# EPO-TEK® H20E-PFC

**Technical Data Sheet**
**For Reference Only**
*Electrically Conductive, Silver Epoxy*

| | |
|---|---|
| **Date:** | February 2023 |
| **Rev:** | XIV |
| **No. of Components:** | Two |
| **Mix Ratio by Weight:** | 1 : 1 |
| **Specific Gravity:** | Part A: 2.88 Part B: 3.31 |
| **Pot Life:** | 3 Days |
| **Shelf Life- Bulk:** | One year at room temperature |
| **Shelf Life- Syringe:** | One year at -40°C |

**Recommended Cure: 150°C / 1 Hour**

Minimum Alternative Cure(s):
*May not achieve performance properties listed below*
175°C / 45 Seconds
150°C / 5 Minutes
120°C / 15 Minutes

80°C / 3 Hours

**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-PFC is a two component, semiconductor grade epoxy, designed for flip chip interconnects using a solder-free joining method.

**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 thixotropic paste | | |
| * Viscosity (23°C) @ 100 rpm: | 3,000 - 4,000 | cPs | |
| Thixotropic Index: | 4.8 | | |
| * Glass Transition Temp: | ≥ 80 | °C (Dynamic Cure: 20-200°C/ISO 25 Min; Ramp -10-200°C @20°C/Min) | |
| Coefficient of Thermal Expansion (CTE): | | | |
| Below Tg: | 48 | x $10^{-6}$ in/in°C | |
| Above Tg: | 106 | x $10^{-6}$ in/in°C | |
| Shore D Hardness: | 50 | | |
| Lap Shear @ 23°C: | 850 | psi | |
| Die Shear @ 23°C: | ≥ 5 | Kg | 1,778 psi |
| Degradation Temp: | 407 | °C | |
| Weight Loss: | | | |
| @ 200°C: | 0.46 | % | |
| @ 250°C: | 1.02 | % | |
| @ 300°C: | 1.78 | % | |
| Suggested Operating Temperature: | < 325 | °C (Intermittent) | |
| Storage Modulus: | 921,254 | psi | |
| Ion Content: | $Cl^-$: 199 ppm | $Na^+$: | 12 ppm |
| | $NH_4^+$: 349 ppm | $K^+$: | 12 ppm |
| * Particle Size: | ≤ 20 | microns | |

| ELECTRICAL AND THERMAL PROPERTIES: | | |
|---|---|---|
| Thermal Conductivity: | 3.2 | W/mK |
| * Volume Resistivity @ 23°C: | ≤ 0.0004 | Ohm-cm |




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A Meridian Adhesives Group Company

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## EPO-TEK® H20E-PFC Advantages & Suggested Application Notes:

- Stencil printing of small dots or “bumps” the size of 4 mil diameter with 8 mil pitch can be achieved.
- Product may be applied at the wafer level or single-chip bumping of prototypes.
- Final system packaging can be hermetic micro-electronic cases or open-faced circuits using potting resin or housing.
- Low temperature cure capable between 70°C – 100°C allows for lower cost plastic substrates / housings to be used.
- Suggested for flip chip packaging applications found in memory devices (SRAM, DRAM), watch modules, RFID tags, smart-cards, military, and medical devices.
- Passes NASA low outgassing standard ASTM E595 with proper cure - http://outgassing.nasa.gov/
- Compatible with Au, Cu, Ag, Ag-Pd component or substrate metallization.
- Recommended to be used with chips or wafers which have UBM layer already deposited.
- Compatible with automated dispensing equipment.



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