

# Starting Formulation

## SF 6003

### Electrically Conductive, Trowelable Floor Topping

### EPON™ Resin 813 / HELOXY™ Modifiers 505 / EPIKURE™ Curing Agent 3072 and 3271

**Introduction** This trowelable floor topping is designed for use in areas where electrical conductivity of the flooring surface is required. Examples of such usage are floors of storage areas, hospitals, instrument rooms, and manufacturing sites where the immediate dissipation of static electricity is required.

Formula	Material	Supplier	Pounds	Gallons
	<b>Resin Portion</b>			
	EPON Resin 813	Hexion Specialty Chemicals	90	9.42
	HELOXY Modifier 505	Hexion Specialty Chemicals	10	1.17
	<b>Converter Portion</b>			
	EPIKURE Curing Agent 3072	Hexion Specialty Chemicals	16	1.97
	EPIKURE Curing Agent 3271	Hexion Specialty Chemicals	7	0.82
	<b>Aggregate Portion</b>			
	Graphite Flake No. 2	Joseph Dixon Crucible Co.	50	2.77
	Silica Sand Grade No. 2	New Jersey Pulverizing Co.	140	6.34
	Silica Sand Grade No. 1	New Jersey Pulverizing Co.	210	9.52
	Silica Sand Grade No. 0	New Jersey Pulverizing Co.	160	7.25

**Compounding and Formulating Options** The 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. The aggregate should be dry-blended using power agitation. The combination of silica sand grades listed above provide good troweling and packing characteristics. Other aggregate combinations can be substituted although a composite offering a broad particle size distribution should be maintained to ensure good working properties.

**Typical Handling Properties** Table 1 /Handling Properties

	Units	Value
<b>Combining Ratio (by weight)</b>		
Resin : Converter		100 : 23
Aggregate : Binder		4.55 : 1
Viscosity at 23 °C, of Binder	cP	660
Denisty at 23 °C		
Binder Portion	lbs/gal	9.19 lb
Total Compound	lbs/gal	17.4 lb
Expected Working Life, 1 Pint Binder at 13 °C (55 °F)	min	60

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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" Thick Topping		
at 13 °C (55 °F)	hrs	9 1/4
at 25 °C (77 °F)	hrs	5 1/4
at 38 °C (100 °F)	hrs	1 3/4

**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 prime coat 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 prime coat.

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 insure 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 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.

To ensure uniform and optimum conductivity, additional graphite flake can be sprinkled on the surface of the freshly troweled topping. After an overnight cure, excess graphite can be removed by sweeping.

**Typical Cured State Properties**

Table 2 /Cured State Properties of Unfilled Binder System at 23 °C<sup>1</sup>

	<u>Units</u>	<u>Value</u>
Tensile Strength	psi	6,700
Tensile Elongation at Break	%	9.2
Compressive Yield Strength	psi	9,800
Flexural Strength	psi	11,000
Izod Impact, notch	ft•lb/in	0.45
Hardness	Shore D	81
Modulus of Elasticity	psi	330,000
Absorption, 24 hours at 23 °C		
Water	%	0.24
5% Acetic Acid	%	0.65

<sup>1</sup> Determined using 1/8 inch thick castings cured for two weeks at 23 °C.

**Electrical Resistance Properties** Table 3 /Electrical Resistance of Cured Topping

	<u>Units</u>	<u>Value</u>
Surface Resistivity	ohm	No detectable reading

**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

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## Safety, Storage & Handling

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

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## Contact Information

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