



# Product Information Sheet

May 22, 2014

## **PSC SmartRoof System Components 4010 TopCoat 4009 BaseCoat 4100 Reinforcing Fabric**

PSC SmartRoof System is a proprietary, high build, low gloss, acrylic elastomeric, reinforced cold roofing system. When applied as directed, PSC 4009/4010 bridges minor surface imperfections, hairline cracks, providing outstanding durability and long lasting protection. It has superior aging characteristics eliminating the causes of ruptures, cracks and delaminating. It withstands substrate movement and accommodates rapid changes in temperature. PSC SmartRoof System allows the substrate to breathe, therefore the supporting structure underneath will not be damaged by the presence of moisture and activated salts. When applied in accordance with the instructions outlined in Product Information Sheets, PSC SmartRoof System produces a tough, monolithic, fungi and mildew resistant solar reflective, UV resistant coating which expands and contracts with the underlying structure.

The molecular structure of the components of PSC SmartRoof System are perfectly adjusted to allow them to utilize their tensile strength and elongation properties for maximum, durable and long lasting protection of roofs in harsh, hot and cold environments. The capability of PSC SmartRoof System goes far beyond those of traditional roofing systems.

### **Uses**

- For flat roofs, low pitched roofs and for roofs with grade.
- PSC SmartRoof System can be applied directly over asphalt, metal, plywood, polyurethane foam and concrete substrates.
- For EPDM, Polyvinyl Chloride (PVC) waterproofing membranes and rubber roofs.

### **Advantages**

- Excellent mildew resistance (Technical Service Report No. PPS-0972)
- Performs on flat roofs under ponding water. (Performance Test Report No. A8344.01-106-31 by Architectural Testing Inc.)
- Light weight, allowing a light support structure.
- A liquid applied system thus eliminating many detailing and flashing problems.
- Application is simple requiring no special equipment.
- Cold applied, no fire hazard.
- UV light stable, fade resistant.
- Provides a tough, rubbery coating.
- Durable and seamless film resists wind driven rain, sleet, snow, hail, mold, mildew and airborne dirt.
- Allows the substrate to breathe.
- Excellent elongation and recovery properties.
- Withstands extremes in thermal cycling, maintains flexibility through the year.
- Seals and waterproofs hairline cracks in substrate.
- Resists aggressive atmospheric conditions; exhaust gases, acid rain, airborne pollutants.
- Inhibits the growth of mildew, fungus, moss and algae.
- Reduces cooling costs and inside air temperature.
- Reduces roof surface heat aging and weathering.
- Reduces rapid roof expansion and contraction.
- Non-flammable.
- Can be tinted, custom colors available.

### **PSC SmartRoof System is designed to**

- Protect roof substrates and substructures from leakage and moisture intrusion.
- Keep the underlying structure cool in hot weather.
- Reduce the cost of air conditioning in hot climate.

- Allow the roof substrate to breathe, thus protecting from costly moisture and rot damage in substructure.
- Reduces surface temperature.
- Reflect harmful UV sunlight.
- Lower thermal shock.

**How does PSC SmartRoof System perform?**

- It bonds to substrate and becomes an integral part of the structure.
- It is liquid applied to form a seamless, protective barrier.
- All vents through the roof are seamlessly incorporated into the roof surface.
- Optimum tensile strength and elongation properties allow it to expand and contract with freeze/thaw conditions while bridging cracks in the substrate up to 1/16”.
- System is sustainable for the life of the structure.

**Performance Test Report by Architectural Testing Inc.,  
130 Derry Court,  
York PA 17406-8405,**

**Report No: A8344.01-106-31**

**Product : PSC SmartRoof System**

Ponding water resistance. This test requires that a membrane retain 25.4 mm of water with no passage of water through the membrane for two hours.

| Test Specimen | Test Duration       | Observations                             |
|---------------|---------------------|--|
| 1             | 2 hours             | No passage of water through the membrane |
| 2             | 2 hours             | No passage of water through the membrane |
| 3             | 2 hours             | No passage of water through the membrane |
| 4             | 2 hours             | No passage of water through the membrane |
| 5             | 2 hours             | No passage of water through the membrane |
| 6             | 2 hours             | No passage of water through the membrane |
| 7             | 2 hours             | No passage of water through the membrane |
| 8             | 2 hours             | No passage of water through the membrane |
| 9             | 2 hours then 7 days | No passage of water through the membrane |
| 10            | 2 hours then 7 days | No passage of water through the membrane |

Note that Test Specimens 9 and 10 retained ponding water on them for seven days with no passage of water through the membrane.

