# TECHNICAL DATA SHEET

## EP1046FGRC Clear

Issue date: 6/27/2022

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

**DESCRIPTION:**

*ResinLab® EP1046FGRC Clear* is a two-part, unfilled, electronic grade epoxy encapsulant designed for use with small castings (less than 25 grams). This material will cure very quickly with low exotherm to a tough, semi-rigid polymer matrix. The low viscosity allows for good wicking and penetration into components and circuitry and will also release trapped air. It was very good resistance to water, acids, bases, and most organic solvents.

*EP1046FGRC Clear* was formulated to a 1A:1B volume mix ratio for use in side by side dispensing cartridges and meter/mix and dispense equipment. *EP1046FGRC Clear* will reach handle cure at room temperature within 1 to 2 hours. Cure time can be accelerated with the application of heat after the product has gelled. Times and temperatures from 30 minutes at 65 °C to 10 minutes at 100 °C are typical for small castings.

**TYPICAL PROPERTIES:**

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

| *Property:* | *Value:* | *Test Method or Source:* |
|---|---|---|
| **Color** | Clear | Visual |
| **Mix Ratio** | Part A to Part B | Calculated |
| **Mix Ratio by weight** | 1.11 to 1 | |
| **Mix Ratio by volume** | 1 to 1 | |
| **Cure Schedule** | 24-48 hrs @ 25 °C<br>30 min @ 65 °C<br>10 min @ 110 °C | |
| **Viscosity - Part A** | 1,600 cP | TA HR20 Rheometer 25mm parallel plate @ 1/s DCV6100723 |
| **Viscosity - Part B** | 1,300 cP | |
| **Viscosity - Mixed** | 1,400 cP * | |
| **Specific Gravity - Part A** | 1.15 | Calculated |
| **Specific Gravity - Part B** | 1.04 | |
| **Specific Gravity - Mixed** | 1.10 | |
| **Gel Time** | 2 minutes (50 g) | Visual, Observed cup and stick |
| **Peak Exotherm** | 158 °C after 4 minutes for 40 mL sample | 455300005593 by Type K thermocouple |
| **Hardness** | 80 Shore D | 455300006287/ASTM D2240 |
| **Glass Transition Temperature/Tg** | 41 °C | 453560822409 by DSC |
| **Water Absorption** | 0.11 % | 24 hr immersion 457561824543/ASTM D570 |
| **Tensile Properties:** | | 4535601224470/ASTM D638 |
| **Strength** | 7,000 psi | |
| **Elongation** | 5 % | |
| **Modulus** | 408,000 psi | |
| **Lap Shear Strength** | | 4535601224468/ASTM D1002 |
| **0.010" Bond Line, Al to Al** | 991 psi | |

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| *Property:* | *Value:* | *Test Method or Source:* |
|---|---|---|
| **Compressive Properties:** | | 4535601224467/ASTM D695 |
| **Yield Strength** | 12,700 psi | |
| **Modulus** | 194,000 psi | |
| **Thermal Conductivity by Transient Plane Heat Source (TPS)** | 0.21 W/m.K | Thermtest TPS Hot Disk ISO 22007-2 45376013225604 |
| **Electrical Resistivity:** | | 455300006612/ASTM D257 @ 21.4 °C @ 51.20 %RH |
| **Volume** | 3.0 x $10^{16}$ ohm-cm | |
| **Surface** | 1.7 x $10^{16}$ ohm/sq | |
| **Dielectric Constant & Dissipation Factor:** | | 455300006513/ASTM D150 |
| **@ 100 Hz** | 2.99 , 0.01 | |
| **@ 100 kHz** | 2.89 , 0.008 | |
| **Coefficient of Thermal Expansion by TMA:** | | 455300005340/ASTM E831 TMA, 5 °C/min |
| **below Tg** | 52 ppm/°C | |
| **above Tg** | 216 ppm/°C | |
| **Operating Temperature Range** | -55 to 150 °C** | |
| **Relative Thermal Index (RTI)** | 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.

**INSTRUCTIONS:**

1. Bring to room temperature prior to use.
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.

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**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.

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