



## **Primal E-330S**

### **ADDITIVE FOR RESTORETION MORTARS**

Art.21151

**Primal E330S** is an 100% pure acrylic resin with low viscosity, in aqueous dispersion. It is particularly indicated as an additive for mortars because it accelerates their hardening and improves their mechanical resistances.

**Characteristics of the Product Primal E330S** belongs to a new generation of environmentally friendly cement modifiers. It is:

- APEO free
- Ammonia free
- Formaldehyde free

**Primal E330S** is an important milestone in the development of environmentally advanced solutions for manufacturers of mortars and concrete admixtures.

The key technical features of performance improvements obtained through the application of **Primal E330S** are:

- **Strength:** Compared with unmodified mortars, polymer modified mortars have superior flexural, and impact strengths, as well as excellent abrasion resistance
- **Adhesion:** Primal **E330S** modified cement mortars have excellent adhesion to a variety of substrates such as concrete, masonry, brick, wood, metals, and others
- **Durability:** Cement mortars prepared with **Primal E330S** are resistant to many industrial chemicals and have excellent resistance to ultraviolet light and heat
- **Curing Advantages:** Unlike unmodified mortars, which require laborious moist curing conditions for optimum strength properties, polymer modified mortars should be air cured at ambient temperature and standard relative humidity
- **Storage Advantages:** Primal **E330S** emulsion is sediment-free and stable to a minimum of five cycles of freezing at -15°C and thawing at 25°C. In the cold or after prolonged storage, it is desirable that the emulsion be thoroughly stirred prior using to ensure a completely homogeneous mixture

#### **Typical Physical Properties**

Appearance Milky	white liquid
Solids Content %	47
pH	10
Freeze-Thaw Stability	5 cycles
Specific gravity	1.06
Viscosity	< 100 mPa.s
Minimum Film Formation Temperature	10°C



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### FORMULATIONS GUIDELINES

#### Recommendations

For optimum performance of the polymer modified cement mortar, the following recommendations should be complied with.

#### Curing Conditions

Air cure conditions should be applied rather than moist cure conditions for optimum polymer film formation properties

#### Air Content

Air has an adverse effect on mechanical strength properties of cement mortars, as expressed by the Ferret's relationship:

$$\text{Relative mechanical strength} = \frac{k_o}{\left[ 1 + \frac{D_c + (w + a)}{c(I + k_1 + k_2)} \right]^2}$$

Where

- k = Constant function of cement type
- k1 = Pozzolanic activity coefficient
- k2 = Filler activity coefficient
- w = Water content
- a = Air content
- c = Cement content
- Dc = Cement specific gravity

Therefore, when modifying cement mortars with **Primal E330S**, it is important to minimise the air entrainment due to foaming at a maximum level of 5% by using an appropriate amount of defoamer.

#### Water Level

As a general rule and indicated by the Ferret's relationship, water should be held to the lowest amount needed to achieve a suitable working consistency. By using a **minimum amount of water, maximum** strength properties are obtained. As **Primal E330S** shows a marked plasticizing effect, increasing amounts of **Primal E330S** used in the cement mortar require decreasing amounts of water for a suitable workable consistency. The following defoamer were found to be efficient in **Primal E330S** at a 0.5% level on emulsion:

#### Film Formation Properties

**Primal E330S** can be used as such in cementitious compositions at ambient temperatures in the range: 10 to 40°C. For optimum film formation properties when working at temperatures below 10°C the addition of a coalescing aid to the emulsion is recommended.

The following coalescing aids can be used up to a 5% level on the emulsion when working at temperatures down to 5°C:

- **Dowanol PM (code 54691) (Di propylene glycolnbutylether)**