Below are the results of testing of PSC SmartRoof System to ASTM D 903, Standard Test Method for Peel or Stripping Strength of Adhesive Bonds using PVC water proofing membrane substrate without primer.

| Test Specimen | Peel Strength on PVC water proofing membrane without primer (lb/in) |
|---------------|---|
| 1             | 2.5   |
| 2             | 2.6   |
| 3             | 3.0   |
| 4             | 3.4   |
| 5             | 3.7   |
| 6             | 2.7   |
| 7             | 3.0   |
| 8             | 2.4   |
| 9             | 2.9   |
| 10            | 2.6   |
| Average       | 2.9   |

While there are no recognized requirements for peel results from the requested substrate, ASTM D 6083, Standard Specification for liquid Applied Acrylic Coating Used in Roofing specifies a minimum of 2.0 lb/in for wet peel results from a galvanized substrate.

Following are the results of bond strength evaluation for PSC SmartRoof System to ICC-ES AC 212, Acceptance Criteria for Water-Resistive Coatings used as Water-Resistive Barriers over Exterior Sheathing – Section 4.1, Tensile Bond Testing using a Polyvinylidene Fluoride (PVDF) coated metal substrate with primer.

Pull-Off Strength of Coating on PVDF Coated Metal Substrate.

| Specimen    | Test Area (in <sup>2</sup> ) | Flatwise Tensile Strength (psi) | AC 212, Section 4.1.2 Performance Criteria <sup>1</sup> | Result      |
|-------------|------------------------------|---------------------------------|---|-------------|
| 1           | 1.0                          | 123.5                           | All Specimens ≥ 15 psi Flatwise Tensile Strength        | Pass        |
| 2           | 1.0                          | 121.6                           |   | Pass        |
| 3           | 1.0                          | 121.8                           |   | Pass        |
| 4           | 1.0                          | 135.1                           |   | Pass        |
| 5           | 1.0                          | 131.2                           |   | Pass        |
| <b>Mean</b> | <b>1.0</b>                   | <b>126.6</b>                    |   | <b>Pass</b> |

<sup>1</sup>Testing was conducted in accordance with ASTM C 297/C 297M-04, Standard Test Method for Tensile Strength of Sandwich Constructions as required by AC 212, Section 4.1.1.

Copies of original test results are available upon request.

**General Data PSC 4010 TopCoat and 4009 BaseCoat**

| Description                          | Performance  | Test Method | Requirement |
|--------------------------------------|--|-------------|-------------|
| Type                                 | Acrylic elastomeric  |             |             |
| Volume Solids                        | 57 %   | ASTM D2697  | >50 %       |
| Weight Solids                        | 69 %   | ASTM D1644  | >60 %       |
| Initial Elongation                   | >250 %   | ASTM D2370  | >100 %      |
| Initial Tensile Strength             | >230 psi   | ASTM D2370  | >200 psi    |
| Initial Reflectance (4010 white)     | >84 %  | ASTM D2824  |             |
| Specific Gravity                     | 1.41 g/cm <sup>3</sup>                                     | ASTM D1475  |             |
| VOC                                  | <20 g/L  |             |             |
| Weight per USG                       | 11.7 lbs/gallon  |             |             |
| Flash Point                          | Not applicable   |             |             |
| Method of Application                | Airless sprayer, brush or roller                           |             |             |
| Film Thickness                       | 20 mils WFT per coat, average, refer to system components. |             |             |
| Drying Time @ 50 % Relative Humidity | @ 20 C (68 F) Recoat                                       | -12 hours   |             |
|                                      | Full cure  | -48 hours   |             |
| Dries by                             | Evaporation, coalescence                                   |             |             |
| Viscosity                            | 25,000 cps. 6 rpm. (Brookfield, 20 C)                      |             |             |
| Thinner                              | Do not thin  |             |             |
| Number of coats                      | Two coats over PSC 4009 BaseCoat (if required)             |             |             |

**General data PSC 4100 Reinforcing Fabric**

(Adds 3 mils to final application thickness).

|                 |                       |
|-----------------|-----------------------|
| Style           | Tietex T272           |
| Construction    | Stitchbond            |
| Content         | 100 % Polyester       |
| Finished Weight | 3.41 oz. per sq. yard |
| Gauge           | 18                    |
| CPI             | 18                    |

#### Average typical properties\*

|                            |                            |             |
|----------------------------|----------------------------|-------------|
| Tensile strength (1" jaws) | Warp 74 lbs<br>Weft 45 lbs | ASTM D-5034 |
| Elongation at break        | Warp 21.3 %<br>Weft 51.3 % | ASTM D-5034 |
| Ball burst                 | 111 lbs                    | ASTM D-3787 |
| Trapezoid (tear strength)  | Warp 13.5 lbs              | ASTM D-117  |
| Thickness                  | 0.18                       | ASTM D-1777 |

- Individual test results may vary. These typical properties are the average results of tests conducted on random samples of the product and are not to be construed as performance specifications. The information provided in this description is not intended to certify the suitability of the product for any specific application.

