EPO-TEK® H21D

Technical Data Sheet
For Reference Only
Electrically Conductive, Silver Epoxy

Date:	February 2021	
Rev:	X	
No. of Components:	Two	
Mix Ratio by Weight:	10 : 1	
Specific Gravity:	Part A: 2.45	Part B: 2.14
Pot Life:	15 Hours	
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
150°C / 5 Minutes
120°C / 15 Minutes
80°C / 90 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® H21D is a two component, high Tg, silver-filled epoxy designed for chip bonding in microelectronic and optoelectronic applications.

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 paste			
* Viscosity (23°C) @ 10 rpm:		25,000-40,000	cPs	
Thixotropic Index:		2.6		
* Glass Transition Temp:		≥ 100	°C (Dynamic Cure: 20-200°C/ISO 25 Min; Ramp -10-200°C @20°C/Min)	
Coefficient of Thermal Expansion (CTE):				
Below Tg:		42	$\times 10^{-6}$ in/in°C	
Above Tg:		225	$\times 10^{-6}$ in/in°C	
Shore D Hardness:		60		
Lap Shear @ 23°C:		1,504	psi	
Die Shear @ 23°C:		≥ 10	Kg	3,556 psi
Degradation Temp:		416	°C	
Weight Loss:				
@ 200°C:		0.03	%	
@ 250°C:		0.06	%	
@ 300°C:		0.17	%	
Suggested Operating Temperature:		< 350	°C (Intermittent)	
Storage Modulus:		802,491	psi	
Ion Content:	Cl^-:	64 ppm	Na^+:	72 ppm
	NH_4^+:	121 ppm	K^+:	ND ppm
* Particle Size:		≤ 45	microns	

ELECTRICAL AND THERMAL PROPERTIES:		
Thermal Conductivity:	1.0	W/mK
* Volume Resistivity @ 23°C:	≤ 0.0009	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® H21D Advantages & Suggested Application Notes:

- Extended pot-life and can be cured at relatively low temperatures such as 80°C.
- Designed to be used in the 300°C range for applications such as wire bonding operations and eutectic lid-sealing processes.
- Contains no solvents or thinners. NASA approved, low outgassing epoxy – http://outgassing.nasa.gov/
- Also suggested for hybrid - aerospace circuits found in RF / Microwave devices like cockpits and satellites.
- Paste-like rheology allows for application by commercial dispensing equipment, stamping, screen printing, or by hand with spatula or toothpick.
- Compatible with Au-plated ceramic substrates found in traditional and custom hybrids.

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