

MEKA XPG®



THE SURFACE THAT LASTS

OUR PRODUCT DEVELOPMENT TEAM IS WORKING CONTINUOUSLY FOR FINDING MORE DURABLE AND COST-EFFECTIVE MATERIALS AND SOLUTIONS. XPG® IS ONE OF THE RESULTS OF THIS WORK.



**Special-coated steel.
Tested in extreme conditions.**

NEW FOR ATMOSPHERIC CORROSION CATEGORY C4

Corrosion of metals has been widely studied over the years. Environments are classified according to EN ISO 12944 into atmospheric-corrosion categories from C1 to CX according to the weight loss of the steel in that environment. Meka has options for all atmospheric corrosion categories classified in the standard, from C1 to CX.

We have traditionally offered hot-dip galvanized (HDG) products into the atmospheric corrosion category C4. Now we are introducing a new competitive and certified corrosion protection, XPG®, into atmospheric corrosion category C4.

The XPG® coating is a zinc-based metal alloy. Alloying elements in the zinc, such as aluminum, form a thin film on the surface of the XPG® coating. This dense film improves the corrosion protection capacity of the coating compared to a traditional zinc coating. Corrosion protection of XPG® coating is based not only on cathodic protection but also on mechanical protection.

XPG® offers the same corrosion protection in alkaline and acidic environments as other zinc-based coatings. In chloride- and ammonia-containing environments, XPG® provides clearly better corrosion protection than traditional zinc coating.

The Key Characteristics of XPG® coating:

- ✓ A clean and smooth surface for steel
- ✓ Cathodic and mechanical corrosion protection
- ✓ More durable corrosion protection with a thinner coating
- ✓ Self-healing corrosion protection for e.g. cutting edges and scratches
- ✓ Environmentally-friendly option to corrosion protection
- ✓ Cost-effective



