Starting Formulation

SF 7010

Flexible Electrical Potting Compound
EPON™ Resin 828

Introduction This general purpose electrical potting compound illustrates the use of polyethylene glycol to improve flexibility with minimal sacrifices in mechanical, thermal and electrical properties. The converter presented is a eutectic mixture of hexahydrophthalic anhydride and chlorendic anhydride which provides easier processing than solid anhydrides such as phthalic.

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

Material	Supplier	Pounds	Gallons
Part A			
EPON Resin 828	Hexion	65.0	6.72
Carbowax 600	Union Carbide Corp.	35.0	3.73
	Total Part A	100.0	10.45
Part B			
Hexahydrophthalic Anhydride / Chlorendic Anhydride	Anhydrides & Chemicals, Inc. Jonas Chemical Corp.	75.00	6.06
DMP-10	Rohm & Haas Co.	0.25	0.03
	Total Part B	75.25	6.09

Typical Handling Properties Table 1 / Handling and Reactivity

	Units	Value
Resin/Converter Combining Ratio	by weight	4 : 3
	by volume	1.72 : 1
Viscosity at 25 °C	cP	2,600
Density	lbs/gal	10.6
Pot Life at 25 °C	hrs	1-2

Compounding Instructions Resin Portion – Blend the Carbowax 600 and EPON Resin 828. If necessary, fillers such as silica or alumina may be incorporated into the resin portion.

Converter Portion – A blend of 70 parts hexahydrophthalic anhydride (HHPA) and 30 parts chlorendic anhydride should be heated to 82 °C and agitated until a clear solution is

attained. Sparging with dry inert gas minimizes anhydride hydrolysis. This solution is stable indefinitely at room temperature.

Composite Blend – Add the HHPA chlorendic anhydride eutectic and DMP-10 to the resin portion and mix until a homogenous solution is attained.

Application Instructions

A typical cure schedule is 3 hours at 120 °C. Acceptable cures are also achieved overnight at 90 °C or in one hour at 150 °C. Large castings should be cured at the lowest temperature. Increasing or decreasing the amount of DMP-10 will shorten or lengthen, respectively, the time necessary for complete cure. Adjustments of the DMP-10 level will also affect the pot life.

The material to be potted is placed in the mold and heated to the cure temperature. The potting compound is then poured into the mold and vacuum deaired, if necessary, to eliminate voids.Silicone mold releases such as Dow-Corning Compound Number 7 are the most effective.

Typical Cured State Properties

Table 2 / Cured State Properties [1]

	Units	Value
Tensile Strength	psi	7,200
Tensile Elongation at Break	%	8.7
Izod Impact, notch	ft•lbs/inch	0.51
Hardness	Shore D	80
Water Absorption, 24 hours	%	0.58
Weight Loss, after 24 hours at 150 °C	%	2.24
Electrical Properties		
Dielectric Constant [2]		4.31
Dissipation Factor		0.027
Volume Resistivity [3]		
at 25 °C	ohm•cm	6.9×10^{14}
at 66 °C	ohm•cm	1.2×10^{12}
at 92 °C	ohm•cm	1.1×10^{10}
Surface Resistivity at 25 °C [3]		5.42×10^{14}

[1] Cured for 3 hours at 120 °C.

[2] Measured at 25 °C, 50% R.H. and 106 Hertz.

[3] Measured at 50% R H., 500 volts for 1 minute.

Storage

Recommendations regarding storage conditions can be obtained by visiting our web site at 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.

Contact Information

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For literature and technical assistance, visit our website atwww.hexion.com

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