

## Acrylic Tennis & Recreational Sport Surfaces

### CUSHION PLUS System Specification

#### PART 1 – GENERAL

##### 1.1 DESCRIPTION

- A. **Scope:** This guide specification covers the application of the Laykold Cushion Plus system. Advanced Polymer Technology Corporation of Harmony, Pennsylvania, U.S.A provides technical data and guideline specifications only. Consult with a professional engineer or architect for a formal specification. The Laykold Cushion Plus system is a resilient, multi-layered acrylic emulsion and EPDM rubber particles application designed to provide the tennis player with added comfort for a more enjoyable playing experience by reducing shock to the back and lower extremities. This surfacing system should be applied only to properly prepared concrete or asphalt substrates. The Laykold Cushion Plus system is comprised of Laykold Acrylic Deep Patch, Laykold Acrylic Resurfacer, Laykold Cushion-Plus Granule (2-4 coats based on specified system), Laykold Cushion Plus Powder (3-coats), Laykold ColorCoat Concentrate (2-coats textured mix & 1-coat finish mix), Laykold Line Prime and Laykold Textured White Line Paint. Laykold Colorflex is a highly recommended alternative to Laykold ColorCoat Concentrate due to its highly flexible physical properties. When applying the Laykold Cushion Plus system to a concrete substrate Laykold Poly Primer (< 75% Relative Humidity), Laykold Epoxy VTB Primer ( $\geq$  75% RH), or if approved, Laykold Acrylic Concrete Primer (adhesion promoter), is required.
- B. **Court Construction:** Refer to the American Sports Builders Association (ASBA) manual Tennis Courts: A Construction & Maintenance Manual for court construction details. This publication may be obtained by calling the ASBA at 443-640-1042 or visiting [www.sportsbuilders.org](http://www.sportsbuilders.org).

##### 1.2 QUALITY ASSURANCE

- A. All tennis court surfacing materials shall be Laykold as manufactured by Advanced Polymer Technology (APT) of Harmony, PA, an ISO 9001 certified manufacturer. APT may be contacted via telephone 888-266-4221, fax 724-452-1703, or web sites [www.laykold.com](http://www.laykold.com) and [www.advpolytech.com](http://www.advpolytech.com).
- B. All work shall be done in accordance with American Sports Builders Association (ASBA) guidelines.
- C. The contractor shall record the batch number of each product used on the site and maintain it through the warranty period.
- D. The contractor shall provide the inspector, upon request, an estimate of the volume of each product to be used on the site.

##### 1.3 SUBMITTALS

- A. Submit one set of Advanced Polymer Technology “Laykold Cushion-Plus Specifications”.
- B. Submit system components Technical Data Sheets (TDS) and one Laykold Color Chart.

- C. Submit current Safety Data Sheets.
- D. Submit current ISO Quality Management System Certification certificate.
- E. Submit current ITF surface classification.

#### **1.4 WORKING CONDITIONS & LIMITATIONS**

- A. Asphalt and concrete substrates shall be allowed to cure a minimum of 30 days before application of any coatings. If time sensitive and/or high RH level is present, Laykold Epoxy VTB Primer can be applied to 5-day old (minimum) concrete substrates according to coatings manufacturer guidelines. RH testing is required.
- B. The substrate shall be CLEAN and DRY before coatings are applied. The surface of the substrate shall be inspected and made sure to be free of grease, oil, dust, dirt and other foreign matter before any coatings are applied.
- C. Water used in all mixtures shall be fresh and potable.
- D. No part of the surfacing system shall be applied during a rainfall, or when rainfall is imminent.
- E. Do not apply coatings to a cold surface. Surface and air temperatures must be at least 50°F (10°C) and rising.
- F. Do not apply coatings if extremely high humidity prevents drying.
- G. No coatings are to be applied if surface temperatures exceed 130°F (54° C).
- H. All materials shall be delivered to the job site in sealed containers with the manufacturer's label affixed.
- I. Color(s) of acrylic color coating system is to be selected by owner from manufacturer's product color card.
- J. If all the above conditions are met, surfacing materials shall have a one-year limited warranty as supplied by the manufacturer.

#### **1.5 WARRANTY**

Advanced Polymer Technology Corp. (APT) warrants, subject to limitations, exclusions, terms and conditions contained herein, that the material supplied by APT, and which is covered by this Warranty, will not fail due to defects for one (1) year. APT's maximum responsibility under this Limited Warranty shall be limited to the replacement of material in a quantity not in excess of the quantity of material furnished by APT in connection with the project. No salesman or other employee or agent of APT is authorized to bind APT by any agreement, warranty, promise, or understanding not herein expressed.

