

Starting Formulation

SF 7018

General Purpose Potting Compound EPON™ Resin 828

Introduction This anhydride based formulation is designed for general purpose use in the encapsulation of metal or non-metallic electronic components.

- Suggested Uses**
- Molded parts such as sand-core boxes for foundry work, pipe fitting, cases, and housings
 - Electrical insulation such as transformer bushings for interior service

Formula	<u>Material</u>	<u>Supplier</u>	<u>Pounds</u>	<u>Gallons</u>
Resin Portion				
	EPON Resin 828	Hexion	97.10	10.052
	Cab-O-Sil M-5	Cabot Corp.	<u>2.90</u>	<u>0.166</u>
		Total	100.00	10.218
Converter Portion				
	Hexahydrophthalic Anhydride	Anhydrides & Chemicals, Inc.	77.68	7.846
	DMP-30	Rohm & Haas Co.	<u>0.05</u>	<u>0.006</u>
		Total	77.73	7.852
Filler Portion				
	Super White Silica	C.K. Williams & Co.	<u>446.66</u>	<u>20.546</u>
		Total	446.66	20.546

Typical Handling Properties Table 1 / Handling Properties

	<u>Units</u>	<u>Value</u>
Viscosity at 125 °C ¹	cP	5,050
Pot Life at 125 °C	hrs	At least 2
Density	lbs/gal	16.17

¹ Brookfield, No. 3 Spindle, 10 RPM

Compounding Stir the Cab-O-Sil into the EPON Resin 828 and heat to 125 °C. Also heat separately the hexahydrophthalic anhydride and the silica to 125 °C. Blend the preheated liquid portions. Stir in the silica, maintaining 125 °C. Add the DMP-30 and heat back up to 125 °C, with stirring. Remove entrained air with vacuum.

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Application The material can be poured into any mold, preheated to 125 °C, that has been treated with a suitable high temperature mold release agent; e.g., DC-20 (Dow-Corning Corp.). Material and mold should be maintained at 125 °C. to assure a good pourable viscosity. A suitable cure schedule consists of 2 hours at 125 °C, plus 24 hours at 130 °C.

Typical Cured State Properties Table 2 / Cured State Properties at 25 °C and 110 °C

Testing Temperatures	at 25 °C		at 110 °C
	Units	Value	Value
Tensile Strength	psi	12,800	8,100
Tensile Elongation	%	0.70	–
Flexural Strength	psi	26,700	16,200
Flexural Modulus, Initial	ksi	2110	1920
Flexural Deflection	inch	0.08	0.08
Compressive Strength, Yield	psi	34,100	10,800
Compressive Deflection at Yield	inch	0.21	0.08
Izod Impact, notch	ft.·lbs/in.	0.37	–
Hardness, Shore D	Shore D	97	–
Coefficient of Linear Thermal Expansion,			
from 25 to 90 °C	in./in./°C		26.7 x 10 ⁻⁶
from 90 to 135 °C	in./in./°C		49.9 x 10 ⁻⁶
Approximate Transition Temperature, °C			90
Electrical Properties			
Volume Resistivity, 1 minute at 500 volts			
at 25 °C			7.7 x 10 ¹⁴
at 66 °C	ohm·cm		8.4 x 10 ¹⁴
at 93 °C	ohm·cm		4.5 x 10 ¹⁴
at 130 °C	ohm·cm		2.8 x 10 ¹²
at 150 °C	ohm·cm		3.9 x 10 ¹¹
at 180 °C	ohm·cm		2.2 x 10 ¹¹
at 200 °C	ohm·cm		2.0 x 10 ¹¹
Dielectric Constant at 25 °C			
60 cycles			5.125
1 megacycle			4.393
Dissipation Factor at 25 °C			
60 cycles			0.091
1 megacycle			0.008

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