



RHOPLEX™ AS-8008 EMULSION

Emulsion Polymer for Truly Flexible Cementitious Mortars

Introduction

RHOPLEX AS-8008 cement modifier is the latest innovation from Dow Construction Chemicals for truly flexible, water resistant cementitious mortars. This acrylic-styrene modifier provides significantly higher flexibility than cementitious mortars modified with higher Tg polymers, such as RHOPLEX AS-48. Cured mortars modified with RHOPLEX AS-8008 polymer have excellent water resistance and adhesion to various substrates. The polymer is particularly beneficial in cementitious applications where flexibility is needed, such as in ceramic tile adhesives over flexible substrates, cementitious below grade waterproofing mortars, and cementitious mortars applied in thin section.

Typical Physical Properties

These properties are typical but do not constitute specifications.

Appearance	Milky white emulsion
Solids Content, %	56.0
pH	7.0
Brookfield Viscosity, cPs	1000
Glass Transition Temperature (Tg), °C	-8
Density, lbs/gal	8.51
Specific Gravity	1.02

Formulating Guidelines

Wet Mortar Density

It is possible to entrain air during the mixing of a cementitious mortar modified with RHOPLEX AS-8008 polymer. This will lower the wet mortar density and adversely affect the mechanical properties of the cured mortar. Minimizing the air entrainment during mixing through the use of an antifoaming agent will yield a mortar with optimally high wet mortar density and corresponding optimally high flexural, impact, adhesive, compressive, and tensile strengths. In general, the wet density of a cement mortar modified with RHOPLEX AS-8008 polymer should be at least the same as an unmodified mortar, in most cases 2.0 g/cm³ or higher.

Pot Life

Most formulations in which RHOPLEX AS-8008 polymer is used are modified at a level of 0.20 polymer solids/cement weight ratio or higher to realize the flexural benefits of the polymer. At these modification levels, the pot life of the mortar is 45 to 60 minutes or more—both at room temperature and 50°C.

Following are starting point formulations for RHOPLEX AS-8008 polymer for various applications:

- Basic Cementitious Mortar
- Waterproofing Mortar
- Cementitious Ceramic Tile Adhesive

Starting Point Formulation

Basic Cementitious Mortar Modified with RHOPLEX AS-8008

Material	Parts by Weight
Unimin 50 – 30 Sand	300
Portland Cement, Type 1	100
RHOPLEX AS-8008 (56.01%)	35.7
Water	29.3
Foamex™ 1488 Defoamer	0.2



Formulation Constants

Sand/cement weight ratio = 3/1

Polymer solids/cement weight ratio = 0.2

Water/cement weight ratio = 0.45

Comparison of Performance Properties

Basic Cementitious Mortar Starting Point Formulation Modified with RHOPLEX AS-8008 vs. RHOPLEX MC-1834

	RHOPLEX AS-8008	RHOPLEX MC-1834
Polymer solids/cement weight ratio	0.2	0.2
Wet Density, g/cc	2	2
Pot Life at Room Temperature, hr	2	8-24 or >8
Compressive, psi ¹		
7 day dry cure	1853	2633
28 day dry cure	2179	3264
Flexural Stress, psi ²		
7 day dry cure	383	783
28 day dry cure	431	976
Flexural Strain, %		
7 day dry cure	1.9	0.45
28 day dry cure	1.8	0.6

¹ ASTM C-109

² Modification of ASTM D-790

Starting Point Formulation

Waterproofing Mortar Modified with RHOPLEX AS-8008

Material	Parts by Weight
Unimin 50 - 30 Sand	150
Portland Cement, Type 1	100
RHOPLEX AS-8008 (56.01%)	71.4
Water	6.6
Sikament 686 Superplasticizer	0.25
Foamex 1488 Defoamer	0.35

Formulation Constants

Sand/cement weight ratio = 1.5/1

Polymer solids/cement weight ratio = 0.4

Water/cement weight ratio = 0.38



**Comparison of Performance Properties
Waterproofing Mortar Starting Point Formulation
Modified with RHOPLEX AS-8008 vs. Competitive Polymer**

	RHOPLEX AS-8008	Competitive Polymer
Polymer solids/cement weight ratio	0.4	0.4
Wet Density, g/cc	1.8	1.8
Pot Life at Room Temperature, hr	6	8
Tensile Strength ¹		
Elongation, %	51	48
Max Stress, MPa	1.6	1.3
Water Vapor Transmission ²		
Perms (cup up)	0.81	0.8
Perms (cup down)	4.5	3.7
Mandrel Bend ³		
Room Temperature	Pass ¼"	Pass ¼"
40°F	Pass ½"	Pass ½"
Hydrostatic Head Test ^{4,5}		
4 psi Water Pressure for 48 hours	Pass	NA

¹ ASTM D-638, 7 day dry cure

² ASTM E-96

³ ASTM D-522, 1/16" coating

⁴ Modification of ASTM D-5385

⁵ Removed superplasticizer from formulation

**Starting Point Formulation
Cementitious Ceramic Tile Adhesive
Modified with RHOPLEX AS-8008**

Material	Parts by Weight
Unimin 50 - 30 Sand	150
Portland Cement, Type 1	100
RHOPLEX AS-8008 (56.01%)	35.7
Water	29.3
Methocel K4M	1.5
Foamex 1488 Defoamer	0.2

Formulation Constants

Sand/cement weight ratio = 1.5/1

Polymer solids/cement weight ratio = 0.2

Water/cement weight ratio = 0.45

Let slake for approximately 10 minutes

Cure Conditions	Shear Strength, psi¹
2 day dry cure	101
7 day dry cure	242
7 day dry cure + 7 day water immersion	178

¹ ANSI A118.4 - 1999 F-5.1