This Limited Warranty is made and given in lieu of all other warranties and conditions, expressed or implied, statutory or otherwise, including but not limited to any warranties or conditions of merchantability, durability and of fitness for a particular purpose. Under no circumstances shall APT be liable or otherwise obligated for indirect, incidental or consequential damages of any

nature or kind whatsoever, including damages arising in contract, tort, product liability or otherwise.

## **PART 2 – PRODUCTS**

### **2.1 LAYKOLD CUSHION PLUS SYSTEM MATERIALS**

- A. All components of Laykold Cushion Plus system shall be supplied by Advanced Polymer Technology, an ISO 9001 certified manufacturer. Cushion Plus system components shall not contain ANY lead, mercury, nor any heavy metals, PCB, or formaldehyde.
- B. Laykold PolyPrimer/Laykold Epoxy VTB Primer (concrete courts only). Shall be a two-component, 100% solids, solvent-free primer. If approved, Laykold Acrylic Concrete Primer (adhesion promoter) may be substituted where concrete's relative humidity, hydrostatic pressure, efflorescence, and staining are not a concern.
  - 1. Percent Solids by Weight 98% (minimum)
  - 2. Weight 9.01 lbs./gallon
- C. Laykold Acrylic Resurfacer. Acrylic based emulsion used for smoothing rough pavements. 1 to 2-coats as required. Laykold NuSurf is recommended for use on new asphalt pavements and is an acceptable substitute for Acrylic Resurfacer.
  - 1. Percent Solids by Weight 52% (minimum)
  - 2. Weight 10.68 lbs/gallon
- D. Laykold Cushion Plus Granule. Acrylic emulsion fortified with 0.5-1.5mm EPDM rubber granules that add resiliency to a hard court surface. 2 to 4 coats required based on Cushion Plus system specified: Standard System - 2 coats Cushion Plus Granule, Xtreme System - 3 coats Cushion Plus Granule, and Supreme System - 4 coats Cushion Plus Granule.
  - 1. Percent Solids by Weight 47.9% (minimum)
  - 2. Weight 8.34 lbs/gallon
- E. Laykold Cushion Plus Powder. Acrylic emulsion fortified with 0.0-0.5mm EPDM rubber powder used to fill, smooth and prepare the Cushion Plus Granule coats for the application of the color coats. 3 coats required.
  - 1. Percent Solids by Weight 39.8% (minimum)
  - 2. Weight 8.34 lbs/gallon
- F. Laykold ColorCoat Concentrate textured batch mixture. Pigmented wear-resistant acrylic emulsion. 2-coats required. Advantage Laykold factory textured color is an acceptable substitute. Laykold Colorflex textured batch mixture is a recommended alternative to Laykold ColorCoat due to its highly flexible physical properties.
  - 1. Percent Solids by Weight 49 % (minimum)
  - 2. Weight: 12.9 (+/- 3) lbs/gallon
- G. Optional Laykold ColorCoat Concentrate finish batch mixture. Pigmented wear-resistant acrylic emulsion. 1-coat. Laykold Colorflex finish batch mixture is a highly recommended substitute. A finish coat will speed up the surface pace of the court.
  - 1. Percent Solids by Weight 49 % (minimum)
  - 2. Weight: 9.47-9.52 lbs/gallon
- H. Laykold Line Prime. Clear drying acrylic emulsion line primer. 1-coat required.

1. Percent Solids by Weight 29%
  2. Weight: 8.9 lbs/gallon
- I. Laykold Textured White Line Paint. Factory textured, wear-resistant acrylic emulsion line marking paint. 1-2 coats as required.
    1. Percent Solids by Weight 67% ( minimum)
    2. Weight: 11.4 lbs/gallon

## **PART 3 – EXECUTION**

### **3.1 INSPECTION**

- A. Concrete substrates shall be installed with a vapor barrier according to ASBA guidelines and be finished with a CSP 3 profile.
- B. Inspect concrete or asphalt substrate for dryness. Concrete substrates are to be tested according to coatings manufacturer guidelines using ASTM F2170 (Relative Humidity testing via probe) or ASTM F1869-98 (Anhydrous Calcium Chloride test). Report any discrepancies to general contractor or owner.
- C. Surface of substrate shall be cleaned by general contractor as required.
- D. Surfacing contractor to approve site and surface conditions prior to proceeding with application of any coatings.

