

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

#### **DESCRIPTION:**

*ResinLab® EP1112NCRC Black* is a two-part epoxy formula designed to be REACH compliant and as of the date of this document contains no raw materials listed on the ECHA Substances of Very High Concern list. This formula also complies with the RoHS 3 Directive (EU) 2015/863.

*EP1112NCRC Black* is an unfilled fast curing electronic grade epoxy designed for small to medium sized castings. It cures completely at room temperature to a tough, flexible polymer. Its low viscosity allows for good wicking and penetration into components and circuitry to fill voids while releasing any trapped air. It has very good resistance to water, acids and bases and most organic solvents. It also has high flexibility which contributes to excellent thermal shock and cycling properties by absorbing stresses created when joining substrates having different thermal expansion rates.

It was formulated to a 1A:1B volume mix ratio for use in side-by-side dispensing cartridges and meter/mix and dispense equipment. *EP1112NCRC Black* will reach full cure at room temperature within 6 to 12 hours. Cure time can be accelerated by the application of heat after product has gelled. Times and temperatures from 1 hour at 65 °C to 10 minutes at 100 °C are typical for small castings (less than 50 grams).

#### **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>By weight</b>	1.14 to 1	
<b>By volume</b>	1 to 1	
<b>Cure Schedule</b>	24-48 hours @ 25 °C 1 hour @65 °C 30 minutes @ 100 °C	
<b>Viscosity – Part A</b>	1,200 cps @1/s	Rheometer parallel plate 25mm@1/s
<b>Viscosity – Part B</b>	1,000 cps @1/s	455300006291
<b>Viscosity – Mixed</b>	1,100 cps @1/s (estimated)	
<b>Specific Gravity – Part A</b>	1.15	Calculated
<b>Specific Gravity – Part B</b>	1.01	
<b>Specific Gravity – Mixed</b>	1.08	
<b>Pot Life, defined as the time it takes for initial mixed viscosity to double</b>	10 minutes	Rheometer parallel plate 25mm@1/s 455300006291
<b>Hardness</b>	80 Shore D	455300006287/ASTM D2240
<b>Gel Time</b>	21 minutes/100cc sample	455300005339/Gardco Stable Temp Gel Timer Extrapolated from EP1112NCRC Clear
<b>Glass Transition Temperature/Tg</b>	30 °C	453560822409 by DSC Extrapolated from EP1112NCRC Clear
<b>Water Absorption</b>	0.17% after 24 hours	457561824543/ASTM D570 Extrapolated from EP1112NCRC Clear

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<b>Tensile Properties:</b>		4535601224470/ASTM D638
<b>Strength</b>	4,500 psi	
<b>Elongation</b>	13%	
<b>Modulus</b>	230,000 psi	
<b>Lap Shear Strength</b>		4535601224468/ASTM D1002
<b>0.010" bond line Al to Al</b>	2,400 psi	
<b>Compressive Properties:</b>		4535601224467/ASTM D695
<b>Yield Strength</b>	5,000 psi	Extrapolated from EP1112NCRC Clear
<b>Compressive Strength</b>	29,000 psi	
<b>Modulus</b>	84,600 psi	
<b>Flame Resistance</b>	Passes Resinlab testing with HB rating at 6.0mm thickness. Not UL Certified.	UL94 Extrapolated from EP1112NCRC Clear
<b>Coefficient of Thermal Expansion by TMA</b>	63 ppm/ °C below Tg 258 ppm/ °C above Tg	455300005340/ASTM E831 TMA, 5 °C/min Extrapolated from EP1112NCRC Clear
<b>Surface Resistivity</b>	4.05 x 10 <sup>15</sup> ohm/sq (@ 21 %RH)	455300006612/ASTM D257
<b>Volume Resistivity</b>	1.25 x 10 <sup>15</sup> ohm-cm (@ 23 °C)	Extrapolated from EP1112NCRC Clear
<b>Dielectric Constant / Dissipation Factor</b>		455300006513/ASTM D150
<b>@ 100 Hz</b>	3.1, 0.02	Extrapolated from EP1112NCRC Clear
<b>@ 100 kHz</b>	2.9, 0.01	
<b>Operating Temperature Range</b>	-40 to 120 °C**	
<b>Relative Thermal Index (RTI)</b>	90 °C **	UL746B, Table 7.1 Generic Value Based on Composition

\*\* 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 both components to room temperature prior to mixing.
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: 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.

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4. Allow to cure undisturbed until product is fully gelled or tack-free to the touch.
5. Clean up uncured resin with suitable organic solvent such as MEK, acetone or other organic solvent.

**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.