PRODUCT BULLETIN

March 2023

POLYCOR® 965 Series

MACT Compliant Vinyl Ester Tooling Gel coats

DESCRIPTION

POLYCOR® 965 Series vinyl ester tooling gel coats are formulated specifically for mold making. These vinyl ester-based products are MACT compliant and heat resistant to withstand repeated molding of FRP laminates.

POLYCOR® 965 Series vinyl ester tooling gel coats are formulated ready-to-spray after the addition of the proper amount of an appropriate methyl ethyl ketone peroxide initiator.

POLYCOR® 965 Series vinyl ester tooling gel coats meet the EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) for Boat Manufacturing and the Reinforced Plastics Industry. For HAP and monomer content information, please refer to the SDS.

BENEFITS & FEATURES

- Provide abrasion resistance
- Excellent gloss retention
- High heat distortion temperature (HDT)
- Extended mold life

PROPERTIES – LIQUID

Property[1]	Unit	965BJ115	965XK118	965YJ071
Color	-	Black	Neutral	Orange
Weight per gallon	lbs/gal	9.03	8.82	9.06
Viscosity	cps	17,500[2]	6,250[3]	17,500[2]
Thix Index	-	7.0[5]	6.0[6]	7.0[5]
Gel Time[4]	minutes	20.5	16	20.5
Lay-up Time[7]	minutes	75	75	75
Sag Resistance	-	No sag @ 20 mils wet	No sag @ 20 mils wet	No sag @ 20 mils wet
Hide (complete)	mils wet	6.5	N/A	25.5
Color Match, Maximum CMC ΔE	units	1.5	N/A	2.0
Barcol Hardness[8]	-	40	30	40
Heat Distortion Temperature One Week at Room Temperature One Week after Post Cure (150°F, 16 hours)[9]	°C/°F	62/144 87/189	62/144 87/189	62/144 87/189
Flash Point (Seta Closed Cup)	°C/°F	31/88	31/88	31/88

1) All properties at 25°C/77°F unless otherwise noted
2) Brookfield Viscometer RV Spindle #4 at 4 RPM
3) Brookfield Viscometer RV Spindle #5 at 20 RPM
4) 2.0% Norox® MEKP-925
5) Thixotropic Index 2/20
6) Thixotropic Index 10/100
7) Depends on product, gel time, and temperature
8) Barcol Hardness determined on a casting. Barcol readings are very sensitive to initiator/mass/temperature. To help overcome this sensitivity, Barcol should be checked by:
    a. Adjusting the tooling gel coat to 77°F
    b. Initiating 100 g with 2.0% United Initiators Norox® MEKP-925
    c. Weighing 50 g into a 160 ml aluminum weighing dish (4" diameter), placed on an insulated surface
    d. Maintaining the casting at 77°F ambient temperature
    e. 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.
9) HDT was determined using an internal Polynt test method that is similar to ASTM D648. The test was run on a gel coat casting (approximately 0.125" thick) made by initiating the gel coat with United Initiators Norox® MEKP-925. The gel coat casting was cured for 16 hours at room temperature and was post cured for 6 hours at 150°F.

APPLICATION

Do not add any material, other than the recommended methyl ethyl ketone peroxide, to this product without the advice of a of Polynt representative.

POLYCOR® 965 Series vinyl ester tooling gel coats are formulated for air atomized and airless air-assist spray application. Air atomized (pot gun) application is recommended for best results. Brushing and rolling are not recommended. Refer to Polynt's Composites Applications Guide for additional information on all phases of mold fabrication.

For best cosmetics and durability, Polynt 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.

Polynt 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 initiated 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 spray-outs 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 initiator 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 an initiator 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 get 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.
  - Initiator content: 1.2-2.4% (ideally 1.8% at 77°F).
- Ensure complete atomization and mixing of gel coat and initiator. 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 initiator 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 initiator, surging problems (gel coat or initiator), poor tip alignment (initiator to gel coat mix), contamination, and poor application procedures. Equipment and application should be constantly monitored to maintain effective calibration, gel coat/initiator mixing, and procedures. Ask about and adhere to all equipment manufacturers' recommendations.

Refer to Polynt's Composites Applications Guide ("Cookbook") for equipment and application 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 products available for commercial use.

SHELF LIFE & STORAGE

The shelf life of POLYCOR® 965 Series is 90 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

POLYCOR® 965CJ036 is a patching thinner developed specifically for patching and resurfacing POLYCOR® 945 and 965 Series vinyl ester tooling gel coats. Refer to the data sheet for more information.

Polynt recommends the use of PATCHAID® when patching POLYCOR® 965 Series gel coats. Options are as follows:

• Polynt's PATCHAID® 970XJ037, 970X900, 970XJ166 and 970XA014 – Resin based products that can be mixed into the gel coat to improve the working properties of spray patches.

• FC PATCHAID® 970C961 Fast Cure Spraycure™– Monomer based product that can be mixed into the gel coat to improve the working properties of spray patches or can be used as an overspray to seal the open side of spray patches.

SAFETY & WARRANTY

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