### **3.2 INSTALLATION**

- A. Primer (concrete substrates only): When installing the Laykold Cushion Plus system over concrete, Primer must be applied as the first layer of the system. After RH tests less than 75% Laykold Laykold Poly Primer can be applied. Laykold Poly Primer is mixed by pouring the “B” component into the “A” component and mixing using a low speed jiffy mixer (400 to 600 rpm) for 2 minutes. Scrape down the sides of the bucket and mix for an additional minute. Do not incorporate air when mixing. Spread the mixed primer on the substrate using a high-quality, medium nap roller to achieve a total coverage of approximately 0.030 gal/yd<sup>2</sup> (0.15 kg/m<sup>2</sup> - 300 ft<sup>2</sup>/gal). The working time for Laykold Primer is approximately 50 minutes and is reduced in high temperatures. Lightly broadcast 40 to 60 mesh silica sand onto the wet primer at the rate of 5 pounds per 100 sq. ft. (0.24 kg/m<sup>2</sup>) to create a rough texture. Allow 5 to 6 hours drying time before proceeding. If the concrete substrate tests with RH of 75% or greater or a MVER (Anhydrous Calcium Chloride) of greater than 3 lbs/1000 sqft/24 hours, more cure time is required or Laykold Epoxy VTB Primer can be used (see Laykold Epoxy VTB Primer TDS for application guidelines). Acrylic Concrete Primer may be substituted under certain conditions when approved by owner and/or design professional. If approved for use, see Acrylic Concrete Primer technical data sheet for application details.
- B. Patching: Once the surface has been thoroughly cleaned and is free of all loose material, dirt, or dust, the court shall be flooded and allowed to drain a minimum of 30 minutes and a maximum of 1 hour. Any area that holds water (birdbaths) in a depth greater than 1/16 inch (1.6 mm or the thickness of a nickel) shall be outlined and patched.
  1. Surface Leveling: Birdbaths shall be leveled using a Laykold Acrylic Deep Patch court patch binder slurry. Prime area with a 50/50 mixture of Laykold Acrylic Deep Patch and water. Primer shall be brushed into place and allowed to dry prior to patching. Patch mix

- shall consist of Laykold Acrylic Deep Patch, 50-mesh sand and Type 1 Portland Cement. Mix as per manufacturer directions.
2. Crack Filling: Cracks shall be cleaned, primed, and filled using Laykold Acrylic Resurfacer if cracks are 1/16 inch or less. If greater than 1/16 inch, Laykold Acrylic Deep Patch court patch binder slurry should be used to fill cracks. Mix as per manufacturer's directions. Refer to Laykold Deep Patch technical data sheet for additional mixing details and application instructions for filling various sized cracks.
  3. All areas that are repaired/leveled/corrected using a court patch binder mixture shall be allowed to fully cure and then ground smooth and level with the substrate by stone or an acceptable mechanical method.
- C. Filler Coat(s): Apply one coat of Laykold Acrylic Resurfacer using a 24", 30" or 36" wide 70 Durometer flexible rubber squeegee. Batch mix shall consist of 55 gallons (260 kg) of Laykold Acrylic Resurfacer, 30 to 40 gallons (115-130 kg) of potable water, and 600 to 900 pounds (270-400 kg) of clean, bagged silica sand (60 to 80 mesh). The application rate shall be 0.05-0.07 gal/yd<sup>2</sup> (0.29-0.40 kg/m<sup>2</sup> - 129-180 ft<sup>2</sup>/gal) of undiluted Laykold Acrylic Resurfacer per coat. NOTE: If the asphalt is very porous, an optional 2<sup>nd</sup> application of Laykold Acrylic Resurfacer may be applied. Each coat should be completely dry before applying subsequent coats. Laykold NuSurf is an acceptable substitute for Laykold Acrylic Resurfacer and is highly recommended for use on new asphalt pavements, older asphalt pavements, older asphalt pavements with hairline surface cracking, slip-sheet/free floating surfaces, and/or repair methods and over cushioned courts.
- D. Cushion Plus Granule Rubber: Apply 2 to 4 coats of Laykold Cushion-Plus Granule (based on system desired: 2 coats Cushion Plus Standard, 3 coats Cushion Plus Xtreme, 4 coats Cushion Plus Supreme) using a 24", 30" or 36" wide 50 Durometer flexible rubber squeegee or manufacturer approved mechanical spray equipment. Batch mix shall consist of 55 gallons (240 kg) of Cushion Plus Granule and 22-27 gallons (83-90 kg) of potable water. DO NOT ADD SAND to any cushion coats! The AVERAGE application rate for the Cushion Plus Granule coats shall equal .20 gal/yd<sup>2</sup> (.91 kg/m<sup>2</sup> - 45 ft<sup>2</sup>/gal) per coat. Allow each coat to dry completely (minimum 5 hours) before proceeding with the next coat of Cushion-Plus or water vapor may become trapped between the cushion layers causing peeling and blisters.
- E. Cushion Plus Powder Rubber: Apply 3 coats of Laykold Cushion Plus Powder using a 24", 30" or 36" wide 50 Durometer flexible rubber squeegee or manufacturer approved mechanical spray equipment. Batch mix shall consist of 55 gallons (235 kg) of Cushion Plus Powder to 22 gallons (83 kg) of potable water. DO NOT ADD SAND to cushion coats! The average application rate for the Cushion Plus Powder coats shall equal 0.12 gal/yd<sup>2</sup> (0.61 kg/m<sup>2</sup> - 75 ft<sup>2</sup>/gal) per coat. Apply cushion coats using a soft rubber, or notched squeegee. Each coat shall be applied perpendicular (90 degrees) to the previous coat. Please note that the first application of Cushion Plus Powder will use the greatest amount of material as it begins to fill the rough texture created by the larger base rubber coats. The 2<sup>nd</sup> and 3<sup>rd</sup> applications of the small filler rubber will use less material with each coat for an overall average consumption rate of 0.12 gal/yd<sup>2</sup> (0.61 kg/m<sup>2</sup> - 75 ft<sup>2</sup>/gal) per coat. Allow each coat to dry completely (minimum 5 hours) before proceeding with the next coat of Cushion-Plus or water vapor may become trapped between the cushion layers causing peeling and blisters.
- F. Textured Color Coats: Apply two coats of Laykold ColorCoat Concentrate textured batch mixture using a 24", 30" or 36" 50 Durometer flexible rubber squeegee. Batch mix shall consist of 55 gallons (260 kg) of ColorCoat Concentrate, 25 to 35 gallons (95-115 kg) of potable water and 300 to 450 pounds (135-203 kg) of clean, bagged silica sand (70 to 100 mesh). The application rate shall be 0.04-0.05 gal/yd<sup>2</sup> (0.23-0.29 kg/m<sup>2</sup> - 180-225 ft<sup>2</sup>/gal) of undiluted ColorCoat Concentrate per coat. Each coat should be completely dry before applying

