Iron is the most common construction material in the world. Unfortunately, in atmospheric conditions containing water, oxygen and natural salts, iron spontaneously reacts to those elements. This is corrosion.

Current anti-corrosion technology in primers works with a combination of one or two of the following three forms of protection.

**Barrier**

The Barrier effect is a physical form of protection which reduces the diffusion of water and air from the surface.

**Inhibitor**

The inhibitor effect is a chemical reaction that takes place when water and corrosive elements penetrate the film and steel is protected either by passivation or by blocking corrosive elements from reaching the metal surface.

**Galvanic**

The Galvanic effect is an electro-chemical reaction within the primer, where the presence of zinc prevents the oxidation of the metal by the zinc reacting with water, oxygen and salts first.

**AvantGuard® takes anti-corrosion technology to a new level, using ALL three methods with proven enhanced performance.**

Read over and redefine your expectations of anti-corrosion coatings with AvantGuard®.
AvantGuard®
Redefining Anti-Corrosion

AvantGuard® technology uses a new combination of zinc, hollow glass spheres and a proprietary activator, which activates the zinc and enhances its protective capabilities. Extensive research has shown that the activated zinc results in advanced anti-corrosive protection in the coating, as well as enhanced mechanical strength and improved productivity. A unique result of AvantGuard® technology is that the coatings use an advanced combination of all three protection methods: the barrier, inhibitor and galvanic effects. The correct weight of zinc in the coating is maintained according to the recognised global standards from ISO, Norsok and SSPC.

Improving Full Systems
AvantGuard® protective coatings have been tested as part of systems alongside Hempel intermediates and topcoats, showing improved performance as a full system.

Redefining Protection
Designed for use around the world, AvantGuard® is proven to give advanced, anti-corrosion protection. Reduced rust creep and better corrosion protection have been displayed through Cyclic corrosion testing (ISO 20340) and Salt Spray testing (ISO 12944).

Redefining Productivity
AvantGuard® products are easy to apply, even in high temperatures and humidity as shown in exposure tests. There is less rework resulting from cracking, because with AvantGuard® the coating is more tolerant, even with high DFTs.

Redefining Durability
AvantGuard® displays improved mechanical strength in the protective coating. Significantly reduced cracking at low and high DFT has been proven in the NACE cracking test (Thermal Cycling Resistance test).

What The Experts Think

"AvantGuard has a self-healing effect on micro cracks, which is something that we’ve never seen before. The insoluble salts which are created in the unique zinc activation process actually occupy the space left by the microcrack, further preventing the development of a more serious crack."

Josep Palasi
Hempel Strategic Technology Director

"You can obtain a very good film formation by using the AvantGuard system. We were very surprised by the mechanical properties and strength even at higher DFT and on irregular surfaces like welding seems. The short drying times will help us in the future to optimise our production processes."

Mr Schomers, Production Manager
Schneider + Co. GmbH
Oberflächentechnik
Corrosion approaches the surface of the paint and starts to create a layer of white salt (layer of green). This should visually look like a gradual build up.
The layer on the surface continues to get thicker, then the glass spheres begin to collect the white salts (layer of green). Again, this should look like a gradual build up.

Further zoom to show the build of white salts on the surface of the glass spheres.

AvantGuard® has an inhibition effect which increases its anti-corrosion process.

AvantGuard® displays low water permeability that is further increased by the white salts produced as a result of the unique zinc activation process. These salts fill any space within the film, sealing it, and enhancing the barrier properties of the coating system.

AvantGuard® has an inhibition effect which increases its anti-corrosion process.

The zinc salts formed contain high levels of chloride ions that are captured as they are diffused from the environment through the film. As a result, the coating uses the inhibition effect by reducing the concentration of corrosive agents that reach the steel structure, delaying the start of the unwanted corrosion process.

AvantGuard® contains activated zinc and thus shows excellent anti-corrosive properties.

In the presence of oxygen, water and salt, zinc reacts faster than steel. The activated zinc in AvantGuard® performs to a higher standard with more particles becoming ‘sacrificed’. This delays the corrosion process for much longer.

All three improved effects work together to redefine anti-corrosion coatings.
Anti-Corrosion Protection

The activated zinc advanced protection in AvantGuard® reduce corrosion.

Reduced rust creep was displayed in Salt Spray tests.

Salt Spray Test

Zinc epoxy without AvantGuard® technology
(986 hours)

Zinc epoxy with AvantGuard® technology

Full system without AvantGuard® technology
(1440 hours)

Full system with AvantGuard® technology
(1440 hours)

Mechanical Strength

AvantGuard® has been engineered to release the internal stress of continual expansion and contraction of the surface and its coating.

Low cracking tendency was displayed during the NACE cracking test and Hempel’s own welding test.

NACE Cracking Test

Zinc epoxy without AvantGuard® technology

Zinc epoxy with AvantGuard® technology

Hempel Welding Test

Zinc epoxy without AvantGuard® technology

Zinc epoxy with AvantGuard® technology
To find out more:

www.hempel.com/avantguard

See what our customers who are using AvantGuard® have to say.

View our videos online to discover more about AvantGuard® technology.

Speak to your local Hempel Protective Coatings representative for more information.

Redefine your expectations of anti-corrosion coatings with AvantGuard®