

Zinc Phosphate Primers

3.10.1

What are Zinc Phosphate Primers?

Zinc phosphate primers are a group of primers that contain zinc phosphate, a mineral that offers **inhibitive** or **active corrosion protection**.

Zinc Phosphate Primers are steel primers formulated with zinc phosphate a mineral that offers **inhibitive** or **active corrosion protection** to protect the steel substrate from corrosion. They act differently from other forms of corrosion protection.

Zinc phosphate primers are available in a range of resin types, either single-pack or two-pack.

What Are The Major Forms Of corrosion Protection?

1. Passive Barrier Protection

Protect through the barrier properties of resin or pigment having low H₂O transmission. (i.e. epoxies, chlorinated rubbers)

2. Active Protection

Inorganic zinc inhibitive pigments, such as zinc phosphate, offer active anti-corrosive protection to the steel substrate. Organic corrosion inhibitors also provide active protection.

3. Sacrificial Protection

Zinc metal in direct contact with the steel substrate offer protect through the preferential oxidation of zinc metal. Examples of sacrificial protection include inorganic zinc silicates, organic zinc-rich primers, metal-sprayed zinc, hot dip galvanising and electroplating.

Active Anticorrosive Mechanism

How does zinc phosphate work?

Zinc phosphate ($Zn_3(PO_4)_2$) is only slightly soluble in water. It hydrolyzes in water to produce zinc ions (Zn^{2+}) and phosphate ions (PO_4^{3-}). The phosphate ions act as anodic inhibitors by phosphating the steel and rendering it passive. The zinc ions act as cathodic inhibitors.

Current Zinc Phosphate Primers

Dulux Protective Coatings currently manufactures several inhibitive primers:

- **Duremax GPE ZP** (two pack epoxy primer finish)
- **Durepon P14** (two pack epoxy primer)
- **Durepon FRX** (two pack cold cure epoxy primer)
- **Luxaprime ZP** (universal single pack primer)
- **Metalshield High Build Zinc Phosphate Primer** (single pack high build primer)
- **Metalshield Quick Dry Primer** (single pack quick dry primer)
- **Luxaprime UMP** (universal single pack tie-coat)
- **Metalshield Etch Primer** (single pack etch primer)
- **Congard** (single pack primer finish)

For more information, please contact the Dulux Protective Coatings Technical Consultant in your state.