TECHNICAL DATA SHEET

EP691F Clear

Revision date: 1/17/2024

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

DESCRIPTION:

Resinlab® EP691F Clear is a two-part electronic grade epoxy encapsulant designed for medium to large castings. It cures at room temperature to a tough, rigid polymer. It offers good wetting and adhesion to most surfaces and is free flowing to fill voids and release trapped air. *EP691F Clear* will have good resistance to water, acids, bases and most organic solvents. The mix ratio of this product is critical for optimal physical and electrical properties and should be measured by weight.

EP691F Clear will reach full cure at room temperature within 24-48 hours. Cure time can be accelerated by the application of heat. Times and temperatures from 2 hours at 65 °C to 1 hour at 100 °C are typical for small 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	Visual
Mix Ratio	Part A to Part B	Calculated
Mix Ratio by weight	3.13 to 1	
Mix Ratio by volume	2.55 to 1	
Cure Schedule	24-48 hrs @ 25 °C 2 hrs @ 65 °C 1 hr @ 100 °C	
Viscosity - Part A	14,000 cP	TA HR20 Rheometer 25mm parallel plate @ 1/s DCV6100723
Viscosity - Part B	10 cP	
Viscosity - Mixed	700 cP	
Specific Gravity - Part A	1.16	Calculated
Specific Gravity - Part B	0.96	
Specific Gravity - Mixed	1.10	
Pot Life defined as the time it takes for initial mixed viscosity to double	2 hours	TA HR20 Rheometer parallel plate 25mm @ 1/s DCV6100723
Gel Time 100cc Sample	> 12 hours	455300005339/Gardco Gel Timer
Hardness	80 Shore D	455300006287/ASTM D2240
Glass Transition Temperature/Tg	82 °C	453560822409 by DSC
Water Absorption	0.06 %	24 hr immersion 457561824543/ASTM D570
Tensile Properties:		4535601224470/ASTM D638
Strength	8,300 psi	
Elongation	4.5 %	
Modulus	335,000 psi	
Lap Shear Strength 0.010" Bond Line, Al to Al	2,000 psi	4535601224468/ASTM D1002

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Property:	*Value:*	*Test Method or Source:*
Compressive Properties:		4535601224467/ASTM D695
Yield Strength	11,800 psi	
Ultimate Strength	34,000 psi	
Modulus	157,000 psi	
Flame Resistance **Tested at ResinLab, not UL Certified**	Passes with HB Rating @ 6.0 mm	45376013225560/UL94HB
Electrical Resistivity:		455300006612/ASTM D257 @ 23 °C @ 38 %RH
Volume	3.16 x 10^{16} ohm-cm	
Surface	3.13 x 10^{15} ohm/sq	
Dielectric Constant & Dissipation Factor:		455300006513/ASTM D150
@ 100 Hz	3.2, 0.01	
@ 100 kHz	3.0, 0.03	
AC Dielectric Strength	17 kV/mm *	DCV6101609; ASTM D149 Method A, immersed in ASTM D3487 Type II Oil
Coefficient of Thermal Expansion by TMA:		455300005340/ASTM E831 TMA, 5 °C/min
below Tg	44 ppm/°C	
above Tg	222 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.
*** 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.

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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.

PMF INSTRUCTIONS:

1. Allow the PMF product to thaw to room temperature (20-25 °C) by placing vertically with the dispense tip up. We do not recommend using additional heat sources to speed up the thawing process. Wipe all excess moisture off of the product prior to use.
2. Once the PMF product is thawed, the product needs to be applied within the specified work life and then discarded.
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.:

SHELF LIFE AND STORAGE:

12 months at 25 °C.
6 months DOP at -40 °C as a one-part premixed and frozen.
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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