Steel

ZM Ecoprotect® – Advantages beginning in the press plant

The new generation of automotive coatings.

thyssenkrupp

ZM Ecoprotect® from thyssenkrupp sets new standards in stamping performance and corrosion protection – the very areas where demands on today's auto component surfaces are particularly high: process reliability, cost efficiency and resource conservation in the press plant, and corrosion resistance and high-quality paint finish in the product. The innovative zinc-magnesium coating combines excellent quality in interior and outer skin parts with an impressive appearance.

The advantages of ZM Ecoprotect® go deeper than the surface

Optimized stamping performance

ZM Ecoprotect® ensures better formability, reduced adhesive wear of press tooling and ultimately less downtime for cleaning.

Improved corrosion behavior

With comparable coating thicknesses, corrosion protection is significantly improved, while a 30% reduction in coating weight still offers equivalent performance – with greater cut edge protection.

Quality inside and out

Also the first choice for exposed outer panels: ZM Ecoprotect® combines highly effective corrosion protection with brilliant appearance – through to the primetex® finish.

Outstanding environmental credentials

ZM Ecoprotect® saves at least 2 kg of zinc per mid-size car – that's a reduction of more than 30% on average in the amount of zinc used.

Ease of processing right down the line

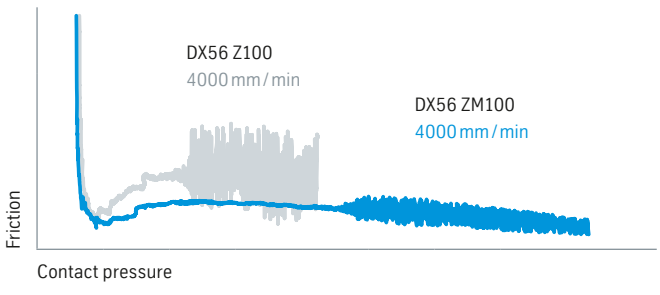
The advantages of the new zinc-magnesium coating already start to make themselves felt in the press plant. Compared with conventional galvanizing, ZM Ecoprotect® offers lower friction and superior forming properties: Stick-slip effects occur significantly later, resulting in reduced adhesive wear. This in turn reduces the time needed for tool cleaning and minimizes production downtimes. So ZM Ecoprotect® makes an important contribution to optimizing costs.

Advantages in forming

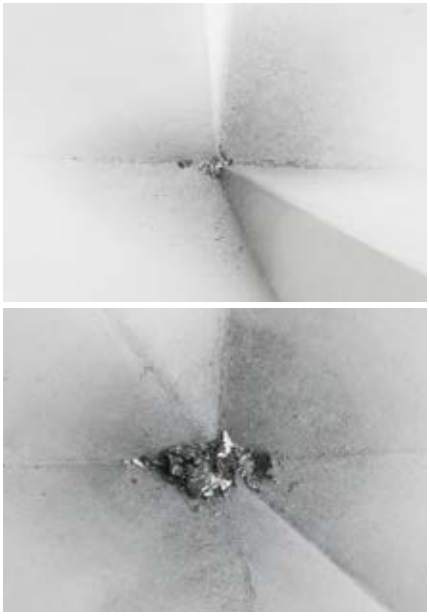
Abrasion	Less abrasion due to harder surface
Adhesive tool wear	No galling even at high tool temperatures
Friction	Reduced friction and improved stick-slip properties
Deep drawing	Higher blankholder forces possible, wider process window with ZM Ecoprotect®

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

Strip drawing test



Zinc-magnesium coatings display lower friction and delayed stick-slip effects compared with pure zinc coatings.



Zinc abrasion after 2,000 cycles in a strip drawing test. ZM70 (top) clearly shows fewer and significantly smaller abrasion particles compared with Z100 (bottom).

Joining forces

Smooth joining processes: Sheet coated with ZM Ecoprotect® can be welded and bonded just as easily as conventional hot-dip galvanized sheet. And it's the same when it comes to phosphating: The superior property profile of ZM Ecoprotect® ensures the production process is not impaired in any way. Paintability is also excellent thanks to very good paint adhesion. In short: ZM Ecoprotect® can be integrated easily into the existing production processes for your vehicle parts.

Overall this means:

With its numerous quality features, ZM Ecoprotect® can be integrated easily into existing production processes for automotive parts.

A strong alliance against rust

Less is more. Particularly when it comes to combining zinc and magnesium in ZM Ecoprotect®. The innovative mixture opens up a completely new spectrum of coating possibilities at once: less zinc is used – and corrosion protection is improved.

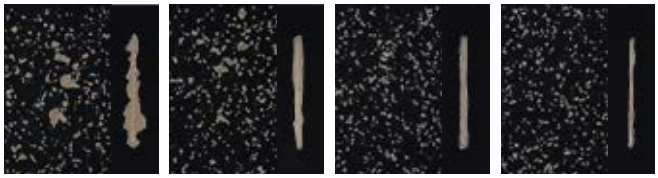
In a direct comparison between ZM70 and Z100 the improved corrosion performance of zinc-magnesium coatings becomes clear, even with a significantly thinner coating.

Comparison between ZM70 and Z100

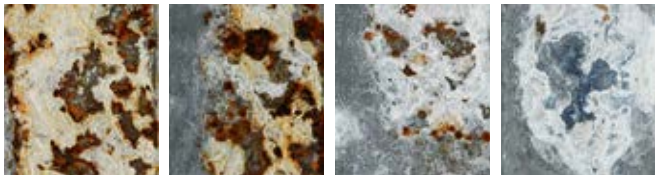
Cut edge corrosion	ZM Ecoprotect® offers significantly better corrosion protection than a conventional zinc coating, even with reduced coating thickness
Scribe corrosion	Significant reduction of creep

Better protection

ZM Ecoprotect® ensures significantly better corrosion protection than conventional zinc coatings of the same thickness. Even with a substantial reduction in coating weight, ZM Ecoprotect® achieves at least equivalent if not better corrosion performance. ZM Ecoprotect® is particularly effective at highly critical points such as cut edges and scratches.



Underpaint creep on stone chipped and scratched surfaces



Corrosion behavior on visible flange (after 6 cycles)

Tested in accordance with DIN EN ISO 11997-1B

Superior performance even at critical points

Compared with conventional coatings, ZM Ecoprotect® is 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®. The coating is superior not just functionally but also economically and ecologically, as only a comparatively small amount of zinc has to be used.

Extremely impressive – outside and in

Looking good from all sides

ZM Ecoprotect® is ideal for parts in corrosion-sensitive areas – for example in the wet area such as 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 next step up from ZM Ecoprotect®: primetex® finish

The premium surface quality of primetex® achieves the highest visual standards for the outer skin of cars. Thanks to a higher peak count and reduced long waviness, primetex® meets particularly high demands on paint appearance. Eliminating the need for filler also offers economic advantages.

ZM Ecoprotect®

- combines outstanding premium corrosion protection and outer skin performance – through to the outstanding primetex® surface finish.
- is ideal for inner and outer skin parts, including in mixed use with conventionally hot-dip galvanized parts.

ZM Ecoprotect® in primetex® finish

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

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Issue October 2016 – Order no. 2132 – broschueren.steel@thyssenkrupp.com