LORD
THERMOSET
Advanced Electronic Materials

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EP-830

DISTRIBUTORLESS IGNITION SYSTEM, COIL IMPREGNATING AND ENCAPSULATING EPOXY

Description:

Lord EP-830 is a heat curing, two component epoxy formulation designed especially for use in automotive high voltage ignition coils where adhesion to segmented bobbins is critical. The combination of low viscosity, excellent high temperature electrical performance and good thermal shock resistance make this epoxy compound ideal for this application.

Use:

The EP-830 system is best handled with automatic mix/meter/dispensing equipment. The mixed material is introduced into preheated coils under vacuum. The potted coils are then cured at elevated temperatures.

Process Description:

The use of Lord EP-830 in potting ignition coils may be summarized as follows:

1. Preheat coils to 90-100°C for 2 to 4 hours.
2. Preheat the EP-830 resin to 80 -90°C.
3. Preheat the EP-830 hardener to 30 -50°C.
4. Introduce the EP-830 system into coils under a vacuum of 1-3 torr.
5. Subject the filled coils to a vacuum of 1-3 torr 10-60 seconds.
6. Cure on the following schedule*:

3 Hours	65-70°C
plus 1.5 hours	105-115°C
plus 1.5 hours	145-155°C

*In Special circumstances where conditions do not permit the use of the above schedule, alternate curing cycles may be used. If this change is necessary, please consult Lord for complete instructions.

Typical Properties:

The values listed below are averages and they are not intended for specification purposes. Contact Lord when establishing specifications. The cured physical and electrical properties listed in this bulletin were developed by using the above referenced cure schedule.

Handling Properties:

Mix Ratio (resin to hardener)	
By Weight	100:28
By Volume	100:46
Mixed Viscosity @ 25°C	4,000 cps
@ 75°C	170 cps
STM 1	
Working Life @ 25°C	1-2 days
Typical Cure Schedule	
@ 100ºC	3 hours
PLUS @ 150ºC	2 hours

Physical Properties:

Glass Transition Temperature (Tg)	175°C
Mettler DSC-30	
ASTM D 3418	
Hardness (Shore D)	97
STM 5 (ASTM D 2240)	
Specific Gravity @ 25°C	1.65
STM 2	
Color	Tan
Temperature Rating Guide*	180°C
Tensile Strength	12,345 psi
ASTM D 638	
Tensile Elongation	2.5%
ASTM D 638	
Flexural Strength	15,980 psi
ASTM D 790	
Izod Impact Strength	0.35 ft lbs/in of notch
ASTM D 256	
Water Absorption (24 hours)	0.18%
ASTM D 570	
Weight Loss (168 hours @ 155°C)	0.28%
Coefficient of Linear Thermal Expansion	25 x 10^{-6} in/in/°C
ASTM D 696	

Electrical Properties:

Dielectric Strength	1,225 volts/mil
ASTM D 149	(0.65mm thickness)
Dielectric Constant (1000 Hz)	
@ 30°C	3.62
@ 90°C	3.67
@ 150°C	3.69
ASTM D 150	
Dissipation Factor (1000 Hz)	
@ 30°C	.003
@ 90°C	.003
@ 150°C	.006
ASTM D 150	
Volume Resistivity (ohm-cm)	
@ 30°C	5.8×10^{15}
@ 90°C	2.5×10^{15}
@ 150°C	3.8×10^{12}
ASTM D 257	

***Temperature Rating Guide:** Is based on average design requirements and the guide is not intended as a guarantee of suitability for all applications operating at that temperature. The guide is based on the weight loss shown in the same table.

In most cases, STM (Lord Standard Test Methods) correspond with standard ASTM tests. Copies are available upon request.

Proportioning and Mixing:

Lord EP-830 can be proportioned by weight or volume. These ratios are stoichiometrically calculated and should be closely followed. Automated meter-mix dispensing equipment may be used for high volume production. (A list of dispensing equipment manufacturers is available from Lord.)

Mold Release:

When encapsulating a unit in a nonporous mold, a mold release should be used. Most mold releases evaporate quickly and, when properly applied, leave a surface that will release easily from Lord epoxies. As with other flammable solvents, appropriate precautions should be observed.

Clean-Up:

It is recommended that customers use disposable containers and utensils when working with epoxies. However, when disposable materials are impractical, uncured epoxy can be removed by cleaning equipment with solvent. Observe appropriate precautions when using flammable solvents. Solvent-cleaned utensils should be thoroughly dried before reuse. Any remaining solvent can contaminate the next mixture.

Shelf Life and Storage:

Lord EP-830 resin and hardener have a shelf life of six months and twelve months, respectively, at room temperature (25°C). The fillers used in EP-830 resin may softly settle with time. Therefore, containers of EP-830 resin should be turned upside down periodically or agitated slightly to prevent settling.

Handling Precautions:

The labels on containers of Lord materials contain current information on the hazards associated with each particular product. Most epoxy resins and hardeners are skin and eye irritants and some may actually be corrosive to the skin and eyes. Other problems, such as skin sensitization or serious health hazards, may exist. Further information on each product is contained in the Material Safety Data Sheet which will be sent upon request.

Lord Corporation
111 Lord Drive
Cary, NC 27511 USA

Web Site: **www.lord.com**
Phone: **1-800-746-8343**
1-317-259-4161
Fax: **1-317-252-8402**