

N109 W13300 ELLSWORTH DRIVE GERMANTOWN, WI 53022  
262-253-5900 FAX 262-253-5919

**DESCRIPTION:**

*Resinlab*<sup>®</sup> *EP965T1 Black* is a two-part, epoxy structural adhesive and encapsulant designed for small to medium sized castings and for bonding a variety of materials. It has good wetting and adhesion to most surfaces. Due to the slight thixotropic nature of the product it prevents unwanted penetration and wicking through small cracks and crevasses, yet allows for flow and self-leveling to a smooth surface. It cures quickly at room temperature to a tough, semi-rigid polymer with good thermal shock and cycle resistance. It also has very good resistance to water, acids and bases, and most organic solvents.

*EP965T1 Black* was especially formulated to a 1A:1B volume mix ratio for use in side-by-side dispensing cartridges and meter, mix and dispense (MMD) equipment. *EP965T1 Black* will reach handle cure within 6-12 hours and full cure within 24 hours at room temperature. Final cure properties can be achieved more quickly by the application of heat after the product has gelled. Cure times and temperatures typical for small castings (less than 100 grams) range from 30 minutes at 65 °C to 15 minutes at 100 °C. Time to heat substrate must be taken into account with cooler temperatures extending the work time.

**TYPICAL PROPERTIES:**

All properties given are at 25 °C unless otherwise noted.

<b>Property:</b>	<b>Value:</b>	<b>Test Method or Source:</b>
<b>Color</b>	Black	Visual
<b>Mix Ratio</b>	Part A to Part B	Calculated
<b>Mix Ratio by weight</b>	1.24 to 1	
<b>Mix Ratio by volume</b>	1 to 1	
<b>Cure Schedule</b>	24 hrs @ 25 °C 30 min @ 65 °C 15 min @ 100 °C	
<b>Viscosity - Part A</b>	227,000 cP	TA HR20 Rheometer 25mm parallel plate @
<b>Viscosity - Part B</b>	9,000 cP	1/s DCV6100723
<b>Viscosity - Mixed</b>	42,000 cP	
<b>Specific Gravity - Part A</b>	1.18	Calculated
<b>Specific Gravity - Part B</b>	0.96	
<b>Specific Gravity - Mixed</b>	1.08	
<b>Pot Life defined as the time it takes for initial mixed viscosity to double</b>	20 minutes	TA HR20 Rheometer parallel plate 25mm @ 1/s DCV6100723
<b>Gel Time 100cc Sample</b>	21 minutes	455300005339/Gardco Gel Timer
<b>Hardness</b>	80 Shore D	455300006287/ASTM D2240
<b>Glass Transition Temperature/Tg</b>	55 °C	453560822409 by DSC
<b>Water Absorption</b>	0.05 %	24 hr immersion 457561824543/ASTM D570
<b>Peak Exotherm</b>	113.5 °C after 32 minutes for 40 mL sample	455300005593 by Type K thermocouple

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<b>Property:</b>	<b>Value:</b>	<b>Test Method or Source:</b>
<b>Tensile Properties:</b>		4535601224470/ASTM D638
<b>Strength</b>	6,500 psi	
<b>Elongation</b>	2.5 %	
<b>Modulus</b>	342,000 psi	
<b>Lap Shear Strength</b>		4535601224468/ASTM D1002
<b>0.010" Bond Line, Al to Al</b>	1,800 psi	
<b>Compressive Properties:</b>		4535601224467/ASTM D695
<b>Yield Strength</b>	11,000 psi	
<b>Modulus</b>	199,000 psi	
<b>Flame Resistance</b>	Passes with HB Rating @ 3.0 mm	45376013225560/UL94HB
<b>Tested at ResinLab, not UL Certified</b>		
<b>Thermal Conductivity by Transient Plane Heat Source (TPS)</b>	0.21 W/m.K	Thermtest TPS Hot Disk ISO 22007-2 45376013225604
<b>Volume Resistivity</b>	$1.6 \times 10^{16}$ ohm-cm	455300006612/ASTM D257 @ 20 °C @ 52 %RH
<b>Surface Resistivity</b>	$7.4 \times 10^{15}$ ohm/sq	455300006612/ASTM D257 @ 20 °C @ 52 %RH
<b>Dielectric Constant &amp; Dissipation Factor</b>		455300006513/ASTM D150
<b>@ 100 Hz</b>	3.1, 0.002	
<b>@ 100 kHz</b>	3.0, 0.011	
<b>Coefficient of Thermal Expansion by TMA</b>		455300005340/ASTM E831 TMA, 5 °C/min
<b>below Tg</b>	73 ppm/°C	
<b>above Tg</b>	213 ppm/°C	
<b>Operating Temperature Range</b>	-55 to 150 °C**	
<b>Relative Thermal Index (RTI)</b>	90 °C	UL746B, Table 7.1 Generic Value Based on Composition

\* Asterisk denotes values considered typical to associated resin systems or extrapolated from other test results.

\*\* Operating Temperature Range is based on average design requirements and is not intended as a guarantee of suitability for all applications operating at that temperature.

\*\*\* This TDS contains values that have been updated. The values reported in this technical data sheet are typical values of the product, and are highly dependent on test conditions and methodology. We actively seek the most precise and accurate ways to measure and interpret performance of our products, and to update estimated values with measured values. The formula has not been revised or changed in any way. Although the values on paper have changed, you can expect the same performance of the product.

### **INSTRUCTIONS:**

1. Bring to room temperature prior to use.

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2. Cartridge format: Mixer should be attached keeping the cartridge vertical and any air pocket purged this way. After the mixer contains material, the mixer tip can be dropped to dispense pre-bleed amount. Attach a new static mixer with each cartridge, then pre-bleed the first 3 inches of dispensed material or until a uniform color is obtained. Maintain adequate velocity during dispensing to ensure complete mixing.
3. Bulk format: stir until homogeneous weigh and mix parts A and B accurately and thoroughly, scraping sides of container often. Do not pour from mixing container, transfer to a new container as residual unmixed material may cause a tacky spot on the surface of the casting. Maintain adequate velocity during dispensing to ensure complete mixing.
4. Clean up uncured resin with suitable organic solvent such as MEK or acetone.
5. Allow to cure undisturbed until product is fully gelled or tack-free to the touch.

**SHELF LIFE AND STORAGE:**

12 months at 25 °C.  
Specialty packaging may be less.

Many epoxy resin systems are prone to crystallization as epoxy resin is a super-cooled fluid. This condition may give the product a gritty or grainy appearance (or hazy in clear products). Products in this state will not usually cure to normal and expected properties. In extreme cases it may appear solid and cured. Fluctuating temperatures (within 5 to 50 °C) aggravate this phenomenon. Heating the individual component to 50 to 60 °C while stirring can usually restore products to original state. Storage at 25 +/- 10 °C is optimum for most products.