



EPOXY RESIN, POTTING COMPOUND

WSF-M3L77-B

1. SCOPE

The material defined by this specification is a silica filled two-part liquid epoxy system, consisting of a resin and a hardener. When mixed in the proper ratio, and cured at specified temperature, it encapsulates with excellent high temperature electrical properties, high thermal shock resistance, and void-free filling of segmented bobbin material.

2. APPLICATION

This specification was released originally for material used to encapsulate the distributorless ignition system (DIS) coils.

3. REQUIREMENTS

3.0 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

Material suppliers and part producers must conform to the Company's Standard Requirements For Production Materials (WSS-M99P1111-A).

3.3 CONDITIONING AND TEST CONDITIONS

All test values indicated herein are based on material conditioned in a controlled atmosphere of 23 +/- 2 °C and 50 +/- 5% relative humidity for not less than 24 h prior to testing and tested under the same conditions unless otherwise specified. Test material, after mixing, must be de-aired at 1 torr or below with agitation for a minimum of 1 to 2 minutes, until no further outgassing occurs, prior to sample curing.

3.3.1 Resin/Hardener Cure Schedule

1.5 h at 110 °C + 1.5 h at 150 °C

3.4 INDIVIDUAL AND MIXED COMPONENT PROPERTIES

Supplier shall furnish the certification attached to this specification.

3.5 CURED RESIN PROPERTIES

3.5.1	Hardness, Durometer D (ISO 868/ASTM D 2240, hand held durometers shall not be used)	94 +/- 3
3.5.2	Tensile Strength, min (ISO R 527/ASTM D 638M)	79 MPa
3.5.3	Elongation, min (Test according to para 3.5.2)	2.0%

Date	Action	Revisions
2003 06 30	Revised	Para 3.0 inserted; Para 3.1, 3.2, 3.6, 3.7, 4 deleted
1992 02 20	DE00E10079345123	Revised 3.5.7 & 3.5.8 L. Rumao
1991 05 20	DF00E00107002038	Released L. Rumao

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ENGINEERING MATERIAL SPECIFICATION

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3.5.4	Flexural Strength, min (ISO 178/ASTM D 790M, Method I, Procedure A)	103 MPa	
3.5.5	Water Absorption, max (ASTM D 570, 24 h)	0.25%	
3.5.6	Coefficient of Linear Thermal Expansion (ASTM D 696)	3.0E-5/ °C	
		As Cured	Wet (para 3.5.5)
3.5.7	Dielectric Constant, max (ASTM D 150, 1000 hz)		
	At 30 °C	3.82	3.85
	At 90 °C	3.87	3.87
	At 150 °C	3.89	3.90
3.5.8	Dissipation Factor, max (ASTM D 150, 1000 hz)		
	At 30 °C	0.015	0.015
	At 90 °C	0.015	0.015
	At 150 °C	0.015	0.015
3.5.9	Volume Resistivity, ohm/cm, min (ASTM D 257)		
	At 30 °C	3.8E15	2.8E15
	At 90 °C	1.5E15	1.0E15
	At 150 °C	2.8E15	2.2E15
3.5.10	Dielectric Strength, kv/mm, min (IEC 243/ASTM D 149, in insulating oil)	39.30	38.89
3.5.11	The candidate material must meet requirements of DIS coil assembly specification ES-E8TF-12029-AA (latest version) as directed by the Ignition Engineering Section of the Electrical & Fuel Handling division.		

5. GENERAL INFORMATION

The information given below is provided for clarification and assistance in meeting the requirements of this specification.