



SURFACE COAT SYSTEMS For HIGH TEMPERATURE INFUSION

When a surface coat is desired for infused tool building, the complete line of PTM&W mid-range and high temperature surface coats can be used very effectively to compliment our high quality infusion resins. The selection of the surface coat is largely based on the service temperature the tooling will operate at and whether or not an autoclave will be used if making prepreg parts off of that tooling. For tooling that will be used in an autoclave we recommend using either PT1995 or PT1945 regardless of the service temperature or pressure used.

To ensure the best bond between surface coat and infusion resin, a chemical bond will give you the best result. Mil fibers or cotton floc will achieve good mechanical bonds and those are fine for room temperature tooling but we prefer a chemical bond for high temperature applications. To achieve this, we do a double surface coat application using the same “A” resin for both coats but switch to the PH3681 hardener for the 2nd coat or tie-coat. When the first coat gets to the “finger print” or “tacky” stage then the 2nd coat should be applied. The first coat should not be allowed to get hard. The PH3681 hardener has a 6-8 hour pot life and will not get hard at temperatures less than 90°F. It is applied the day before the dry fibers are laid up and will be in that perfect “tacky, B stage” state the next morning, even staying that way for several days when the room is kept under 80°F. This allows the dry stack of fibers to be laid without worry that the 2nd coat will gel hard before the infusion takes place. For best compaction results of fabric into the 2nd coat, we recommend bagging (debulking) after the 3rd or 4th dry layer for 15-30 minutes. The first ply of fabric should be cut into approximately 12” small squares that are easily handled. You do not want to have to pull it up to reposition or remove a wrinkle for risk of lifting the tacky surface coat.

Surface coats should be kept thin to minimize cracking. We recommend a maximum of .030” thick or 2 applications of .015” Using 100 grams per square foot for calculating coverage will get you very close to that thickness (or 50 grams per square foot, per coat, for 2 coats). A mil gauge is also a good tool to have to monitor thickness. A good stiff brush cut down to approximately 1” length bristles works well for spreading the thicker surface coats. PTM&W offers these 2” wide brushes pre-cut, which also shed much less than the typical store bought china bristles do. Squeegee’s can also be used for flatter surfaces to distribute the resin but the resin should ultimately be brushed out to ensure an even, uniform thickness.

THE PTM&W HIGH TEMPERATURE SERVICE SURFACE COAT SYSTEMS

PT1540 Black graphite filled surface coat for high temperature service, with a thin paintable viscosity.

PT1554 Gray general purpose aluminum filled surface coat system with easy-to-apply lower viscosity.

PT1935 Black high temperature surface coat that can be polished to a high gloss when cured.

PT1945 Black high temperature surface coat with special characteristics developed for prepreg layup tooling. Carbide filled for a very tough hard surface that resists damage caused by cutting prepreg right on the tool surface.

PT1995 Black graphite filled surface coat for high temperature service, with thermal expansion characteristics designed for high performance composite tooling.

MIX RATIOS:

| Surface Coat Resin: | Mix Ratio with the Part B: | Mix Ratio with PH3681: |
|---------------------|----------------------------|------------------------|
| PT1540 Part A | 100 : 15 | 100 : 6.5 |
| PT1554 Part A | 100 : 12 | 100 : 5 |
| PT1935 Part A | 100 : 12 | 100 : 6 |
| PT1945 Part A | 100 : 10 | 100 : 5 |
| PT1995 Part A | 100 : 12 | 100 : 6 |

TYPICAL MECHANICAL PROPERTIES

| | PT1540 A/B | PT1554 A/B | PT1935 A/B | PT1945 A/B | PT1995 A/B |
|---|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Mix Ratio, By Weight | 100 : 15 | 100 : 12 | 100 : 12 | 100 : 10 | 100 : 12 |
| Color | Black | Gray | Black | Black | Black |
| Mixed Viscosity, @77°F, centipoise | Thin Paste | 106,000 cps | 52,000 cps | 144,000 cps | Thin Paste |
| Pot Life, 4 fl. Oz. Mass, @77°F | 20 - 25 min. | 25 - 30 min. | 40 - 45 min. | 40 - 45 min. | 50 - 60 min. |
| Cured Hardness, Shore D | 82 - 85 D | 90 D | 90 D | 90 D | 89 D |
| Specific Gravity, grams, cc | 1.18 | 1.42 | 1.39 | 1.48 | 1.39 |
| Density, lb./cu. Inch | .0427 | .0514 | .0502 | .0535 | .0502 |
| lb. / gallon | 9.86 | 11.9 | 11.6 | 12.4 | 11.6 |
| Specific Volume, cu. in./lb. | 23.4 | 19.5 | 19.9 | 18.6 | 19.9 |
| Tensile Strength, psi | 6,560 psi | 9,850 psi | 5,420 psi | 6,840 psi | 7,690 psi |
| Glass Transition Temperature, Tg, Peak | 271°F | 260°F | 380°F | 295°F | 310°F |
| Coefficient of Thermal Expansion, Range 50°C to 100°C | 2.31 x 10 ⁻⁵ in./in./ °F | 3.26 x 10 ⁻⁵ in./in./ °F | 2.74 x 10 ⁻⁵ in./in./ °F | 2.20 x 10 ⁻⁵ in./in./ °F | 2.56 x 10 ⁻⁵ in./in./ °F |

Surface Coats for Infusion / InDesign / 021615-C1



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