



# EPO-TEK® E4110-LV

Technical Data Sheet

For Reference Only

Electrically Conductive, Silver Epoxy

|                      |                              |
|----------------------|------------------------------|
| Date:                | June 2022                    |
| Rev:                 | VIII                         |
| No. of Components:   | Two                          |
| Mix Ratio by Weight: | 10 : 1                       |
| Specific Gravity:    | Part A: 3.10                 |
| Pot Life:            | 6 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 / 15 Minutes

80°C / 3 Hours

23°C / 3 Days

### 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.
- Syringe packaging will impact initial viscosity and effective pot life, potentially beyond stated parameters.

**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: Clear  |
| * Consistency:                          | Smooth flowing paste                  |  |
| * Viscosity (23°C) @ 100 rpm:           | 350 - 850                             | cPs  |
| Thixotropic Index:                      | 1.9                                   |  |
| * Glass Transition Temp:                | ≥ 40                                  | °C (Dynamic Cure: 20-200°C/ISO 25 Min; Ramp -10-200°C @20°C/Min) |
| Coefficient of Thermal Expansion (CTE): |                                       |  |
| Below Tg:                               | 50                                    | × 10 <sup>-6</sup> in/in°C                                       |
| Above Tg:                               | 283                                   | × 10 <sup>-6</sup> in/in°C                                       |
| Shore D Hardness:                       | 60                                    |  |
| Lap Shear @ 23°C:                       | 1,080                                 | psi  |
| Die Shear @ 23°C:                       | ≥ 5                                   | Kg 1,778 psi   |
| Degradation Temp:                       | 365                                   | °C   |
| Weight Loss:                            |                                       |  |
| @ 200°C:                                | 0.33                                  | %  |
| @ 250°C:                                | 0.65                                  | %  |
| @ 300°C:                                | 1.19                                  | %  |
| Suggested Operating Temperature:        | < 250                                 | °C (Intermittent)  |
| Storage Modulus:                        | 788,340                               | psi  |
| Ion Content:                            | Cl <sup>-</sup> : 332 ppm             | Na <sup>+</sup> : 0 ppm  |
|   | NH <sub>4</sub> <sup>+</sup> : 27 ppm | K <sup>+</sup> : 0 ppm   |
| * Particle Size:                        | ≤ 45                                  | microns  |

### ELECTRICAL AND THERMAL PROPERTIES:

|   |          |        |
|---|----------|--------|
| Thermal Conductivity:                                 | 1.8      | W/mK   |
| * Volume Resistivity @ 23°C (150°C/1 Hour):           | ≤ 0.0005 | Ohm-cm |
| Volume Resistivity @ 23°C (25°C 40-60%RH/3 Day Cure): | ≤ 0.009  | 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® E4110-LV Advantages & Suggested Application Notes:**

- Very low viscosity, silver-filled epoxy which can be applied by hand, brushing, roll coating, tooth-picking or stamping, or spraying.
- After cure, it has a shiny, almost metallic looking finish. This can be used to repair surface imperfections in metal coating applications such as electroplating or sputtering processes.
- Suggested applications:
  - Electronics - filling vias at the PCB level for top-to-bottom connections; EMI & Rf shielding applications.
  - Hybrids - electrically conductive potting for radar systems. The potting can be self-leveling, trapping no voids, and non-cracking with performance.
  - Optics - die-attaching LED's by the stamping process, or pin-transferring applications.
- NASA approved, low outgassing epoxy – <http://outgassing.nasa.gov/>

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