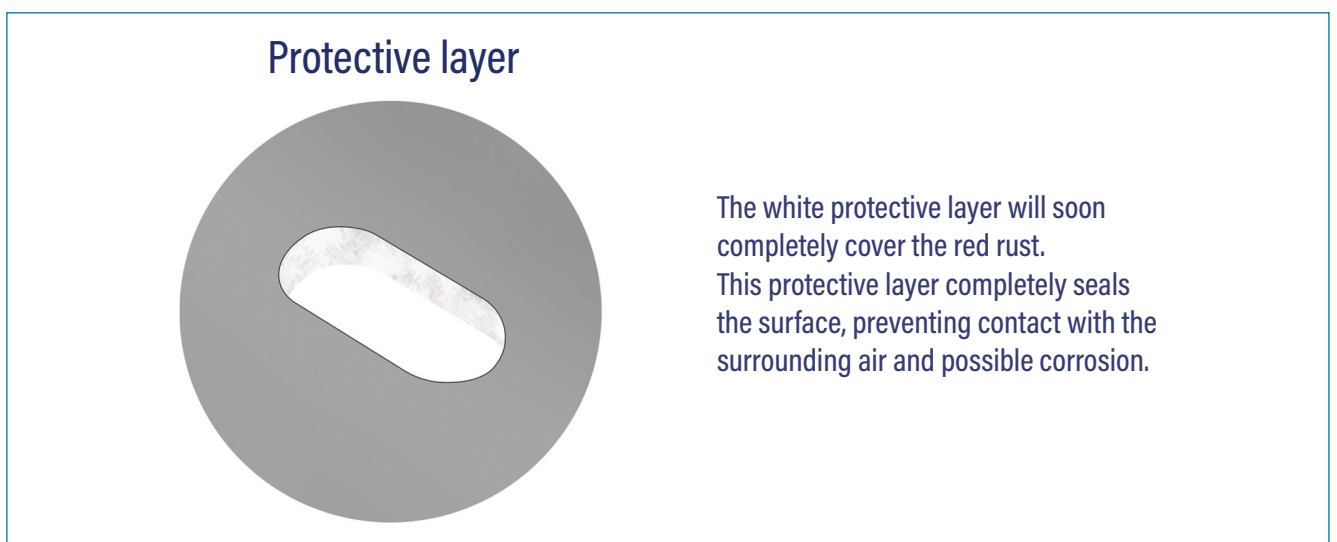
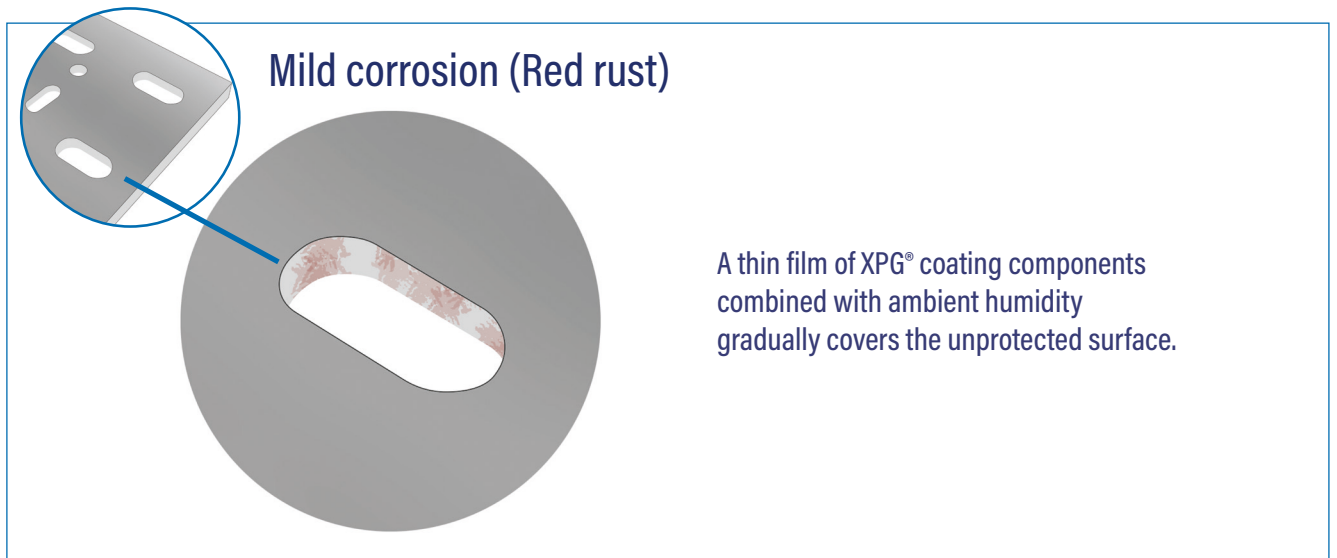
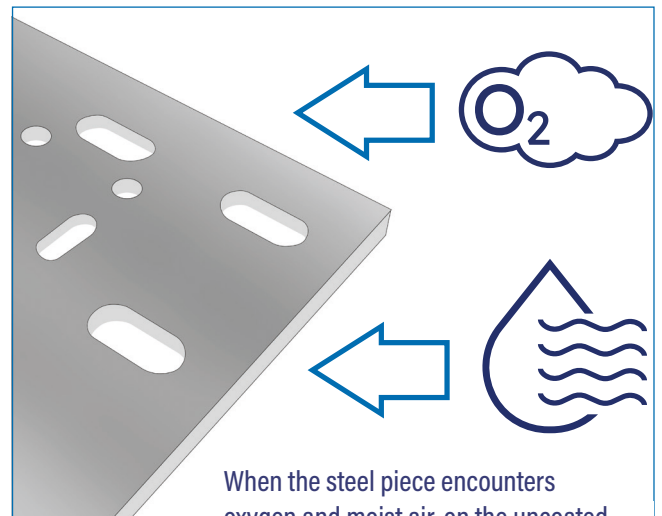
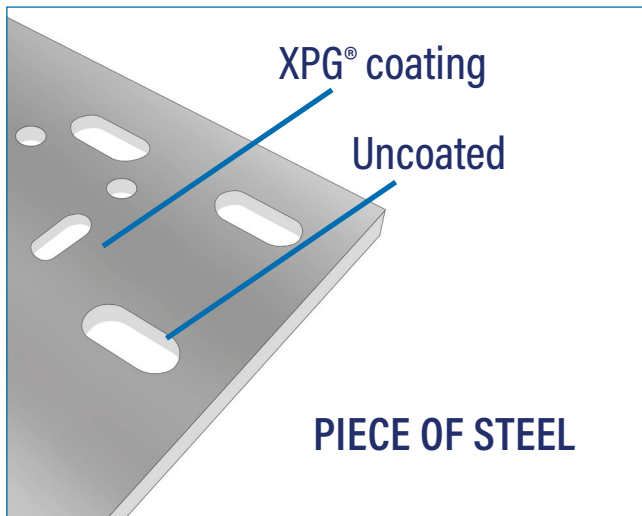
Red rust formed on the cut edges of the XPG® product disappears as the film created by the XPG® coating develops. Any potential red rust on the cut edges does not spread to the coated surfaces.