#### Limitations

- Do not apply PSC 4009/4010 in temperatures below 5 C (41 F) or above 35 C (95 F).
- Do not apply PSC 4009/4010 if precipitation or freezing temperatures are to be expected before full cure is achieved.
- Ensure that a minimum of 4 hours of daylight remains after application to allow for proper UV curing.
- The maximum operating temperature for the product is 120 C (250 F)
- The minimum operating temperature for the product is -50 C (-58 F).

#### System components

- Primer; on porous surfaces, such as concrete, dilute PSC 4009 or 4010 by 50 % (a ratio 1 : 1) with clean water and apply at a rate of 0.5 gallons / 100 sq.ft. or use undiluted PSC 4008 PrimeBond.
- PSC 4009 BaseCoat; apply at a rate of 1.5 gallons / 100 sq. ft.. Wet film thickness 24 mils.
- PSC 4100 Reinforcing Fabric; backroll into basecoat on flat or low grade surfaces, overlap adjacent runs of fabric a minimum of 4 inches by side.
- Saturation coat, PSC 4009 or 4010, apply at a rate of 1 gallon / 100 sq. ft. WFT 16 mils.
- Topcoat; PSC 4010, apply at a rate of 1 gallon / 120 sq .ft. at wet film thickness of 10 to 12 mils per coat.

#### Surface preparation

New surfaces. Surfaces must be structurally sound, free of dirt, dust, oil, grease and loose particles. Remove all surface contaminants by power washing at a minimum pressure of 3000 psi. To remove oil, grease and surface salts, wash with a solution of PSC 0100 Cleaner Degreaser, followed by rinsing and scrubbing thoroughly with clean water. Allow the surface to dry prior to applying PSC 4009 BaseCoat.

Old roofs. Remove all dust, dirt, oil, grease, deteriorated old roof coatings and loose particles by power washing at 3000 psi with a strong detergent as above. Rinse off any detergents with clean water. Allow wet surfaces to dry. Any cracks, holes or other imperfections should be repaired prior to applying PSC 4009 BaseCoat.

On metal roofs, remove all rust down to the bare metal with a power wire brush prior to pressure washing. Damaged or severely rusted panels should be replaced.

#### Priming

- No priming required on plywood or unpainted wood.
- No priming required on weathered, galvanized metal. Prime unprotected metal with an appropriate metal primer.
- No priming required on modified bitumen, roll roofing, built-up, polyurethane foam and insulation board.
- Prime concrete and masonry surfaces with PSC 4008 PrimeBond. Apply at a rate of 200 sq. ft. per gallon.
- PVDF substrate does not require priming with PSC 4008 PrimeBond.

#### Application

- Install cant strips at all internal corners and a flat metal drip edge on outside perimeter.
- Repair all cracks, holes, non-working joints and other imperfections with a 6 inches wide strip of PSC 4009 BaseCoat applied at 25 mils WFT, embed a 6 inch wide strip of Reinforcing Fabric into the BaseCoat while it is still wet and saturate with the same immediately at 16 mils WFT.

- On metal roofs, embed all fasteners with PSC 4009 BaseCoat. Apply a minimum of 4 inch wide strip of BaseCoat on all joints and seams, embed PSC 4100 Reinforcing Fabric into it and immediately saturate with a coat of BaseCoat. Apply two coats of PSC 4010 TopCoat at 10 to 12 mils each. (70 sq. ft. / USG combined).
- On flat roofs coat the entire roof area with PSC 4009 at 24 mils WFT and embed PSC 4100 Reinforcing Fabric into the coating while it is still wet. Overlap adjacent runs of fabric a minimum of 4 inches per side. Immediately saturate with PSC 4009 BaseCoat at a rate of 16 mils WFT and allow to dry.
- Flash all roof penetrations using PSC 4010 TopCoat. Apply at a wet film thickness of approximately 24 to 25 mils, immediately embed and brush in 6 " or 12 " wide Reinforcing Fabric ensuring that the fabric is not stretched and is wrinkle free. Cut of all fish mouths. Apply a second coat of PSC 4010 at the same thickness as previous one.
- When used as a top coat on an existing roof substrate, apply 2 coats of PSC 4010 at a minimum thickness of 20 mils wet per coat.

