TECHNICAL DATA SHEET EP1350

04/09/2020

N109 W13300 ELLSWORTH DRIVE GERMANTOWN, WI 53022
262-502-6610 FAX 262-502-4743

68DESCRIPTION:

Resinlab™ EP 1350 is a highly filled, low viscosity black casting resin designed for applications requiring a high degree of thermal conductivity and a low CTE. It includes a rubber toughening agent in addition to the proprietary toughening system already present. It gives excellent resistance to acids, bases, water, and most organic compounds. The use of a toughened cycloaliphatic epoxy resin provides higher performance in terms of glass transition temperature, arc and track resistance, inherently low ionic content, and enhanced outdoor weathering and UV stability compared to standard Bisphenol A type resins or other resins manufactured using epichlorohydrin as a precursor. The high filler content also enhances resistance to thermal cycle stresses and reduces cure shrinkage. It contains abrasive aluminum oxide filler, which can introduce wear considerations for wetted components of meter-mix and dispensing equipment.

Due to the long pot life of this material it can easily be batch mixed and used at moderate elevated temperature in vacuum impregnation equipment for applications requiring void free encapsulation.

A stepped cure schedule is suggested as a method of minimizing shrinkage and maximizing Tg. 2 hours at 90 °C + 3 hours at 150 °C + 3 hours at 180 °C (optional) + 3 hours at 210 °C (optional) is a practical method that was used to generate 'Typical Properties' listed below. Other schedules may provide good results depending on part size and geometry.

When fully cured, this product retains impressive compressive strength to temperatures as high as 205 °C.

TYPICAL PROPERTIES:

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

Property:	*Value:*	*Test Method:*
Color	Black	Visual
Mix Ratio **By weight** **By volume**	Part A to Part B 3.25 to 1 1.47 to 1	Calculated
Cure Schedule	2hrs 90 °C + 3hrs 150 °C 2hrs 90 °C + 3hrs 150 °C + 3hrs 180 °C 4hrs 180 °C 2hrs 90 °C + 3hrs 150 °C + 3hrs 180 °C + 3 hrs 210 °C	
Viscosity – Part A **Viscosity – Part B** **Viscosity – Mixed**	125,000 cps #7@10 rpm 250 cps 6,000 cps	Brookfield Viscosity 455300005420
Viscosity – Part A **Viscosity – Part B** **Viscosity – Mixed**	189,000 cps 2,000 cps 10,000 cps	Rheometer parallel plate 25mm 455300006291
Specific Gravity – Part A **Specific Gravity – Part B** **Specific Gravity – Mixed**	2.49 1.17 1.97	Calculated
Pot Life – 500 g sample	12-16 hours	453560822627
Gel Time @ 100 °c	37 minutes @ 100 °C / 100cc sample	455300005339/Gardco Hot Pot Gel Timer
Hardness	90 Shore D	455300006287/ASTM D2240
Water Absorption	0.04% after 24 hours	457561824543/ASTM D570
Glass Transition Temperature/Tg **Cure Schedule** **2hrs 90 °C + 3hrs 150 °C** **2hrs 90 °C + 3hrs 150 °C + 3hrs 180 °C**	 178 °C 203 °C	453560822409 by DSC

N109 W13300 ELLSWORTH DRIVE GERMANTOWN, WI 53022
262-502-6610 FAX 262-502-4743

4hrs 180 °C	203 °C		
Tensile Properties: **Strength** **Elongation** **Modulus**	 5,400 psi 1-2% 651,000 psi		4535601224470/ASTM D638 Cure schedule: 2hrs@90 °C + 3hrs@150 °C
Compressive Properties: **Offset (0.2%) Yield Strength** **Compressive Yield Strength** **Compressive Strength** **Modulus**	Tested @ 25 °C 9,600 psi 21,000 psi 21,000 psi 235,000 psi	Tested @ 205 °C 1,400 psi 5,200 psi 5,500 psi 51,000 psi	4535601224467/ASTM D695 Cure schedule: 2hrs@90 °C + 3hrs@150 °C + 3hrs @180 °C + 3 hrs@210 °C
Coefficient of Thermal Expansion by TMA	46 ppm/ °C below Tg 184 ppm/ °C above Tg		455300005340/ASTM E831 TMA, 5 °C/min
Thermal Conductivity by LFA	0.73 W/(m.K)		453560822409/ASTM E1461
Surface Resistivity **Volume Resistivity**	6.89 x 10^{15} ohm/sq (@ 16 %RH) 2.43 x 10^{15} ohm-cm (@ 26 °C)		455300006612/ASTM D257
Dielectric Constant / Dissipation Factor **@ 100 Hz** **@ 100 kHz**	 3.5, 0.004 3.4, 0.009		455300006513/ASTM D150
AC Dielectric Strength	425 V/mil		ASTM D149 Method A, immersed in ASTM D3487 Type II Oil Specimen thickness was 1-3 mm
Temperature Range	-55 to 230 °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.
*** 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) Store Part A at 5 °C to minimize settling and separation. Bring both components to room temperature before use. Mix Part A thoroughly to ensure a homogenous blend. Weigh each component carefully and stir together thoroughly. Vacuum degas under 29" Hg for at least 5 minutes or until product has risen and subsided. Store Part B at 20-35 °C under nitrogen, dry air or inert gas to minimize hydrolysis.

2) Allow to cure undisturbed until product is fully gelled or tack-free to the touch.

3) Clean up uncured resin with suitable organic solvent such as MEK or acetone.

SHELF LIFE AND STORAGE: 6 months. Specialty packaging may be less.

N109 W13300 ELLSWORTH DRIVE GERMANTOWN, WI 53022
262-502-6610 FAX 262-502-4743

Anhydride curing agents, with sufficient exposure to humidity or moisture, can hydrolyze to an insoluble white solid that will not provide expected cure of the epoxy resin. To prevent this from occurring, product should be stored in original properly sealed container at temperature between 20-35 °C and in a dry place. Venting and sealing the curing agent with dry air, nitrogen, or other inert and dry gas during and after use is recommended. Seal container tightly after use.