

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

**DESCRIPTION:**

*ResinLab® EP324ERC Clear* is a two-part unfilled electronic grade epoxy encapsulant. It was formulated to be compliant to the REACH regulation and as of the date of this document it contains no raw materials listed on the ECHA Substances of Very High Concern list. It cures completely at room temperature to a tough, semi-rigid polymer with a smooth high gloss surface. It was designed for medium sized castings and will have good wetting and adhesion to most surfaces and is free flowing to penetrate voids and release trapped air. *EP324ERC Clear* will have good resistance to water, acids and bases and most organic solvents.

*EP324ERC Clear* was formulated to a 2A:1B by volume mix ratio for use in side-by-side dispensing cartridges and meter/mix and dispense equipment. It will reach full cure at room temperature in 24 hours. Cure time can be accelerated by the application of heat after the product has gelled. Times and temperatures from 1 hour at 65 °C to 20 minutes at 100 °C are typical for castings less than 50 grams.

**TYPICAL PROPERTIES:**

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

| Property:  | Value:  | Test Method or Source:                            |
|--|---|---|
| Color  | Clear/Amber   | Visual  |
| Mix Ratio  | Part A to Part B  | Calculated  |
| By weight  | 2.39 to 1   |   |
| By volume  | 2 to 1  |   |
| Cure Schedule  | 24 hours @ 25 °C<br>1 hour @ 65 °C<br>20 minutes @ 100 °C |   |
| Viscosity – Part A   | 4,600 cps   | Rheometer parallel plate 25mm@1/s                 |
| Viscosity – Part B   | 400 cps   | 455300006291                                      |
| Viscosity - Mixed  | 1,500 cps   |   |
| Specific Gravity – Part A  | 1.14  | Calculated  |
| Specific Gravity – Part B  | 0.95  |   |
| Specific Gravity - Mixed   | 1.08  |   |
| Pot Life, defined as the time it takes for initial mixed viscosity to double | 1 hour, 10 minutes  | Rheometer parallel plate 25mm@1/s<br>455300006291 |
| Gel Time   | 5 hours, 50 minutes/100cc sample                          | 455300005339/Gardco Hot Pot Gel<br>Timer          |
| Glass Transition Temperature/Tg  | 50 °C   | 453560822409 by DSC                               |
| Hardness   | 80 Shore D  | 455300006287/ASTM D2240                           |
| Water Absorption   | 0.16% after 24 hours                                      | 457561824543/ASTM D570                            |
| Peak Exotherm  | 26 °C after 5.5 hours for 40mL sample                     | 455300005593 by Type K thermocouple               |
| Tensile Properties:  |   | 4535601224470/ASTM D638                           |
| Strength   | 5,100 psi   |   |
| Elongation   | 3-4%  |   |
| Modulus  | 250,000 psi   |   |
| Lap Shear Strength   |   | 4535601224468/ASTM D1002                          |
| 0.010" bond line Al to Al  | 1,900 psi   |   |

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|  |   |  |
|--|---|--|
| <b>Compressive Properties:</b>                     |   | 4535601224467/ASTM D695  |
| <b>Yield Strength</b>                              | 7,800 psi                                   |  |
| <b>Compressive Strength</b>                        | 19,000 psi                                  |  |
| <b>Modulus</b>                                     | 127,000 psi                                 |  |
| <b>Surface Resistivity</b>                         | $7.61 \times 10^{11}$ ohm/sq (@ 63 %RH)     | 455300006612/ASTM D257   |
| <b>Volume Resistivity</b>                          | $6.24 \times 10^{14}$ ohm-cm (@ 22 °C)      |  |
| <b>Dielectric Constant / Dissipation Factor</b>    |   | 455300006513/ASTM D150   |
| <b>@ 100 Hz</b>                                    | 3.1, 0.03                                   |  |
| <b>@ 100 kHz</b>                                   | 2.8, 0.02                                   |  |
| <b>AC Dielectric Strength</b>                      | 410 V/mil*                                  | ASTM D149 Method A, immersed in<br>ASTM D3487 Type II Oil<br>Estimated |
| <b>Coefficient of Thermal Expansion by<br/>TMA</b> | 86 ppm/ °C below Tg<br>215 ppm/ °C above Tg | 455300005340/ASTM E831<br>TMA, 5 °C/min                                |
| <b>Temperature Rating</b>                          | -40 to 121 °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.

#### **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: 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. 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.