

# Starting Formulation

## SF 6002

### Industrial Floor Topping and Patching System

### EPON™ Resin 828 and 813 / EPIKURE™ Curing Agent 3072 / HELOXY™ Modifiers 505

**Introduction** This general purpose floor topping and patching compound is designed for the majority of interior industrial applications. Resistance to a broad spectrum of chemicals permits use in areas subjected to frequent spillage of alkalies, dilute acids, aliphatic hydrocarbon solvents, salt solutions, sugar solutions, carbonated beverages, greases, animal fats, oils, and acidic foods processed from milk, citrus fruits, tomatoes, vinegar, fermentation products, etc. These toppings may also be used to protect concrete from excessive wear by steel wheeled carts, tow motors, and skid tubs.

Formula	Material	Supplier	Pounds	Gallons
Resin Portion				
	EPON Resin 828	Hexion	38	3.94
	HELOXY Modifier 505	Hexion	12	1.41
	EPON Resin 813	Hexion	<u>50</u>	<u>5.27</u>
	Total Resin Portion		100	10.62
Converter Portion				
	EPIKURE Curing Agent 3072	Hexion	32	3.93
	Aggregate silica sand, <sup>1</sup> local		<u>792</u>	<u>35.89</u>
	Total Converter Portion		824	39.82

<sup>1</sup> Sand should be specially graded for good packing and troweling characteristics, dry, and available in bags of standard weight for convenience. The following sieve analysis is one characteristic of sands which will trowel well:

U.S. Standard Sieve #	Percent Retained
6	0
8	0-10
16	10-20
30	25-35
50	35-45
100	5-15

A 27:40:33 blend of Grade 2:Grade 1:Grade 0 silica sands from New Jersey Pulverizing Co. is one example of an aggregate conforming to this particle size graduation.

**Compounding** EPON Resin 828, HELOXY Modifier 505, and EPON Resin 813 are combined and thoroughly blended by a motor driven agitator. Pigment pastes ground in an epoxy resin base may be blended into the resin portion to impart color and hiding power. Air release agents such as DC-200 (Dow-Corning) or PC-1344 (Monsanto) may be incorporated at levels of 30 to 70 parts per million of resin to facilitate release of bubbles entrapped during mixing and decrease the porosity of the topping. Thixotropes may be incorporated at concentrations of 2 to 5 parts per hundred of resin to impart non-sag characteristics for application on vertical surfaces and coves.

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The aggregate should be dry blended using power agitation such as is provided by a paddle-type mortar mixer. Pea gravel should be mixed with the sand and combined with the binder at weight ratios of 7:1 to 8:1 for filling holes over 1-inch deep.

**Application Instructions** Old concrete substrates should be cleaned by either sandblasting or scarifying to remove surface contaminants such as oils, fats, greases, waxes, membrane coatings, paints, etc. The laitance on new concrete can be removed with an acid etch (muriatic acid) followed by thorough water flushing, scrubbing and drying.

To ensure maximum adhesion, a primer coating of the unfilled binder (mixed resin + converter portions) should be applied to the concrete substrate by brush, roller or squeegee. A coverage rate of 160 square feet per gallon (average film thickness of 10 mils) is suggested for all but highly porous substrates where heavier application may be required. The topping system must then be applied prior to gelation of the primer coating.

The topping system is prepared by first blending the resin and converter portions in the designated ratio and mixing until homogeneous. Power agitation is recommended; however, manual stirring may be used if care is taken to accomplish thorough mixing. In either case, the sides and bottom of the mixing vessel should be scraped frequently to ensure complete blending. Pour the blended binder over the sand and mix in a KOL Mixal paddle-type mortar mixer, or with a drill motor powered agitator.

Dump and distribute all of the sand/binder mix to the approximate thickness desired and then finish trowel. This procedure provides additional working life by permitting the heat of reaction to dissipate from the thinner sections.

This procedure may be modified for applying skidproof topping by broadcasting sand or abrasive grains over the ungelled topping. The excess (unwetted) grains are swept off later when the epoxy binder has hardened.

Typical Properties Table 1 / Handling Properties

	<u>Units</u>	<u>Value</u>
Combining ratio		
Resin:Converter	by weight	100 : 32
Sand:Binder	by weight	6 : 1
Viscosity at 23 °C, of binder	cP	960
Density at 23 °C		
Binder	lbs/gal	9.07
Sand-filled topping	lbs/gal	18.30
Expected working life, 1 pint binder		
at 13 °C (55 °F)	min	60
at 25 °C (77 °F)	min	33
at 38 °C (100 °F)	min	28
Expected working life, 1 quart sand-filled topping		
at 13 °C (55 °F)	hrs	2 1/2
at 25 °C (77 °F)	hrs	1 1/2
at 38 °C (100 °F)	hrs	1
Set time, 1/4-inch thick topping		
at 13 °C (55 °F)	hrs	9 1/4

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at 25 °C (77 °F)	hrs	5 1/4
at 38 °C (100 °F)	hrs	1 3/4

Typical Cured State Properties Table 2 / Cured State Properties of Binder System at 23 °C

	<u>Units</u>	<u>Value</u>
Tensile strength	psi	8,600
Tensile elongation at break	%	6.5
Compressive yield strength	psi	12,000
Flexural strength	psi	14,000
Izod impact	ft•lbs/in notch	0.45
Hardness	Shore D	81
Chemical, absorption, 24 hours at 23 °		
Water	%	0.22
50:50 Xylene/Isopropanol	%	2.71
5% Acetic acid	%	0.52

Typical Cured State Properties Table 3 / Chemical resistance of sand-filled topping <sup>1</sup>

	Days without deterioration in continuous contact with fresh chemical at 23 °C
Chemical	
Trichloroethylene	< 1
Methyl ethyl ketone	< 1
Toluene	3
Transformer oil	> 28
Clorox (5% NaOCl)	14
5% Detergent	> 28
5% Sulfuric acid	> 28
25% Sulfuric acid	> 28
15% Hydrochloric acid	14
5% Lactic acid	> 28
25% Lactic acid	7
5% Acetic acid	14
25% Acetic acid	3
5% Citric acid	> 28
Oleic Acid	> 28
5% Sodium hydroxide	> 28
25% Sodium hydroxide	> 28

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polyolefin <sup>1</sup> 6:1 Sand/Binder ratio by weight; cured 2 weeks at 23 °C prior to contacting surface with chemical contained in a ring bonded to the topping surface. All chemicals were replenished periodically.

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.

Exposure to these materials should be minimized and avoided, if feasible, through the observance of proper precautions, use of appropriate engineering controls and proper personal protective clothing and equipment, and adherence to proper handling procedures. None of these materials should be used, stored, or transported until the handling precautions and recommendations as stated in the Material Safety Data Sheet (MSDS) for these and all other products being used are understood by all persons who will work with them. Questions and requests for information on Hexion Inc. ("Hexion") products should be directed to your Hexion sales representative, or the nearest Hexion sales office. Information and MSDSs on non-Hexion products should be obtained from the respective manufacturer.

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For literature and technical assistance, visit our website at [www.hexion.com](http://www.hexion.com)

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