TECHNICAL DATA SHEET

EP1310 Clear

Revision date: 2/14/2022

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

DESCRIPTION:

ResinLab® EP1310 Clear is a two-part medium reactivity epoxy encapsulant. This product can achieve gelling of the top layer in 5-10 seconds when exposed to UV light. Full cure will occur within 24 hours at room temperature. Lighting in the workspace will not affect speed of the room temperature cure process. Once catalyzed the resin warms to approximately 32 °C almost instantaneously.

EP1310 Clear was formulated to a 2A:1B by volume mix ratio for ease of use in side by side dispensing cartridges and meter/mix and dispense equipment. It will reach full cure within 24 – 48 hours at ambient temperature. Cure times can be accelerated with application of heat after the product has gelled. Times and temperatures from 1 hour @ 65 °C to 20 minutes at 100 °C are typical for small castings (less than 50 grams).

Fluid Research® progressive cavity pumps are ideal for shear sensitive systems like *EP1310 Clear*. Piston type MMD machines with high shear should be avoided.

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	2.15 to 1	
Mix Ratio by volume	2 to 1	
Cure Schedule	24-48 hrs @ 25 °C 1 hr @ 65 °C 20 min @ 100 °C	
UVA Dose	2941 mJ/cm²	455300005390 / Power Puck II Radiometer
UVB Dose	829 mJ/cm²	
UVC Dose	187 mJ/cm²	
UVV Dose	3744 mJ/cm²	
Viscosity - Part A	3,500 cP	TA HR20 Rheometer 25mm parallel plate @ 1/s DCV6100723
Viscosity - Part B	1,300 cP	
Viscosity - Mixed	3,000 cP	
Specific Gravity - Part A	1.14	Calculated
Specific Gravity - Part B	1.03	
Specific Gravity - Mixed	1.10	
Pot Life defined as the time it takes for initial mixed viscosity to double	5 minutes	TA HR20 Rheometer parallel plate 25mm @ 1/s DCV6100723
Work Life	27 minutes	Observed, cup and stick
Hardness	75 Shore D	455300006287/ASTM D2240
Glass Transition Temperature/Tg	48 °C	453560822409 by DSC
Water Absorption	0.09 %	24 hr immersion 457561824543/ASTM D570

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Property:	*Value:*	*Test Method or Source:*
Peak Exotherm	42 °C after 30 minutes for 40 mL sample	455300005593 by Type K thermocouple
Tensile Properties:		4535601224470/ASTM D638
Strength	6,500 psi	
Elongation	4 %	
Modulus	320,000 psi	
Lap Shear Strength		4535601224468/ASTM D1002
	3,500 psi	
Compressive Properties:		4535601224467/ASTM D695
Ultimate Strength	25,000 psi	
Modulus	180,000 psi	
Thermal Conductivity by LFA	0.18 W/m.K	453560822409/ASTM E1461
Volume Resistivity	2.0 x 10^{13} ohm-cm *	455300006612/ASTM D257
Dielectric Constant & Dissipation Factor		455300006513/ASTM D150
@ 100 Hz	3.5*	
AC Dielectric Strength	440 V/mil *	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	67 ppm/°C	
above Tg	201 ppm/°C	
Operating Temperature Range	-55 to 150 °C**	

* 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.

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.

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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 or acetone.

SHELF LIFE AND STORAGE:

12 months at 25 °C.
Specialty packaging may be less.
Protect from sunlight.
Store cartridges vertically.

This product cures with exposure to UV and visible light. Dispensing components including needles and fluid lines should be 100% light blocking, not just UV blocking. For best performance bond surfaces should be clean and free from oil/grease/debris. Exhaust ventilation is required during the curing process. Cure speed is dependent upon many variables including lamp intensity, adhesive thickness and percent light transmission of components. Oxygen in the atmosphere may inhibit surface cure and result in a tacky partially cured surface. UVC light (100-280 nm, typically 260-265 nm) and high inert gas content in curing ambient will help to eliminate this surface tack.

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.

NOTE: This system contains acrylate monomers in Part A. Monomers are subject to polymerization under high temperatures and/or pressures in some pumping and metering systems. Wetted surfaces should be stainless steel and Teflon where appropriate.

NOTE: this product should be stored with a headspace of air, which contains oxygen and will prevent the product from curing inside the container. Do not purge container with nitrogen or other inert gases.