



## SDE CEMENT POLYMER MORTAR PAINT

### PRODUCT DESCRIPTION

**SDE CEMENT POLYMER MORTAR PAINT** is a low-odour acrylic polymer emulsion designed for modifying Portland cement compositions. The superior adhesion, ultraviolet light resistance, water resistance, and increased mortar strength properties provided by previous acrylic emulsions have been complemented by improved spray ability in a low-odour formulation.

The many performance features provide a product of exceptional versatility. Representative applications include: regular weight and lightweight spray-applied coatings, traditional trowel-applied stuccos, basement waterproof coatings, general purpose patching and repair mortars, floor resurfacing and underlayments, terrazzo, and heavy use industrial/commercial cement flooring. Which also provides a superior binder for certain non-cementitious products such as one-package tile grouts.

### PERFORMANCE ADVANTAGES:

#### **DURABILITY AND STRENGTH**

Cement mortars modified are hard, tough, and durable to exterior exposure. Compared with unmodified mortars, acrylic polymer-modified mortars have superior flexural, tensile, and impact strengths, as well as excellent abrasion resistance and adhesion. These qualities are especially important in thin section applications (for example, spray coatings, stuccos, and underlayments) and applications where excessive vibration and heavy traffic are encountered.

#### **ADHESION**

SDE-modified cement mortars have excellent adhesion to a variety of surfaces; such as, concrete, masonry, brick, wood, rigid polystyrene and polyurethane foam, glass, and metals.

#### **RESISTANCE PROPERTIES**

SDE-modified mortars are uniform in colour and resistant to yellowing or discoloration due to exposure to ultraviolet light. The internal polymer matrix provides excellent water resistance to decrease spalling, cracking, and surface degradation caused by repeated freeze/thaw cycles. These mortars are also resistant to many industrial chemicals.

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## **APPLICATION ADVANTAGES**

SDE – modified mortar is ammonia-free, which eliminates a source of chemical irritation for field applications. This low-odour feature is especially beneficial for interior construction or repair projects. SDE – modified mortar emulsion has also been optimized to provide a longer mortar pot life, an important feature for warm weather, low humidity application conditions. Further, the emulsion properties have been improved to enhance the flow characteristics of the modified cement for spray coat applications.

## **CURING ADVANTAGES**

Unmodified mortars require laborious moist-curing conditions for optimum strength properties. However, acrylic polymer-modified mortars do not require these conditions. For optimum physical properties, cement mortars modified should be air-cured at ambient temperature and relative humidity.

## **STORAGE ADVANTAGES**

SDE – modified mortar emulsion is sediment -free and stable to a minimum of five cycles of freezing at -18°C and thawing at 25°C.

### **Typical Physical Properties**

These properties are typical but do not constitute specifications.

Appearance	Milky, white liquid
Odor	Mild acrylic odor
Solids Content, %	47 ± 0.5
pH (when packed)	9.3-10.2
Specific Gravity	1.059
Lbs/Gal	8.8
Freeze/Thaw Stability	5 cycles
Minimum Film Formation Temperature, °C	10-12

## **FORMULATION TECHNIQUES:**

The general procedure for preparing for evaluation begins by thoroughly premixing the sand and cement, water is blended together and added to the premixed sand and cement. The entire composition is mixed thoroughly for about two to four minutes. To avoid overly fluid compositions, a portion of the water should be withheld and added gradually to the modified mortar mixture until the desired consistency is obtained.

Although the procedures generally remain the same, the formulation varies according to the performance needs of the application situation. These formulations can vary in both the type and quantity of materials used. While numerous component relationships exist, some key formulation concepts are presented below:

