EPO-TEK® T7109
Technical Data Sheet
For Reference Only
Thermally Conductive Epoxy

Number of Components: Two
Mix Ratio By Weight: 10:1
Specific Gravity:
Part A  1.33
Part B  1.02
Pot Life: 4 Hours
Shelf Life: One year at room temperature

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

Minimum Bond Line Cure Schedule*:
150°C  10 Minutes
100°C  4 Hours
80°C  8 Hours

Product Description:
EPO-TEK® T7109 is a two component, thermally conductive epoxy designed for die attach and heat-sinking applications found in the semiconductor, hybrid, medical and optical industries.

EPO-TEK® T7109 Advantages & Application Notes:
- • Thermal resistance compared to three other epoxies
  • Thermal resistance and how it relates to overall thermal conductivity
  • Strength measurements plotted versus pot-life, versus Tcyles and damp heat (85°C/85%RH).
- Thixotropic paste allows for application by automatic dispensers or screen printers. It can also be applied by hand or spatula.
- Excellent adhesion to Aluminum, ferrous and non ferrous metals, and most plastics including Kapton.
- Suggested Applications:
  o Semiconductor - Thermally conductive underfill / Electrically non conductive die-attach, low stress for large die exceeding 500 mil x 500 mil.
  o Hybrid Micro-electronics - Large die attach, adhesion to GaAs devices, ceramic substrate attach to housing
  o Fiber Optic Packaging - Substrate attach of optical bench; TECooler attach; good adhesion to Au, Kovar and ceramic; can be used for laser diode and photo-diode attach.
  o Liquid Crystal Displays - die-attach micro-LCDs onto flex circuits like Kapton, or rigid carriers like FR4, ceramic, or silicon.
  o Medical - Heat sinking electronics found in ultrasound and CT Detectors, and other radiation devices.
- Low temperature cure between 80°C and 150°C allows use on lower cost plastics and temperature sensitive devices.
- Can be suggested as a lower stress, more resilient alternative of EPO-TEK® 930-4.

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)

<table>
<thead>
<tr>
<th>Physical Properties:</th>
<th>Electrical Properties:</th>
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<tbody>
<tr>
<td>Color: Part A: White Part B: Amber</td>
<td>Weight Loss: @ 200°C: 0.02% @ 250°C: 0.25% @ 300°C: 0.98%</td>
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<tr>
<td>Consistency: Smooth paste</td>
<td>Operating Temp: Continuous: -55°C to 200°C Intermittent: -55°C to 300°C</td>
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<td>Viscosity (@ 20 RPM/23°C): 14,000 - 20,000 cPs</td>
<td>Storage Modulus @ 23°C: 258,593 psi</td>
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<td>Thixotropic Index: 1.79</td>
<td>Ions: Cl - Na + NH4 + K +</td>
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<tr>
<td>Glass Transition Temp.(Tg): ≥ 45°C (Dynamic Cure 20 - 200°C /ISO 25 Min; Ramp -10 - 200°C @ 20°C/Min)</td>
<td>*Particle Size: ≤ 20 Microns</td>
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| Coefficient of Thermal Expansion (CTE):
  Below Tg: 46 x 10^-6 in/in/°C
  Above Tg: 239 x 10^-6 in/in/°C | Thermal Conductivity: 0.7 W/mK (40 mil); 1.5 W/mK (3 mil) |
| Shore D Hardness: 83 | Volume Resistivity @ 23°C: ≥ 8 x 10^15 Ohm-cm |
| Lap Shear Strength @ 23°C: > 2,000 psi | Dielectric Constant (1KHz): 3.5 |
| Die Shear Strength @ 23°C: ≥ 15 Kg / 5,100 psi | Dissipation Factor (1KHz): 0.004 |
| Degradation Temp. (TGA): 377°C | |

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