

# Starting Formulation

## SF 6008

### Waterborne Epoxy Binder for Trowelable Floor Toppings EPI-REZ™ Resin WD-510 / EPIKURE™ Curing Agent 3277

**Introduction** This formulation illustrates the use of a water dispersible epoxy resin system as a binder for trowel-applied, decorative and protective floor toppings. Water is added to the resin/converter mix to lower viscosity and impart non-stick troweling characteristics without the disadvantages of odor, fire hazard and health hazard associated with many organic diluents and solvents. Extended pot life and water cleanup of tools are additional convenience features. Practical cure rates are achieved at substrate temperatures as low as 18 °C. The ceramic coated, quartz granule aggregate affords a wide selection of colors for decorative flooring applied in institutional buildings, schools, hospitals, restaurants, and offices.

Formula	Material	Supplier	Pounds	Gallons
<b>Resin Portion</b>				
	EPI-REZ Resin WD-510	Hexion	<u>100.0</u>	<u>10.36</u>
	Total Resin Portion		100.0	10.36
<b>Converter Portion</b>				
	EPIKURE Curing Agent 3277	Hexion	<u>46.0</u>	<u>5.74</u>
	Total Converter Portion		46.0	5.74
<b>Water Portion</b>				
	Tap water		<u>65.6</u>	<u>7.88</u>
	Total Water Portion		65.6	7.88
<b>Aggregate Portion</b>				
	Colorquartz, 907 White, Grade 11	3M Company	69.0	21.25
	Colorquartz, 402 Brown, Grade 28	3M Company	381.0	17.26
	Colorquartz, 402 Brown, Grade 11	3M Company	<u>102.0</u>	<u>4.62</u>
	Total Aggregate Portion		952.0	43.14

**Compounding Instructions** The Colorquartz granules may be dry blended in a variety of colors. The ratio of coarse (Grade 11) to fine (Grade 28) particles was selected to provide optimum packing and troweling characteristics. Minor portions of white glass sands may be substituted for the ceramic coated granules to alter troweling characteristics, achieve depth effects or cost reductions.

**Application Instructions** Old concrete substrates should be cleaned by either sandblasting or scarification to remove surface contaminants such as oils, fats, greases, waxes, curing compounds and paints. The laitance on new concrete can be removed with an acid etch followed by a

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thorough water flushing and scrubbing step. Standing water should be removed.

Prepare a dispersion of the resin/converter system in water and apply as a bond coat to insure maximum adhesion between the substrate and the topping. Application may be accomplished by brush, spray, roller, or squeegee at a coverage rate of 200 to 400 square feet per gallon. The primer is mixed by first blending the resin and converter portions in the proper ratio, then adding the designated quantity of water and agitating until a uniform creamy emulsion is formed. Power agitation is preferred. The concentration of water prescribed in this formulation has been chosen for optimum working characteristics and topping density. Gross deviation from this formula, particularly the use of higher water levels, should be discouraged.

Blend the resin and converter portions, then reduce with water using the same procedure as with the primer. Add the emulsified binder to the aggregate and blend in a paddle-type mortar mixer or other suitable equipment. Empty all of the freshly mixed topping onto the primed substrate and spread with a trowel to a uniform thickness. To develop maximum adhesion, the topping must be applied over the primer before the primer has gelled. Depending on temperature, this bond coat will remain "open" for approximately 1 to 5 hours.

Allow the topping to harden sufficiently to permit foot traffic (approximately 8 hours at 25 °C or 18 hours at 18 °C). Application of a low gloss sealer fills pores, which improves cleanability, and masks any imperfections such as lap joints, trowel marks and resin-rich areas.

Typical Handling Properties Table 1 / Handling Properties

	<u>Units</u>	<u>Value</u>
Resin/Converter/Water combining ratio	by weight	100:46 : 66
Aggregate/Binder ratio	by weight	4.5 : 1
Non-volatile content of binder, by weight	%	69
Viscosity of binder at 25 °C		
5 rpm	cP	400
10 rpm	cP	310
20 rpm	cP	245
50 rpm	cP	210
Density of topping	lbs/gal	17.34
Expected Pot Life at 25 °C		
1 pint of binder	min	45
1 gallon of aggregate filled mix	hrs	2

Typical Cured State Properties Table 2 / Cured State Properties <sup>1</sup>

	<u>Units</u>	<u>Value</u>
Heat deflection temperature	°C	60
Tensile strength	psi	7,200
Tensile elongation at break	%	8.5
Tensile modulus, 10 <sup>6</sup>	psi	0.35
Flexural strength	psi	10,500
Flexural modulus, 10 <sup>6</sup>	psi	0.31

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Flexural modulus, 10 <sup>4</sup>	psi	0.31
Izod impact, notch	ft•lbs/inch	0.46
Hardness	Shore D	82
Chemical resistance, weight gain		
Water	%	0.18
5% Acetic Acid	%	0.65
Xylene	%	2.05

<sup>1</sup> Determined on 1/8-inch thick castings of the waterless resin/converter system cured 2 weeks at 25 °C. When applied in thicknesses of 1/8 to 1/4-inch, the tensile bond strength of the cured topping exceeds the tensile strength of concrete when tested both dry and after 2 weeks water soak. However, long term field tests have not been conducted on water-thinned topping systems, and applicators should proceed cautiously until performance is confirmed in a variety of slab environments.

<sup>2</sup> After 24 hours immersion

Storage Recommendations regarding storage conditions can be obtained by visiting our web site at [www.hexion.com](http://www.hexion.com)

#### General Information

These are starting formulations and are not proven in the user's particular application but are simply meant to demonstrate the efficacy of the products and to assist in the development of the user's own formulation. It is the user's responsibility to fully-test and qualify the formulation, along with the ingredients, methods, applications or equipment identified herein ("Information"), by the user's knowledgeable formulator or scientist, and to determine the appropriate use conditions and legal restrictions, prior to use of any Information.

#### Safety, Storage & Handling

Please refer to the MSDS for the most current Safety and Handling information.

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