skin parts, including in combination with conventionally hot-dip galvanized outer skin products.

The superior surface quality of ZM PrimeProtect® leaves nothing to be desired for the outer skin of cars. Thanks to a higher peak count and reduced long waviness, ZM PrimeProtect® meets particularly high demands on paint appearance. The surface is also highly suitable for filler-less painting.

OUTER

INNER

A STRONG ALLIANCE AGAINST RUST.

Zinc and magnesium result in improved corrosion performance, even with reduced coating weights.

■ ZM EcoProtect® and ZM PrimeProtect® provide far higher corrosion protection than conventional zinc coatings of the same thickness.

Even with a substantial reduction in coating weight, ZM EcoProtect® and ZM PrimeProtect® achieve at least equivalent corrosion performance. ZM EcoProtect® and ZM PrimeProtect® are particularly effective at highly critical points such as cut edges and scratches.

IN A DIRECT COMPARISON BETWEEN ZM70 AND Z100 the improved corrosion performance of zinc-magnesium coatings becomes clear, even with a significantly thinner coating.

+ Cut edge corrosion

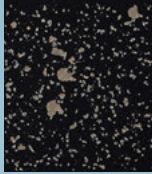
- ZM EcoProtect® and ZM PrimeProtect® offer significantly better corrosion protection than a conventional zinc coating, even with reduced coating thickness

+ Scribe corrosion

- Significant reduction of creep
-

TIME UNTIL RUST

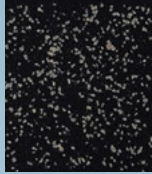
Z100



ZM70



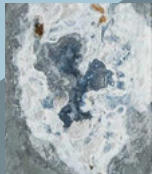
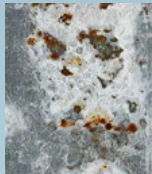
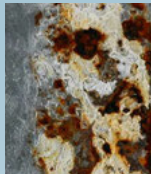
ZM100



ZM140



Underpaint creep
on stone chipped surface



Corrosion behavior
on visible flange
(after 6 cycles)

TESTED IN ACCORDANCE WITH DIN EN ISO 11997-1B

ZM EcoProtect®
ZM PrimeProtect®

GALVALUME®

GALFAN®

Conventional
hot-dip zinc coating

Compared with conventional coatings, ZM EcoProtect® and ZM PrimeProtect® are able to minimize underpaint rust creep around scratches and cut edges. The special mixture of zinc and magnesium provides a protective coating. Various tests show how efficient the coating is: No other coated steel withstands rust for longer than ZM EcoProtect® and ZM PrimeProtect®.

ZM EcoProtect® and ZM PrimeProtect® are superior not just functionally but also economically and ecologically, as only a comparatively small amount of zinc has to be used.

RESULTS OF CORROSION PROTECTION TESTS
with ZM EcoProtect®, ZM PrimeProtect® and other
metallic coatings compared.

THICKNESS OF COATING



EASE OF PROCESSING RIGHT DOWN THE LINE.

ZM EcoProtect® and ZM PrimeProtect® require no changes to existing production processes.

