EPOXY TECHNOLOGY

EPO-TEK® H20E-FC

Technical Data Sheet
For Reference Only
Electrically Conductive Epoxy

Date: Oct 2013
Rev: Rev III
No. of Components: Two
Mix Ratio by Weight: 1 : 1
Specific Gravity: Part A: 3.80 Part B: 2.51
Pot Life: 20 Hours
Shelf Life: One year at room temperature

Recommended Cure: **140°C / 10 Minutes**

Minimum Alternative Cure(s):
may not achieve performance properties below
140°C / 35 Seconds
120°C / 15 Minutes
80°C / 45 Minutes

NOTE: Container(s) should be kept closed when not in use.
For filled systems, mix contents of each container (A & B) gently but thoroughly before mixing the two together.

Product Description: EPO-TEK® H20E-FC is a two-component, electrically conductive, snap curing epoxy for photovoltaic thin film module stringing, semiconductor packaging and PCB circuit assembly.

Typical Properties:
To be used as a guide only, not as a specification. Different batches, conditions & applications yield differing results.
*Cure condition : 140°C/10 Minutes * denotes test on lot acceptance basis Data below is not guaranteed.*

PHYSCIAL PROPERTIES:		
* Color (before cure):		Part A: Silver Part B: Silver
* Consistency		Smooth thixotropic paste
* Viscosity (23°C): @ 50 rpm	2,361	cPs
Thixotropic Index:	4.62	
* Glass Transition Temp:	85	°C (Dynamic Cure:20-200°C/ISO 25 Min; Ramp -10-200°C @ 20°C/Min)
Coefficient of Thermal Expansion (CTE):		
Below Tg:	53	$x 10^{-6}$ in/in°C
Above Tg:	233	$x 10^{-6}$ in/in°C
Shore D Hardness:	55	
Lap Shear @ 23°C:	> 2,000	
Die Shear @ 23°C:	≥ 10	Kg 3,400 psi
Degradation Temp:	392	°C
Weight Loss: @ 200°C	0.73	%
@ 250°C	1.67	%
@ 300°C	2.37	%
OperatingTemp: : Continuous:	- 55°C to 200°C	
Intermittent:	- 55°C to 300°C	
Storage Modulus:	927,509	psi
* Particle Size:	≤ 45	microns

ELECTRICAL AND THERMAL PROPERTIES:		
Thermal Conductivity:	2.63	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-FC Advantages & Suggested Application Notes:

- It is a snap cure version of EPO-TEK® H20E, designed for snap cure at 140°C and <15 minute cure at 120°C.
- Strengths include dispensable rheology and a long pot life.
- Suggested Applications:

◊ Semiconductor: die-attaching IC’s onto Cu plated lead-frame yielding semiconductor plastic package formats.

◊ PCB: solder replacement adhesive, electrical bridge of Au, Ag and AgPd electrode pads onto Au- or Cu-plated PCBs.

◊ Photovoltaics:

- Electrically conductive stringing of thin film, organic and crystalline Si solar cells.
- Compatible with SnCu and AgCu metalized solar ribbons, and TCO substrates such as ITO, ZnO and SnO.
- Versatility in ribbon bonding geometries, such as dotted or continuous line.
- In-line/in-situ curing processes in <1 minute at 140°C can be achieved.
- Reliable green strength holds solar ribbons in position prior to cure.
- Low temperature cure is well suited for CIGS and OPV/DSC solar cells requiring a low temperature process.
- Suitable for use on IEC 61646, IEC 61730 and UL 1703 certified solar panels.

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