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EPO-TEK® H20E-FC

Technical Data Sheet
For Reference Only
Electrically Conductive Epoxy

Date:	August 2024	
Rev:	VII	
No. of Components:	Two	
Mix Ratio by Weight:	1 : 1	
Specific Gravity:	Part A: 3.80	Part B: 2.51
Specific Gravity, Mixed:	2.86	
Pot Life:	20 Hours	
Shelf Life- Bulk:	One year at room temperature	
Shelf Life- Syringe:	One year at -40°C	

Recommended Cure: 140°C / 10 Minutes

Minimum Alternative Cure(s):
May not achieve performance properties listed below
140°C / 35 Seconds

120°C / 15 Minutes
80°C / 45 Minutes

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-FC is a two-component, electrically conductive, snap curing epoxy for photovoltaic thin film module stringing, semiconductor packaging and PCB circuit assembly.

Typical Properties: Cure condition: 140°C / 10 Minutes 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) @ 50 rpm:	1,000 - 5,000	cPs	
Thixotropic Index:	4.6		
* Glass Transition Temp:	≥ 70	°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	psi	
Die Shear @ 23°C:	≥ 10	Kg	3,556 psi
Degradation Temp:	392	°C	
Weight Loss:			
@ 200°C:	0.73	%	
@ 250°C:	1.67	%	
@ 300°C:	2.37	%	
Suggested Operating Temperature:	< 300	°C (Intermittent)	
Storage Modulus:	927,509	psi	
* Particle Size:	≤ 45	microns	

ELECTRICAL AND THERMAL PROPERTIES:		
Thermal Conductivity:	2.6	W/mK
* Volume Resistivity @ 23°C:	≤ 0.0004	Ohm-cm

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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