EPO-TEK® EK1000

Technical Data Sheet
For Reference Only
High Conductivity Epoxy

Date: Nov 2013
Rev: VII

Recommended Cure: 150°C/1 Hour plus 200°C/1 Hour (post cure)

No. of Components:	Single
Mix Ratio by Weight:	N/A
Specific Gravity:	3.34
Pot Life:	2 Weeks
Dry Time:	≤ 1 Day
Shelf Life:	One year at -40°C

Minimum Alternative Cure(s):
may not achieve performance properties below
200°C / 30 Minutes

NOTE: Container(s) should be kept closed when not in use. Filled systems should be stirred thoroughly before mixing and prior to use.

Product Description: EPO-TEK® EK1000 is a silver-filled adhesive that exhibits exceptional thermal and electrical conductivity along with a shiny silver appearance designed for the demanding requirements of high power LED die attach applications. It is the single component version of EPO-TEK® EK2000.

Typical Properties:

To be used as a guide only, not as a specification. Different batches, conditions & applications yield differing results.
Cure condition: varies as required * denotes test on lot acceptance basis Data below is not guaranteed.

PHYSCIAL PROPERTIES:

*	**Color (before cure):**	Silver				
*	**Consistency**	Smooth thixotropic paste				
*	**Viscosity (23°C): @ 100 rpm**	1,800 - 3,600	**cPs**			
	Thixotropic Index:	3.6				
*	**Glass Transition Temp:**	≥ 80	**°C** (Dynamic Cure:20-200°C/ISO 25 Min; Ramp -10-200°C @ 20°C/Min)			
	Coefficient of Thermal Expansion (CTE):					
	Below Tg:	38 x 10^{-6}	**in/in°C**			
	Above Tg:	94 x 10^{-6}	**in/in°C**			
	Shore D Hardness:	66				
	Lap Shear @ 23°C:	1,010				
	Die Shear @ 23°C initial:	≥ 10	**Kg**	3,400	**psi**	
	Die Shear @ 23°C after 1000 hrs 85°C/85%R:	≥ 5	**Kg**	1,700	**psi**	
	Degradation Temp:	357	**°C**			
	Weight Loss: @ 200°C	0.09	**%**			
	@ 250°C	0.94	**%**			
	@ 300°C	1.70	**%**			
	OperatingTemp: : Continuous:	- 55°C	**to** 200°C			
	Intermittent:	- 55°C	**to** 300°C			
	Storage Modulus:	273,528	**psi**			
	Ion Content: Cl:	≤ 10	**ppm**	**NA^+:**	2	**ppm**
	NH_4^+:	6	**ppm**	**K^+:**	0	**ppm**
*	**Particle Size:**	≤ 45	**microns**			

ELECTRICAL AND THERMAL PROPERTIES:

	Thermal Conductivity (150°C/1 Hour):	12.6 **W/mK**
	Thermal Conductivity (150°C/1 Hour+200°C/1 Hour):	26.3 **W/mK**
	Thermal Conductivity (125°C/2.5 Hours+150°C/36 Minutes+200°C/15 Minutes):	35.5 **W/mK**
*	**Volume Resistivity @ 23°C:**	≤ 0.00009 **Ohm-cm**

Epoxies and Adhesives for Demanding Applications™

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EPO-TEK® EK1000 Advantages & Suggested Application Notes:

- Low viscosity and high thixotropy make it ideal for a wide range of application techniques including syringe dispensing
- Extreme thermal management in high power and high brightness LED die attach.
- Resistant to thermal cycling and impact resistance in high power microwave communications die attach.
- Available in a Mil-STD-883 Test Method 5011 version: EPO-TEK® EK1000-MP.
- Concentrated PV solar cells (CPV):
  - ◊ Die attach of triple junction, III-V semiconductor chips, offering the lowest thermal resistance.
  - ◊ Favorable performance with respect to solder devices.
  - ◊ Replacing vacuum preform solder manufacturing with low temperature/low stress with a proven low temperature/low stress, high volume dispensing process.
- Alternative step cures can result in improved thermal management. Contact techserv@epotek.com for selecting the best multi-step curing process.

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