

## Product Information Sheet

**MATERIAL ID:**

**EPO-TEK® OE121**

**Date:** 08/2007

**Per:**

**Rev:** II

**Material Description:**

A two component, optically clear, low stress, capillary grade semiconductor underfill. It is clear and colorless and capable of curing at low temperatures in the range of 23°C to 80°C, suggested for opto-device flip chip packaging. It can also be used for general potting and encapsulation.

**Number of Components:**

Two

**Mix Ratio by weight:**

100:35

**Cure Schedule (minimum)**

90°C/1 Hour - 80°C/3 Hours - 23°C/2 Days

**Specific Gravity:**

--- Part A: 1.16 Part B: 0.96

**Pot Life:**

5 Hours

**Shelf Life:**

One year at room temperature

*NOTE:* Container(s) should be kept closed when not in use. Filled systems should be stirred thoroughly before mixing and prior to use

**MATERIAL CHARACTERISTICS:** *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: varies as required*  
 \* denotes test on lot acceptance basis

<b>PHYSICAL PROPERTIES:</b>	
<p><b>*Color (before cure):</b> Part A: Clear Yellow Part B: Clear/Colorless</p> <p><b>*Consistency:</b> Pourable liquid</p> <p><b>*Viscosity (23°C):</b> @ 100 rpm 300 - 500 cPs</p> <p><b>Thixotropic Index:</b> N/A</p> <p><b>*Glass Transition Temp:</b> ≥ 55 °C (Dynamic Cure 20—200°C /ISO 25 Min; Ramp -10—200°C @ 20°C/Min)</p> <p><b>Coefficient of Thermal Expansion (CTE):</b> Below Tg: 43 x 10<sup>-6</sup> in/in°C Above Tg: 158 x 10<sup>-6</sup> in/in°C</p> <p><b>Shore D Hardness:</b> 78</p> <p><b>Lap Shear @ 23°C:</b> 1,716 psi</p> <p><b>Die Shear @ 23°C:</b> ≥ 15 Kg / 5,100 psi</p> <p><b>Degradation Temp:</b> 350 °C</p>	<p><b>Weight Loss:</b></p> <p>@ 200°C: 1.20 % @ 250°C: 1.71 % @ 300°C: 3.91 %</p> <p><b>Operating Temp:</b> <b>Continuous:</b> - 55°C to + 200°C <b>Intermittent:</b> - 55°C to + 275°C</p> <p><b>Storage Modulus @ 23°C:</b> 248,652 psi</p> <p><b>Ion Content:</b> Cl<sup>-</sup>: 52 ppm NH<sub>4</sub><sup>+</sup>: 5 ppm Na<sup>+</sup>: 10 ppm K<sup>+</sup>: 2 ppm</p> <p><b>Particle Size:</b> N/A</p>
<b>ELECTRICAL AND THERMAL PROPERTIES:</b>	
<p><b>Thermal Conductivity:</b> N/A</p> <p><b>Volume Resistivity @ 23°C:</b> ≥ 1 x 10<sup>13</sup> Ohm-cm</p>	<p><b>Dielectric Constant (1KHz):</b> 3.52</p> <p><b>Dissipation Factor (1KHz):</b> 0.009</p>
<b>OPTICAL PROPERTIES @ 23°C:</b>	
<p><b>Spectral Transmission:</b> &gt; 94 % @ 380-1640 nm</p>	<p><b>Refractive Index (uncured):</b> 1.5271 @ 589 nm</p>

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