The difference of anti-corrosion mechanism

What is the difference between ROVAL and conventional paint?
A conventional paint film acts as a surface barrier to water and air. This is called “anti-corrosion by barrier protection.” But once the film is damaged or has deteriorated, rust develops in that area and begins to spread underneath the film. ROVAL protects steel by the mechanism of electrochemical reaction, employing the self-sacrificing property of zinc. In the case of steel only, the reaction between the anode and the cathode occurs on the surface of the steel and rust occurs. However, when steel and zinc in close contact, the zinc side becomes the anode, and the zinc protects the steel by rusting instead of the iron. Even when a ROVAL film is damaged, rust will not spread due to the presence of the surrounding zinc particles.
Water may penetrate through the zinc dusts on the steel surfaces, but the steel is protected by the electrochemical reaction of zinc. The oxidation of zinc forms corrosion products which act as a protective barrier against air and moisture improving anti-corrosion performance. If rust should develop on damaged or thinly covered surfaces, electrochemical reaction prevents rust from creeping under the paint film. Paint film provides protection to a metal surface by shielding it from water/air. A protective barrier deteriorates with exposure. Rust will develop and creep under the paint film.

**ROVAL**  
(Anti-corrosion by electrochemical reaction)

**Normal paints**  
(Anti-corrosion by barrier protection)

### ROVAL vs Normal paints Anti-corrosion mechanism

#### Mechanisms of Anti-corrosion

**ROVAL film**  
- Water penetration through zinc dusts on steel surfaces
- Electrochemical reaction of zinc protects steel
- Corrosion products act as protective barrier

**Normal paints**  
- Paint film protects metal by shielding from water/air
- Protective barrier deteriorates with exposure
- Rust will develop and creep under the paint film

#### Maintenance

**Preparation**

- Hand tool
- Power tool

**Reapplying**

- No need to remove old film

**Low cost**

**Easy application**

**Old ROVAL film**

**New ROVAL film**

**High cost**

**Complex application**

**Steel**

**Red Rust**

**Sulfurous acid gas**

**Water**

**Sunlight (UV rays)**

**Steel**

**Top-coating**

**Secondary layer**

** Primer**

**Stead**

**Old films**

**Sandblasting**

**Power tool**

**Steel**

**Red Rust**

**Top-coating**

**Secondary layer**

**Primer**

**Stead**

**New ROVAL film**

**Old ROVAL film**
The zinc protects the iron by rusting instead of the iron

Prepare two steel plates and immerse one in salt water. On the other steel plate, put a slab of zinc and immerse in salt water. After 2 weeks, only the steel plate without zinc has rusted. On the other hand, the steel plate carrying a slab of zinc has not rusted. This experiment shows the zinc protects the iron by rusting instead of the iron.

We succeeded in raising the dry film zinc content to 96% by mixing a large amount of zinc powder into a special resin. Our competitors usually use around 70 to 80% zinc in their products, but we use a staggering 96%. ROVAL is a paint that can make the most of the anti-corrosion ability of zinc.