PRODUCT BULLETIN

July 2019

POLYCOR® 945RD131

Polyester Tooling Gel Coat

DESCRIPTION

POLYCOR® 945RD131 polyester tooling gel coat provides durable surfaces to withstand the repeated moldings of FRP laminates. The pigmented products are formulated to be low in hide so that imperfections can be easily spotted.

This product is formulated as ready-to-spray after the addition of the proper amount of an appropriate organic peroxide catalyst.

BENEFITS & FEATURES

- Flexibility – Excellent for reducing cracking and crazing
- Application – Easy to spray with minimal air entrapment and good air release
- Sag resistance – Sprayed films resist sagging and slumping
- Abrasion resistance – For long mold life
- Temperature resistance – Withstands repeated molding cycles
- Smoother sprayed film – For less orange peel
- High gloss surface

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PROPERTIES – LIQUID

Property[1]	Unit	945RD131
Appearance	-	Red
Flash Point (Seta Closed Cup)	°C/°F	28/82
Total VOC	%	47.34
Weight per Gallon	lbs/gal	9.0
Viscosity[2]	cps	22,000
Thix Index [3]	-	7
Gel Time[4]	minutes	14
Lay-up Time[5]	minutes	60-90
CPP RTAIR Peak Exotherm	°C/°F	202/395
Sag Resistance	mils wet	No sag @ 20
Hide Complete	mils wet	26
Color Standard, Maximum ΔE (65)	-	1.5
Barcol Hardness[6]	HB	45
Heat Distortion Temperature[7]	Cure @ 77 °F & Cure @ 150 °F	181 °F

1) All properties at 25°C/77°F unless otherwise noted
2) Brookfield RVF #4 Spindle @ 4 RPM
3) Brookfield RVF #4 Spindle @ 2/20 RPM
4) 100 g mass, 1.8% Luperox® DDM-9
5) Depends on product, gel time and temperature
6) Barcol Hardness determined on a casting. Barcol readings are very sensitive to catalyst/mass/temperature. To help overcome this sensitivity, Barcol should be checked by:
    - Adjusting the tooling gel coat to 77°F.
    - Catalyzing 100 grams with 1.8% Luperox® DDM-9.
    - Weighing 50 grams into a 160 ml aluminum weighing dish (4 in. diameter), placed on an insulated surface.
    - Maintaining the casting at 77°F ambient temperature.
    - Final determination (numbers) should be achieved in 75 minutes using the Model #934 Barcol impressor. **Barcol cannot be checked on a gel coat film** because the cured film is too thin. The Barcol impressor penetrates the film and reads the hardness of the substrate behind.
7) HDT was determined using an internal Polynt Composites test method that is similar to ASTM D648. The test was run on a gel coat casting (approximately 0.125" thick) made by catalyzing the gel coat with 1.8% Luperox® DDM-9. The gel coat casting was cured for 16 hours at room temperature and was post cured for 6 hours at 150°F.

APPLICATION

For best cosmetics and durability, Polynt Composites recommends that molds be fabricated using 18 ± 2 mils wet of tooling gel coat followed by 22 ± 2 mils wet of Polynt's ArmorGuard® 967 vinyl ester barrier coat. Allow the tooling gel coat to gel and cure prior to application of the ArmorGuard®. ArmorGuard® 967 improves cosmetics by reducing fiber print and distortion. ArmorGuard® 967 also provides excellent heat resistance and toughness.

If extensive sanding is expected, an alternative method is to apply two coats of tooling gel coat. The first coat should be 18 ± 2 mils wet. The second coat should be 20 ± 2 mils wet. Allow the gel coat to gel and cure between coats. This provides a thicker a gel coat layer for reworking the mold surface. Do not use barrier coat if applying two coats of tooling gel coat.

Apply each coat using three passes, with each pass having a thickness of 5-8 mils. More rapid film build could result in sagging and porosity. For best results, ensure that the tooling gel coat is allowed to "breathe" for two minutes between each pass. Do not allow overspray and thin passes to go beyond 5 minutes without covering with a fresh pass. Thin, independently curing films can create a textured effect when the surface is sanded and buffed.

Polynt Composites recommends that you include the fabrication of a quality control panel as part of your quality control program. Fabrication and testing of this panel prior to actual mold fabrication allows you to verify the suitability of the product and your process. Fabricate the quality control panel by spraying catalyzed tooling gel coat over a test mold to a film thickness to 18 ± 2 mils. Use the same equipment and settings that will be used for actual mold fabrication. Laminate behind the tooling gel. Once the laminate has cured, de-mold the panel. Sand and stain the gel coat and examine it for entrapped air. These sprayouts should be saved along with other mold records.

Air Atomized

Use the following advice when using air atomized equipment:

- Spray 1.5-2.5 pounds per minute of tooling gel coat.
- A minimum of 60 psi atomizing pressure (measured at the gun with fan full open) should be used to properly atomize the gel coat.
- Spray gun distance should be 1.5-3 feet.

Airless Air-Assist

While the use of air atomized equipment typically gives the best results, production requirements may dictate the use of airless air-assist equipment. Internal air atomization spray equipment, airless, or catalyst injection spray equipment can result in porosity in the gel coat film if improperly applied. Tooling gel coats will not be as tolerant of inaccuracies in a catalyst injection system as are production gel coats. Proper spray technique is very important to eliminate porosity in the gel coat film.

Use the following advice when using airless equipment:

- Calibrate daily or for each job
  - Gel coat delivery of 1.5-3.0 pounds per minute for intricate parts, small parts, and decks; recommended gel coat tip size of 0.018 inch.
  - Gel coat delivery of 1.5-4.0 pounds per minute for large parts, open molds, and flat panels; recommended gel coat tip size of 0.021 inch.
  - Catalyst content: 1.2-2.4% (ideally 1.8% at 77°F).
- Ensure complete atomization and mixing of gel coat and catalyst. If air-assist is used, keep it as low as possible. Excess air-assist can result in trapping air in the film and sagging.
- Do not let raw catalyst fall on the plug surface or on the sprayed gel coat.
- Spray gun distance should be 2-3 feet.

Even with the equipment properly calibrated, potential problems can occur due to poorly atomized catalyst, surging problems (gel coat or catalyst), poor tip alignment (catalyst to gel coat mix), contamination, and poor application procedures. Equipment and application should be constantly monitored to maintain effective calibration, gel coat/catalyst mixing, and procedures. Ask about and adhere to all equipment manufacturers' recommendations.

Refer to Polynt's Composites Applications Guide ("Cookbook") for equipment, application and repair recommendations. Each user must determine the suitability of this product to his/her particular mode of operation and intended end-use application. A Polynt representative will be available to assist in the proper selection of all Polynt-Reichhold products available for commercial use.

Molds stored outside should be protected from UV and moisture exposure for best mold life. This may be accomplished by covering the mold or inverting the mold so that the surface is not exposed to UV and moisture cannot collect on the mold.

SHELF LIFE & STORAGE

The shelf life of POLYCOR® 945RD131 is 120 days from the date of manufacture from Polynt. To maximize usage life and maintain optimum properties, resins and gel coats should be stored in the original closed container at temperatures below 23°C/73°F and away from ignition sources and sunlight. Keep containers sealed to prevent moisture pick-up and monomer loss.

RELATED PRODUCTS

PATCHAID® 970X900, 970XJ037, 970XJ166, and 970XA014 Resin-Based Aids for Spray Patching

SAFETY & WARRANTY

To receive a copy of our safety and warranty information, please email safetyandwarranty@polynt.com.