Self-healing coating for cutting edges

In the manufacturing of sheet steel products, coated steel sheets are shaped and cut. During cutting, the coating is removed from the surface of the steel, leaving the uncoated cut edge susceptible to corrosion.

The thin film that forms on the surface of the XPG® coating also protects cut edges, welds, and scratches. In some circumstances, red rust may form on the uncoated surface of XPG® before the thin protective film has time to form. Over time, the film formed by the XPG® coating will mask any red rust, preventing corrosion of the steel. The rate of film formation of the XPG® coating depends entirely on the environment. The more humid the environment, the faster the film will form.

The self-repairing protection process



Option for hot-dip galvanising

The XPG® coating provides 10 to 20 times better corrosion protection than conventional dip galvanizing based on salt spray tests.

Compared to traditional dip galvanizing, XPG® allows significant weight reduction of the coating without compromising corrosion protection.

Greener choice

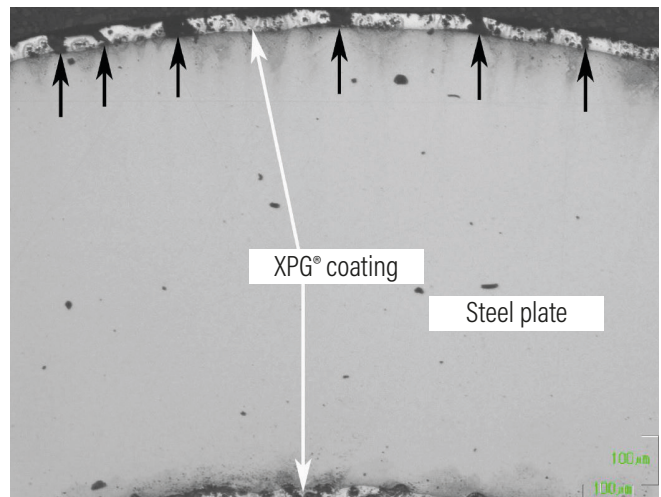
The XPG® coating is thinner than the traditional hot dip galvanized (HDG) coating. This alone has a major environmental impact. The structure of XPG® also significantly reduces zinc runoff into soil from the coating, i.e. zinc runoff into soil. The XPG® products are manufactured from pre-coated steel, which speeds up the manufacturing process and reduces the carbon footprint caused by logistics during manufacturing.

Extensive testing by Meka

In addition to the comprehensive tests conducted by the special coating manufacturer, we have wanted to ensure that the XPG® coating also meets its high standards when processed. Since spring 2018, we have been testing the new coating using various methods, such as continuous **salt spray tests** [ISO 9227, 550 h (equivalent to IEC 61537 class 6)], **accelerated salt spray test** [VDA 621-415 (cyclic corrosion test)], **penetrant testing** [SFS-EN ISO 3452-1], **field tests** in a real industrial environment, and **bending tests** at the University of Oulu.



XPG® coated MEK® lighting rail after salt spray test.



In the bending test conducted at the University of Oulu, samples were bent 180 degrees with bending radii of $r = 1$ mm and $r = 3$ mm, after which the sample pieces were inspected with a light microscope. The microscopic images revealed cracking in the coatings on the tensile side of the bend. On the compressive side of the bend, no cracking or fractures were observed in the XPG® coating.



The XPG® coated bottom plate POL was subjected to a penetrant test according to the SFS-EN ISO 3452-1 standard. No cracks were found in the coating.



Meka XPG[®] -
for corrosion categories C1-C4



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