EPO-TEK® H31

Technical Data Sheet
For Reference Only
Electrically Conductive, Silver Epoxy

Date:	February 2022
Rev:	VII
No. of Components:	Single
Mix Ratio by Weight:	N/A
Specific Gravity:	2.20
Pot Life:	28 Days
Shelf Life- Bulk:	Six months at -40°C
Shelf Life- Syringe:	Six months at -40°C

Recommended Cure: 150°C / 1 Hour

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.
- Failure to ship frozen may result in viscosity growth beyond the range of values herein; customer assumes all risk.

Product Description: EPO-TEK® H31 is a single component, silver-filled, electrically conductive epoxy designed for semiconductor die attach applications found in hybrids, JEDEC, and opto-electronic packaging.

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):	Silver			
* Consistency:	Smooth paste			
* Viscosity (23°C) @ 5 rpm:		15,000-25,000	cPs	
Thixotropic Index:		3.0		
* Glass Transition Temp:		≥ 110	°C (Dynamic Cure: 20-200°C/ISO 25 Min; Ramp -10-250°C @20°C/Min)	
Coefficient of Thermal Expansion (CTE):				
Below Tg:		48	x 10^{-6} in/in°C	
Above Tg:		201	x 10^{-6} in/in°C	
Shore D Hardness:		84		
Lap Shear @ 23°C:		1,320	psi	
Die Shear @ 23°C:		≥ 5	Kg	1,778 psi
Degradation Temp:		370	°C	
Weight Loss:				
@ 250°C:		0.06	%	
Suggested Operating Temperature:		< 300	°C (Intermittent)	
Storage Modulus:		824,640	psi	
Ion Content:	Cl^-:	7 ppm	Na^+:	143 ppm
	NH_4^+:	8 ppm	K^+:	41 ppm
* Particle Size:		≤ 45	microns	

ELECTRICAL AND THERMAL PROPERTIES:		
Thermal Conductivity:	1.1	W/mK
* Volume Resistivity @ 23°C:	≤ 0.0005	Ohm-cm
Dielectric Constant (1KHz):	N/A	
Dissipation Factor (1KHz):	N/A	

Epoxies and Adhesives for Demanding Applications™

EPO-TEK® H31 Advantages & Suggested Application Notes:

- Bright /shiny silver provides high reflectance, especially good for enhancing LED overall brightness.

- Creamy thixotropic paste allows for high volume dispensing and pin transfer methods of application.

- Available in several different viscosity versions. Contact techserv@epotek.com for your best recommendation.

- Suggested Applications:
  - Semiconductor: die attach chips onto lead-frames for JEDEC Level III and II packaging. Adhesion to Ag-spot lead-frame.
  - Hybrids: GaAs and Si die attach, adhesion to Au-plated chips, general electrical contacts for ceramic circuits, substrate attach to ground package.
  - Opto-electronic: single LED packaging in TO-cans, LED arrays on PCB or substrate, adhesion to ITO in LCDs, and sensor device/OEM instrumentation.
  - PCB/General: EMI or Rf shielding of electronics

- Passes NASA low outgassing standard ASTM E595 with proper cure - http://outgassing.nasa.gov/.

- Long pot-life, up to 28 days, yields low waste between manufacturing shifts.