

## 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 H<sub>2</sub>O 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.