ORIEM TECHNOLOGY SDN. BHD. **(597413-T)**
Plot 25, Bayan Lepas Industrial Estate, Non-FTZ, Phase 4,
Bayan Lepas, 11900 Penang, Malaysia.
Tel: (6)04-642 6363 Fax: (6)04-642 6366

PRODUCT TECHNICAL BULLETIN

Rev A

LH 1622

(Epoxy Encapsulant)

PRODUCT DESCRIPTION

LH1622 is a two component, unfilled, rigid potting epoxy resin for encapsulation of mainly LED Lamps or Radial devices. It is designed to withstand the stringent JIS requirement for outdoor accelerated testing. Special UV retardant is added to enhance the UV resistant properties. It has a special stress relieving mechanism that will allow superior reliability performance. When casted, it provides excellent clarity, thermal shock resistant and excellent environmental protection.

Key advantages of LH1622:

a) High purity material to ensure good consistency
b) Low mixed viscosity to allow easy casting
c) Stress relieving mechanism to offer superior reliability performance
d) Lower cost than most similar Tg material in the market

TYPICAL PROPERTIES

Uncured:

Property	16 (Part A)	22 (Part B)	Test Method
Color	Blue	Clear	Visual
Viscosity @ 25°C, cP	4000±1000	450±100	ASTM2393
Shelf life @ 30°C (from date of manufacturing), month	15	6	Use test

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Cured:

Property	Specification	Test Method
Color	Water clear	Visual
Mix Viscosity @ 25°C, cP	1000 ± 500	ASTM2393
Glass transition temperature (midpoint), °C	140 ± 10	ASTM D3418
Coefficient of thermal expansion (α1 and α2), ppm	α1 = <70, α2 = <180	ASTM D 696
Hardness @ 25°C, Shore D	85	ASTM D2240
Moisture absorption @ 100°C/24hrs, %	<2%	ASTM D570

HANDLING & MIXING

Pre-Heating Part A (before mixing)	= 60-80°C at min 1 hour and max 12 hours
Mix Ratio (R: H)	= 100 : 100
Recommended weighing tolerance	= ± 0.1g
Pot Life (upon mixing Part A&B)	= 4 hours

Caution!

Visually inspect containers of the resin before use. The Part B may crystallize upon storage due to high purity of the material. Do not use the material directly if crystal or sedimentation is visible. The Part B can be heated up to 60^{o}C for 1 to 3 hours until material is totally liquid. Allow the Part B to cool down naturally to about 35^{o}C before use. The anhydride system in Part B is moisture sensitive. Always reseal the opened container immediately after use. It is a good practice to purge with nitrogen before resealing. Shake the bottle right before use and make sure that all ingredients inside are properly mixed after storage. Preheat Part A to 70°C for an hour to reduce the viscosity and allow ease of flow. No reaction will take place. Pour the required quantity of Part B into the container first. This is important as Part A has high viscosity and will adhere very well to the side wall of the container making it difficult to mix homogeneously. Then stir gently manually to have partial mix. Then use automated (preferably vacuum mixer) mixer to mix the Part A and Part B. Proceed to degassing if necessary. The degassing process can be facilitated with slight heating up to 35^{o}C. Application of pressure should be around –30in Hg. Due to low molecular weight of Part B, continuous bubbling may occur. Do not over degas the Part A and B mixture as continuous evaporation of Part B may offset the optimum mix ratio (10 to 20 minutes should be sufficient).

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CURE PROCEDURE

Initial cure Tg	125°C/1hr (excluded ramp up time)
Subsequently cure Tg Oven ramp up from 60 to 80 deg °C	140°C/3hrs (excluded ramp up time)

Important!

LH1622 was found to be superior when cured using a step cure profile (continuous). We would suggest the curing Tg at 1st Curing @ 120 -130 deg C, 2nd curing @ 140-145 deg C.
We are glad to suggest the initial curing profile for your kindly reference.
1st Cure: 120 deg C @ 1 hour – De-mold at 60 to 80 deg C, follow by 2nd Cure: 140 deg C @ 3 hours. Temperature ramp up/start from 60 to 80 deg C. This is to avoid the start temperature will ramp above 140 deg C if we start from 130 /135 deg C.
As the oven setting temperature and the actual temperature may vary, the actual cure profile may be varied, please refer to the Tg as a better reference.

After cured the epoxy will have good adhesion with the lead frame and mold cup interface. It is critical that customer apply mold release to the mold cup prior to casting this material. If not increased de-molding stress will compromise the package performance. It is recommended to apply the mold release before casting to reduce the de-molding force after cured.
For de-molding, it is recommended that the de-molding temperature is ~40°C below Tg to avoid undesirable crazing or micro-crack (i.e. If product initial cure yields Tg of 100°C, the max recommended de-molding temperature is at 60 to 80 °C

SAFETY AND FIRST AID

Prevent prolonged or frequent skin contact. Wear protective gears when mixing. Avoid inhalation of vapor. Mix in a well ventilated area. If contact occurs, was with soap and water. Please refer to MSDS for more information.

PACKAGING & STORAGE

LH1622 available in 20kg per box (small packaging in 5kg for each Part A and Part B).
It should be stored in a dry place, preferably in the sealed original container.