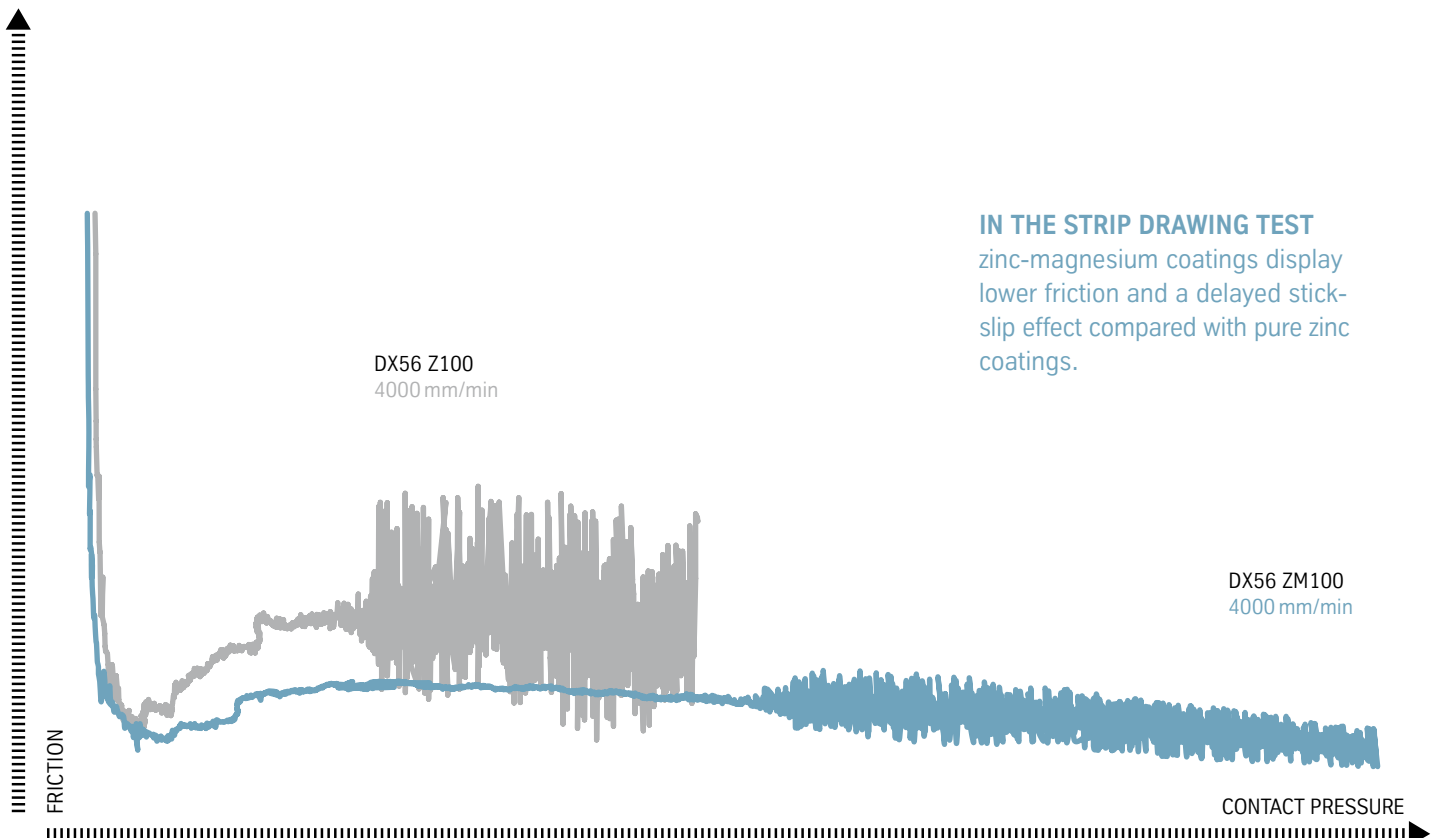
Overall, ZM EcoProtect® and ZM PrimeProtect® have superior forming properties to conventional zinc coatings.

The two zinc-magnesium products display lower friction than conventionally zinc-coated material. In addition, stick-slip effects occur much later.

This results not only in less abrasive wear during part manufacture but also reduced adhesive wear of press tooling, meaning less downtime for cleaning and lower costs.

When it comes to joining, too, ZM EcoProtect® and ZM PrimeProtect® are just as easy to process. Whether it's welding or adhesive bonding – both products offer similar properties to conventionally hot-dip galvanized steel.

But that's not all: Phosphating is not impaired in any way, and paintability is excellent thanks to very good paint adhesion.



- + Abrasion**
 - Less abrasion thanks to harder surface
- + Adhesive tool wear**
 - No galling even at high tool temperatures
- + Friction**
 - Reduced friction and improved stick-slip properties
- + Deep drawing**
 - Higher blankholder forces possible, wider process window with ZM EcoProtect® and ZM PrimeProtect®

CLEAR ADVANTAGES IN FORMING:

Cleaner tooling and better deep drawing properties are clear arguments in favor of the zinc-magnesium coatings.

IN TOTAL this means: With their numerous quality features, ZM EcoProtect® and ZM PrimeProtect® can be easily integrated into existing production processes.

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