

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

DESCRIPTION:

Resinlab® EP1320 is a one-part heat cure epoxy conformal coating. It can also be used as a small mass potting compound, structural adhesive, or insulating polymer system where the application requires low shrinkage and excellent adhesion to a wide variety of plastics, metals and circuit board materials. This product has very good environmental protection and dielectric properties over a wide temperature range.

This product can cure as low as 85 °C with temperatures in the 100 °C to 150 °C being most commonly used.

TYPICAL PROPERTIES:

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

Property:	Value:	Test Method or Source:
Color	Black	Visual
Cure Schedule	5 - 10 minutes @ 150 °C 15 minutes @ 120 °C 30 minutes @ 110 °C 30 -45 minutes @85 °C – minimum temp to activate cure	
Viscosity	82,000 cps	Rheometer parallel plate 25mm@1/s 455300006291
Specific Gravity	1.3	Calculated
Glass Transition Temperature/Tg	95 °C (see below for additional information)	453560822409 by DSC
Hardness	85 Shore D	455300006287/ASTM D2240
Water Absorption	0.13% after 24 hours	457561824543/ASTM D570
Tensile Properties:		455300006285/ASTM D638
Strength	3,000 psi	
Elongation	0-1%	
Modulus	700,000 psi	
Lap Shear Strength 0.010" bond line Al to Al	1,300 psi	455300005642/ASTM D1002
Compressive Properties:		455300006265/ASTM D695
Yield Strength	12,000 psi	
Compressive Strength	19,000 psi	
Modulus	550,000 psi	
Thermal Conductivity by LFA	0.3 W / (m.K)	453560822409/ASTM E1461
Surface Resistivity	1.9 x 10 ¹⁶ ohm/sq (@ 16 %RH)	455300006612/ASTM D257
Volume Resistivity	3.0 x 10 ¹⁶ ohm-cm (@ 20 °C)	
Dielectric Constant / Dissipation Factor		455300006513/ASTM D150
@ 100 Hz	3.8, 0.03	
@ 100 kHz	3.4, 0.03	
AC Dielectric Strength	440 V/mil* 17.2 kV/mm*	ASTM D149 Method A, immersed in ASTM D3487 Type II Oil Estimated

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Coefficient of Thermal Expansion by TMA	58 ppm/ °C below Tg 200 ppm/ °C above Tg	455300005340/ASTM E831 TMA, 5 °C/min
Temperature Range	-40 to 150 °C**	

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

** Temperature Rating 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.

Approximate time to 90 or 95% cure at various temperatures by DSC

<u>Temperature</u>	<u>90% cure</u>	<u>95% cure</u>
85 °C	30 minutes	50 minutes
110 °C	5-10 minutes	10-15 minutes
120 °C	5-10 minutes	5-10 minutes
130 °C	< 5 minutes	5-10 minutes
140 °C	< 5 minutes	5-10 minutes
150 °C	< 5 minutes	5-10 minutes

NOTE: This chart reflects the thermal response of a very small sample run in a DSC, actual assemblies will require longer times to cure due to heat transfer, mass and method of heating. The cure schedule provided on page 1 provides times and temperatures more in line with use in a typical application.

INSTRUCTIONS:

1. Bring to room temperature prior to mixing.
2. Apply heat to cure.
3. Allow to cure undisturbed until product is fully gelled or tack-free to the touch.
4. Clean up uncured resin with suitable organic solvent such as MEK, acetone or other organic solvent.

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SHELF LIFE AND STORAGE:

3 months at 25 °C
6 months at 5 °C or less
Specialty packaging may be less.
Product can withstand short term exposures (less than 7 days) to temperatures up to 40 °C without detriment.
Usable shelf life is dependent upon method of application, storage conditions and user requirements.

Note: This product is sensitive to excursions above room temperature. Exposure to higher temperature, or cycling of product temperature, will shorten product shelf life

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.