- ⌘ Choice of Filler – The type and particle size distribution of fillers are selected for reasons which include cost, density, colour/texture of the final product, levelling characteristics and workability.
- ⌘ Sand (filler)/Cement Ratio – For a typical modified mortar application, a 3/1 sand/cement ratio provides excellent mechanical strength properties. However, different ratios of filler to cement may be appropriate for applications with different performance requirements.
- ⌘ Level of Water – Maximum density and strength are obtained when a minimum amount of water is used. This minimum water requirement refers to the lowest water/cement ratio which provides adequate workability.
- ⌘ Level of Polymer Modification – Laboratory tests indicate that an optimum balance of modified mortar properties (adhesion, tensile strength, flexural strength, compressive strength, impact resistance, water resistance and abrasion resistance) is obtained by incorporating 10 to 20 percent polymer solids, by weight, on cement. Higher modification will enhance a more limited set of properties (e.g., flexibility and water resistance). Lower levels of polymer will decrease the benefits of the polymer modification.
- ⌘ Use of Defoamer – Exhaustive research has shown that most cement strength properties vary directly with the density of the mortar - the higher the density, the better the performance. Thus, when modifying cement mortars with a polymer emulsion, it is important to minimize the air entrainment which results from foaming. By using the appropriate amount of commercially available defoamer, it is possible to achieve high density, polymer-modified mortars with excellent strength properties. In general, the wet density of the latex-modified cement mortar should be very close to that of an unmodified mortar. In most cases, the wet density will be 2.0 g/cm<sup>3</sup> or higher.

Selected starting point formulations, test results, and other technical information are presented in the Technical Data Sheets for this product. Because the construction substrates, raw materials (e.g., sand and cement) and application conditions can vary widely, it is strongly recommended that trial applications be made to evaluate performance. Specific formulation changes can then be considered to achieve the best field results.

## DECORATIVE CEMENTITIOUS COATING – REGULAR WEIGHT, WHITE SUGGESTED STARTING FORMULATION:

Material	Parts by Weight	Formulating Notes
White Portland Cement Type I	100.0	For additional whitening, TiO <sub>2</sub> can be added as required.
XO Aggregate	100.0	A coarse limestone filler.
RHOPLEX MC-1834P (47% solids)	21.0	10% polymer solids, based on cement weight.
Foamaster NXZ defoamer	0.1-0.2	Suggested minimum of 1%, based on polymer solids, using 100% active defoamer.

Water To desired consistency

## DECORATIVE CEMENTITIOUS SPRAY COATING – LIGHTWEIGHT

### SUGGESTED STARTING FORMULATION:

Material	Parts by Weight	Formulating Notes
White Portland Cement Type I	500.0	
Vermiculite (Concrete Grade #4)	100.0	A low density filler; will produce an off-white to light tan color in the mortar.
SDE – modified mortar (47% solids)	160.0	15% polymer solids, based on cement weight.
Foamaster NXZ defoamer	0.8	Suggested minimum of 1%, based on polymer solids, using 100% active defoamer.

Water To desired consistency

## DECORATIVE CEMENTITIOUS BASEMENT WATERPROOF COATING (TWO COAT SYSTEM) SUGGESTED STARTING FORMULATION:

Material	Parts by Weight	Formulating Notes
White Portland Cement Type I	100.0	
XO Aggregate	100.0	A coarse limestone filler.
SDE – modified mortar (47% solids)	42.6	20% polymer solids, based on cement weight.
Foamaster NXZ defoamer	0.6	Suggested minimum of 1%, based on polymer solids, using 100% active defoamer.

Water To desired consistency

Mortar can be spray or trowel applied.

Two coats are required for optimum performance. Coat coverage: 75 ft<sup>2</sup>/gal.

This formulation passes TT-P-001411: Federal Specification Paint, Copolymer-Resin, Cementitious (For Waterproofing Concrete and Masonry Walls). This specification simulates pressures obtained 8 feet below grade.

## **CEMENTITIOUS PATCHING AND REPAIR MORTAR SUGGESTED STARTING FORMULATION:**

<b>Material</b>	<b>Parts by Weight</b>	<b>Formulating Notes</b>
Sand (45 Mesh)	300.0	
Portland Cement Type I	100.0	
SDE – modified mortar (47% solids)	21.0	10% polymer solids, based on cement weight.
Foamaster NXZ defoamer	0.10	Suggested minimum of 1%, based on polymer solids, using 100% active defoamer.
Water	To desired consistency	Withhold a portion and add gradually to obtain desired consistency.