subsequent coats. Due to its superior flexibility Laykold ColorFlex is a highly recommended substitute for ColorCoat Concentrate on cushioned courts.

- G. Optional Finish Color Coat: Apply one coat of Laykold ColorCoat Concentrate finish batch mixture using a 24", 30" or 36" 50 Durometer flexible rubber squeegee. Batch mix shall consist of 55 gallons (260 kg) of ColorCoat Concentrate and 55 gallons (210 kg) of potable water. The application rate shall be 0.03-0.04 gal/yd<sup>2</sup> (0.17-0.23 kg/m<sup>2</sup> - 225-300 ft<sup>2</sup>/gal) of undiluted Laykold ColorCoat Concentrate per coat. Each coat should be completely dry before applying game lines. Allow topcoat to cure a minimum of 24 hours before applying game lines. Due to its superior flexibility Laykold ColorFlex is a highly recommended substitute for ColorCoat Concentrate on cushioned courts. A finish coat WILL produce a faster surface pace.
- H. Game Lines:
  - 1. Wait a minimum of 24 hours after final color coat before applying line paint.
  - 2. All lines are to be applied by painting between masking tape with a paintbrush or roller according to U.S.T.A. and A.S.B.A. specifications.
  - 3. Prime masked lines with Laykold Line Prime and allow a minimum drying time of 1-hour.
  - 4. Apply 1 to 2 coats as needed of Laykold Textured White Line Paint with a brush or roller.
  - 5. Remove masking tape immediately after lines are dry.
  - 6. Allow lines to dry a minimum of 24 hours before allowing play on court.
- I. Remove all excess and waste materials from the area of work. Dispose of empty containers in accordance with federal and local statutes.

### **3.3 PROTECTION**

- A. Cure Time. No traffic or other trades shall be allowed on the surface for a period of one week following completion to allow for complete and proper cure of the finish.
- B. Other Trades. It is the responsibility of the general contractor to protect the surface from damage by other trades before acceptance by the owner or the owner's authorized agent.
- C. Do not allow surrounding sprinkler systems to spray water on the newly applied court surface for a period of one week after completion.
- D. Do not place any benches, chairs, ball baskets, or any other type of court equipment on the newly applied court surface for a period of one week after completion.
- E. Do not allow black soled shoes, bicycles, rollerblades, etc. on the court surface. Black scuff marks cannot be removed!

*Acrylic, all-weather tennis and athletic surfacing systems are designed and used to visually enhance asphalt and concrete substrates while providing a desired surface texture, surface pace and/or speed of play. Laykold systems and system components may be used to level surface depressions, fill substrate cracking, smooth surface roughness and make other such adjustments to a new or existing surface/substrate. However, acrylic all-weather tennis and athletic surfacing systems are NOT capable of solving the problems and/or forces associated with cracked, deteriorating, or damaged substrates.*