EPOXY TECHNOLOGY

EPO-TEK® H20E-PFC

Technical Data Sheet
For Reference Only
Electrically Conductive, Silver Epoxy

Date: September 2017
Rev: IX
No. of Components: Two
Mix Ratio by Weight: 1 : 1
Specific Gravity: Part A: 2.88 Part B: 3.31
Pot Life: 3 Days
Shelf Life- Bulk: One year at room temperature

Recommended Cure: 150°C / 1 Hour

Minimum Alternative Cure(s):
May not achieve performance properties listed below
175°C / 45 Seconds
150°C / 5 Minutes
120°C / 15 Minutes
80°C / 3 Hours

NOTES:
- Container(s) should be kept closed when not in use.
- Filled systems should be stirred thoroughly before mixing and prior to use.
- Performance properties (rheology, conductivity, others) of the product may vary from those stated on the data sheet when bi-pak/syringe packaging or post-processing of any kind is performed. Epoxy's warranties shall not apply to any products that have been reprocessed or repackaged from Epoxy's delivered status/container into any other containers of any kind, including but not limited to syringes, bi-paks, cartridges, pouches, tubes, capsules, films or other packages.

Product Description: EPO-TEK® H20E-PFC is a two component, semiconductor grade epoxy, designed for flip chip interconnects using a solder-free joining method.

Typical Properties: Cure condition: 150°C / 1 Hour Different batches, conditions & applications yield differing results. Data below is not guaranteed. To be used as a guide only, not as a specification. * denotes test on lot acceptance basis

PHYSICAL PROPERTIES:				
* Color (before cure):		Part A: Silver	Part B: Silver	
* Consistency:		Smooth thixotropic paste		
* Viscosity (23°C) @ 100 rpm:		3,000 - 4,000	cPs	
Thixotropic Index:		6.7		
* 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:	48	x 10^{-6} in/in°C	
	Above Tg:	106	x 10^{-6} in/in°C	
Shore D Hardness:		50		
Lap Shear @ 23°C:		850	psi	
Die Shear @ 23°C:		≥ 5	Kg	1,778 psi
Degradation Temp:		407	°C	
Weight Loss:				
	@ 200°C:	0.46	%	
	@ 250°C:	1.02	%	
	@ 300°C:	1.78	%	
Suggested Operating Temperature:		< 325	°C (Intermittent)	
Storage Modulus:		921,254	psi	
Ion Content:	Cl^-:	199 ppm	Na^+:	12 ppm
	NH_4^+:	349 ppm	K^+:	12 ppm
* Particle Size:		≤ 20	microns	

ELECTRICAL AND THERMAL PROPERTIES:		
Thermal Conductivity:	3.2	W/mK
* Volume Resistivity @ 23°C:	≤ 0.0004	Ohm-cm

Epoxies and Adhesives for Demanding Applications™
This information is based on data and tests believed to be accurate. Epoxy Technology, Inc. makes no warranties (expressed or implied) as to its accuracy and assumes no liability in connection with any use of this product.
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EPO-TEK® H20E-PFC Advantages & Suggested Application Notes:

- Stencil printing of small dots or "bumps" the size of 4 mil diameter with 8 mil pitch can be achieved.
- Product may be applied at the wafer level or single-chip bumping of prototypes.
- Final system packaging can be hermetic micro-electronic cases or open-faced circuits using potting resin or housing.
- Low temperature cure capable between 70°C – 100°C allows for lower cost plastic substrates / housings to be used.
- Suggested for flip chip packaging applications found in memory devices (SRAM, DRAM), watch modules, RFID tags, smart-cards, military, and medical devices.
- Passes NASA low outgassing standard ASTM E595 with proper cure - http://outgassing.nasa.gov/
- Compatible with Au, Cu, Ag, Ag-Pd component or substrate metallization.
- Recommended to be used with chips or wafers which have UBM layer already deposited.
- Compatible with automated dispensing equipment.

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