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PRODUCT BULLETIN

Creatively connecting knowledge and application.

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POLYLITE® 33540-00

Shrink Control Tooling System

DESCRIPTION

POLYLITE® Profile 33540-00 is a MACT-compliant, shrink-controlled resin system with a 14-year track record of revolutionalizing the cost and performance of FRP tools. POLYLITE® Profile 33540-00 is a non-promoted, non-thixotropic, unsaturated polyester laminating resin developed to be used with specific alumina trihydrate fillers for fabricating FRP tooling. This resin is formulated to cure at room temperature with the addition of Promoter 46559-00 (cobalt-based promoter solution), followed by Superox® 46750-00 (peroxide catalyst).

APPLICATIONS

- FRP tooling
- Other applications which require dimensional stability and high-quality surface

Similar Resin: POLYLITE® Profile 33541-00, pre-promoted.

FEATURES	BENEFITS

• MACT Compliant Shrinkage Control Tooling System
  ➢ 40 CFR Part 63, Subpart WWWW, Section 63.5935
• Marine MACT Compliant
  ➢ Requires non-atomized application
  ➢ Requires >45% Filler levels
• Less than 0.3% linear shrinkage per ASTM D-2556
  ➢ Typically 0.1% linear shrinkage per ASTM D-2556
	• Complies with MACT Regulation for Shrink Control Resins
	• Tools reproduce master exactly
	• Resulting tools are stress-free
	• Print-through and surface distortion eliminated
	• Minimized potential for pre-release
	• Reduced post-finishing time

• Reduces tool-building time up to 80%	• Significant labor cost reduction • Prototype tools can be made quickly and economically • Tools can go into production sooner
• Rapid Barcol development • Changes color during cure • Fillable to 50% with ATH	• Tools can be demolded earlier • Quality control indicator • Lower composite cost • Increased composite stiffness
• Manufactured using statistical process and quality controls	• Consistent performance, batch to batch

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PROPERTIES

PHYSICAL DATA IN LIQUID STATE AT 25°C / 77°F

Properties	Unit	Value	Test Method
Non-Volatiles, NV	%	53	18-001/B070
Viscosity - Brookfield, LVF, #1 at 30 rpm	cps/ mPa·s	120	18-021/ASTM D 2196-86
Gel time With 0.5 parts (by weight) Promoter 46559-00 followed by 1.25% (by weight) Superox® 46750-00	minutes	22	
Total time to Peak	minutes	29	
Peak Exotherm	°C / °F	213 / 415	
Flash Point (Seta Closed Cup)	°C / °F	32 / 89	ASTM D 3278-95
Weight per Gallon	lbs	8.8	
Color		Clear amber	
Shelf life, minimum	months	3	

FILLED PROPERTIES AT 25°C / 77°F

Properties	Unit	Value	Test Method
Viscosity - Brookfield, LVF, #3 at 60 rpm	cps/mPa·s	850	18-021/ASTM D 2196-86
Gel time With 0.5 parts (by weight) Promoter 46559-00 followed by 1.25% (by weight) Superox® 46750-00	minutes	19	
Total time to Peak	minutes	29	
Peak Exotherm	°C / °F	127 / 260	
Weight per Gallon Shrinkage, linear	lbs %	12.3 0.3 Maximum	 ASTM D-2566

FILLED MATRIX			
Polylite® Profile 33540-00	parts	100	
Promoter 46559-00	parts (bor)	0.5	
Alumina Trihydrate With 0.5 parts (by weight) Promoter 46559-00 followed by 1.25% (by weight) Superox® 46750-00	parts (bor)	100	
Superox® 46750-00	parts (bor)	1.25	
Type and lot of alumina trihydrate may significantly influence gel and cure times. Testing is recommended prior to production use. Filled properties reported in this bulletin were attained using R.J. Marshall Company A-208 alumina trihydrate filler. To reduce the effect of filler on gel time, a filler with a medium particle size (10-18µ) is recommended.			
POLYLITE® 33541: **Gel Time:** 25 to 28 min. at 1.25% Superox® 46750 -00 **Viscosity:** 120 cps/ mPa·s (Brookfield LVF#1 at 30 RPM)			