### **Typical Performance Data, Tensile Strength (psi)**

7 day air-cure	490	ASTM Standard C-190-72
7 day air-cure + 7 day water soak	390	

### **Shear Bond Adhesion<sup>1\*</sup> (psi)**

7 day air-cure	400 (Cohesive failure)	
7 day air-cure + 7 day water soak	200 (Cohesive failure)	

### **Compressive Strength (psi)**

7 day air-cure	3,070	ASTM Standard C-109-73
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<sup>1</sup>Shear Bond Strength – A 2" x 2" x 0.5" polymer-modified cement mortar patch is centrally cast and cured on a 5" x 2.5" x 0.75" cured, unmodified concrete base piece. A suitable plunger applies a load at 0.5 inches per minute to the patch until failure occurs. The shear bond strength (psi) equals the load in pounds divided by the interfacial area of the patch in square inches.

## CEMENTITIOUS RESURFACING AND UNDERLAYMENT MORTAR SUGGESTED STARTING FORMULATION:

Material	Parts by Weight	Formulating Notes
Sand (80 Mesh)	100.0	
Silica Flour #120	50.0	A low density filler; will produce an off-white to light tan color in the mortar
Portland Cement Type I	100.0	
SDE – modified mortar (47% solids)	160.0	10% polymer solids, based on cement weight.
Foamaster NXZ defoamer	0.10	Suggested minimum of 1%, based on polymer solids, using 100% active defoamer.
Water	To desired consistency	

## CEMENTITIOUS STUCCO FORMULATION) SUGGESTED STARTING FORMULATION:

### Cementitious Stucco Formulation Suggested Starting Formulation

Material	Parts by Weight	Commercial Product
Sand (conforming to ASTM C-144)	350.0	
Portland Cement Type I	100.0	
SDE – modified mortar (46.5% solids)	21.5	
Georgia Marble RH-1	8.0	
Polyester fibers (1/4 inch length)	1.0	
Foamaster NXZ defoamer	0.4	
Water	36.5	
<b>TOTAL</b>	<b>517.30</b>	
Polymer solids based on cement, %	10.0	None
Water based on cement, %	48.0	50.0
Density, gm/cc	2.20	2.15
Workability	Very Good	Good
Cure Time, hours	<24	<24
<b>Tensile Bond Adhesion to EPS Board, ps</b>		
7 days, dry CTR cure (Notes 1 and 2 below)	28.1C	13.9A

### Compression Strength, psi

7 days, dry CTR cure (See note below)	4,170	3,042
28 days dry CTR cure	4,627	Not Run

### Shear Bond Adhesion, psi (Notes 2 and 3 below)

7 days, dry CTR cure	382 + 52 (B/P)	64 ± 14 (I)
28 days, dry CTR cure	468 + 144 (P/B)	Not Run

### Tensile Strength, psi

7 days, dry CTR cure	588	277
28 days, dry CTR cure	641	Not Run

### Flexural Stress, psi

7 days, dry CTR cure	1,636	574
28 days, dry CTR cure	1,327	Not Run

<sup>1</sup>CTR = constant temperature room at 75°F and 50% relative humidity

<sup>2</sup>C = Cohesive failure in the EPS board

I = Interfacial failure between the EPS board and the stucco

<sup>3</sup>Applied over our standard concrete test substrate

<sup>4</sup>I = Interfacial; P = Patch; B = Base (concrete block)

## SAFE HANDLING INFORMATION:

However, based on its similarity to emulsions that have been tested it is not expected to be hazardous via single acute oral, dermal, or inhalation exposure. It may be a slight skin and eye irritant.

SDE provides up-to-date Material Safety Data Sheets (MSDS) on all of its products. These sheets contain pertinent information that you may need to protect your employees and customers against any known health or safety hazards associated with our products.

## NOTES:

The information given in this leaflet is based upon laboratory research, as well as extensive field work and application experience. All products are subject to standard conditions of sale which are available upon request. This information is based on **Safety Direct Egypt's** present state of knowledge and is intended to provide general information on **Safety Direct Egypt's** products and their methods of use.

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The information given in this data sheet represents test results & practical experience obtained under controlled conditions, and are correct to the best of our knowledge. However, as products are often used under different conditions, we can only guarantee the quality of our product, and reserve the right to change data without further notice.

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