EPO-TEK® H20E
Technical Data Sheet
For Reference Only
Electrically Conductive, Silver Epoxy

Number of Components:	Two	Frozen Syringe	Minimum Bond Line Cure Schedule*:	
Mix Ratio By Weight:	1:1		175°C	45 Seconds
Specific Gravity:		2.67	150°C	5 Minutes
Part A	2.03		120°C	15 Minutes
Part B	3.07		80°C	3 Hours
Pot Life:	2.5 Days			
Shelf Life:	One year at 23°C	One year at -40°C		

*Note: Container(s) should be kept closed when not in use. For filled systems, mix contents of each container (A & B) thoroughly before mixing the two together. *Please see Applications Note available on our website.*

Product Description:

EPO-TEK® H20E is a two component, 100% solids silver-filled epoxy system designed specifically for chip bonding in microelectronic and optoelectronic applications. It is also used extensively for thermal management applications due to its high thermal conductivity. It has proven itself to be extremely reliable over many years of service and is still the conductive adhesive of choice for new applications. Also available in a single component frozen syringe.

EPO-TEK® H20E Advantages & Application Notes:

- Especially recommended for use in high speed epoxy chip bonding systems where very fast cures are desired.
- Suggested for JEDEC Level III and II for plastic IC packaging.
- NASA approved and is NON TOXIC—complying with USP Class VI Biocompatibility Standards.
- Capable of resisting TC wire bonding temperatures in the range of 300°C to 400°C.
- Ease of use; apply by dispensing, screen printing, die-stamping, or by hand.
- Especially suited for high power devices and high current flow. High power LEDs.
- Opto-electronic packaging material: LED, LCDs, and fiber optic components.

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

Physical Properties:

***Color:** **Part A:** Silver **Part B:** Silver
***Consistency:** Smooth, thixotropic paste
***Viscosity (@ 100 RPM/23°C):** 2,200 – 3,200 cPs
Thixotropic Index: 3.69
***Glass Transition Temp.(Tg):** ≥ 80°C (Dynamic Cure 20—200°C /ISO 25 Min; Ramp -10—200°C @ 20°C/Min)
Coefficient of Thermal Expansion (CTE):
Below Tg: 31 x 10^{-6} in/in/°C
Above Tg: 158 x 10^{-6} in/in/°C
Shore D Hardness: 75
Lap Shear Strength @ 23°C: 1,475 psi
Die Shear Strength @ 23°C: > 5 Kg / 1,700 psi
Degradation Temp. (TGA): 425°C

Weight Loss:
@ 200°C: 0.59%
@ 250°C: 1.09%
@ 300°C: 1.67%
Operating Temp:
Continuous: -55°C to 200°C
Intermittent: -55°C to 300°C
Storage Modulus @ 23°C: 808,700 psi
Ions: Cl^- 73 ppm
Na^+ 2 ppm
NH_4^+ 98 ppm
K^+ 3 ppm
***Particle Size:** ≤ 45 Microns

Electrical Properties:

***Volume Resistivity @ 23°C:** ≤ 0.0004 Ohm-cm

Thermal Properties:

Thermal Conductivity: 2.5 W/mK
Thermal Conductivity: 29 W/mK
Based on Thermal Resistance Data: $R = L \times K^{-1} \times A^{-1}$

Thermal Resistance: (Junction to Case)
TO-18 package with nickel-gold metallized 20 x 20 mil chips and bonded with EPO-TEK® H20E (2 mils thick)
EPO-TEK® H20E: 6.7 to 7.0°C/W
Solder: 4.0 to 5.0°C/W

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