HANDLING AND CURING

USE AT LOW AMBIENT TEMPERATURES

To achieve the best possible profile when using the Polylite® Profile system, an ambient temperature of 24°C/ 75°F or higher should be maintained. Warming the filled resin will improve sprayabiity, but it will not compensate for a cool ambient temperature. The chopper gun slave arm should not be set beyond 1.25% initiator. (1.25% is equivalent to delivering 1.88% based on resin.) Although increasing the peroxide level may shorten the gel time, it may also retard cure.

In cases where the recommended ambient temperature cannot be maintained, additional Promoter 46559-00 promoter should be added to the mix until the proper test laminate hardness development is achieved. A 120-mil thick test laminate should be made before using any mix. At ambient temperatures below 24°C /75°F, the laminate should be tested for Barcol development. A Barcol of 20-25 should be obtained in 3 hours or less. If the Barcol is below this level, an additional 0.1% of Promoter 46559-00 should be added to the mix. If a Barcol of 20-25 still cannot be obtained in 3 hours, the use of Polylite® Profile 33540-00 should be delayed until the ambient temperature can be maintained at 24°C /75°F.

The procedures outlined in Reichhold's ***Profile Tooling Manual*** should be followed when using Polylite® Profile 33540-00.

Polylite® Profile 33540-00 is unpromoted and requires the addition of 0.4-0.6 parts (by weight) of Promoter 46559-00 before catalyzing with Superox® 46750-00 initiator. Promoter levels below 0.4 parts are not recommended. Thoroughly mix the promoter into the resin before adding the initiator. Adding Superox® 46750-00 will induce gel and cure at room temperature. Superox® 46750-00 levels should be between 1 and 2 parts, based on weight of resin. Using initiator levels outside of this range may result in inadequate cure.

Certain precautions are required to ensure proper secondary bond performance. Secondary bonding will be adversely affected in resin-rich areas or in laminates that have been exposed to heat or direct sunlight for an extended period of time. Contamination of the primary laminate (e.g., grinding dust, oil, moisture, waxes or release agents) will also adversely affect secondary bond performance. The laminate surface must be free of contamination prior to secondary bond application.

The type of glass reinforcement used will also affect secondary bond performance. A Reichhold representative will be happy to assist with selection of reinforcements.

STORAGE

To ensure maximum stability and maintain optimum resin properties, resins should be stored in closed containers at temperatures below 24°C/75°F and away from heat ignition sources and sunlight. Resin should be warmed to at least 18°C/65°F prior to use in order to assure proper curing and handling. All storage areas and containers should conform to local fire and building codes. Copper or copper containing alloys should be avoided as containers. Store separate from oxidizing materials, peroxides and metal salts. Keep containers closed when not in use. Inventory levels should be kept to a reasonable minimum with first-in, first-out stock rotation.

Additional information on handling and storing unsaturated polyesters is available in Reichhold's application bulletin "Bulk Storage and Handling of Unsaturated Polyester Resins." For information on other Reichhold resins or initiators, contact your sales representative or authorized Reichhold distributor.

SAFETY

READ AND UNDERSTAND THE MATERIAL SAFETY DATA SHEET BEFORE WORKING WITH THIS PRODUCT

Obtain a copy of the material safety data sheet on this product prior to use. Material safety data sheets are available from your Reichhold sales representative. Such information should be requested from suppliers of all products and understood prior to working with their materials.

DIRECTLY MIXING ANY ORGANIC PEROXIDE WITH A METAL SOAP, AMINE, OR OTHER POLYMERIZATION ACCELERATOR OR PROMOTER WILL RESULT IN VIOLENT DECOMPOSITION