Apply as received in the container. Do not add other paints or solvents. Stir the product thoroughly prior to use. Avoid entrapping excessive quantities of air when stirring. Apply with airless spray, power roller, conventional roller or brush. Do not apply when air and surface temperatures are below 5 C (41 F), nor in damp or rainy weather. Do not apply to surfaces with excessive moisture content.

Apply a liberal coat and check application with wet film gauge to ensure the minimum wet film thickness is obtained. Polyester reinforcing fabric is to be back rolled into basecoat on even and low-slope surfaces. Steeper grades do not require reinforcing fabric. Apply topcoats within re-coat window.

**Power roller**

Apply generously, monitoring application frequently with a wet film thickness gauge to ensure proper wet film thickness.

**Conventional roller**

Apply in two crosshatch coats at 90 degrees to each other, monitoring application frequently with a wet film thickness gauge to ensure proper wet film thickness. Keep roller saturated with material at all times. Allow the first coat to dry 6 hours (@ 20 C (68 F), or until its no longer tacky and dry enough to walk on, before applying second coat. Finish off with dry roller in one direction to ensure uniform finish.

**Airless spray**

Apply generously in a cross hatch pattern and backroll to achieve a pinhole free surface. Monitor application frequently with a film thickness gauge to ensure proper wet film thickness. Coverage will vary according to surface texture and profile. Use equipment capable of maintaining 2,500 to 2700 psi at the tip. Orifice size: 0.019" (0.48 mm) to 0.023" (0.58 mm).

**Thinning / Cleanup**

Do not thin finishing coats; thinning will reduce the sealing ability of this product. Never add paints or solvents. Wash all equipment with warm detergent solution and rinse thoroughly with clean water. Spray equipment should be given a final rinse with mineral spirits to prevent rusting.

Use completely or dispose properly. Dry, empty containers may be recycled in a can recycling program. Local disposal requirements vary; consult your sanitation department or local environmental agencies for more information on disposal options.

**Curing time**

Coating applied @ 24 mils WFT (1.5 gallons / 100 sq. ft.) @ 50 % relative humidity.

| Substrate temperature | Re-coat after | Full cure |
|-----------------------|---------------|-----------|
| 5 C (41 F)            | 24 hours      | 72 hours  |
| 10 C (50 F)           | 24 hours      | 72 hours  |
| 20 C (68 F)           | 12 hours      | 48 hours  |
| 30 C (86 F)           | 8 hours       | 30 hours  |

Allow primers to dry for a minimum of 4 hours, or until it will support foot traffic without tracking. For multiple coats of PSC 4009 / 4010, generally allow to dry until the coating will support foot traffic before applying the next coat.

### **Maintenance and solar reflectivity**

All roofs are a maintenance item, and as such, should be inspected twice a year, in the spring and in the fall.

Excess dirt, dust or other foreign material will build up on the roof surface and, along with normal aging and weathering, reduce solar reflectance. The coating surface may be cleaned with water and mild detergent by hand or low pressure spray equipment. Rinse thoroughly. It is recommended that the coating surface is cleaned every two years to maximize the solar reflectance and cooling cost savings.

Energy savings from installation of PSC SmartRoof System are climate specific and vary by building. The greatest savings will occur in hot and sunny climates that have a high roof surface to building volume ratio and lower levels of attic and/or roof insulation.

### **Safety precautions**

Prior to handling this product, consult Material Safety Data Sheets (MSDS) for detailed information.

### **Shelf Life**

PSC 4010 SmartRoof System has a shelf life of 6 Months in an unopened container

### **Shipping Information**

Non - hazardous.

### **Minimum precautions**

Keep out of reach of children. Wear protective gloves and goggles. Avoid skin and eye contact. In case of skin contact, wash thoroughly with soap and lukewarm water. In case of eye contact, flush with water for at least 15 minutes and seek immediate medical attention.

### **Packaging**

5 USG pails

55 USG drums

### **Warranty Disclaimer**

**We guarantee our Products to conform to the specifications of Polymer Science Corporation. Polymer Science Corporation makes no warranty or guarantee, express or implied, including warranties of fitness for a particular purpose or merchantability, respecting its Products. Liability, if any, is limited to refund of purchase price or replacement of the Product. All consequential damages, labor and cost of labor are hereby excluded.**

**For projects that required 250 gallons of products or more, contact PSC for details on a 10 years product warranty.**

**For orders or inquiries from Canada, US and Mexico, call toll free 1-866-793-3503 or fax your orders to PSC's customer service at 403-287-2766.**

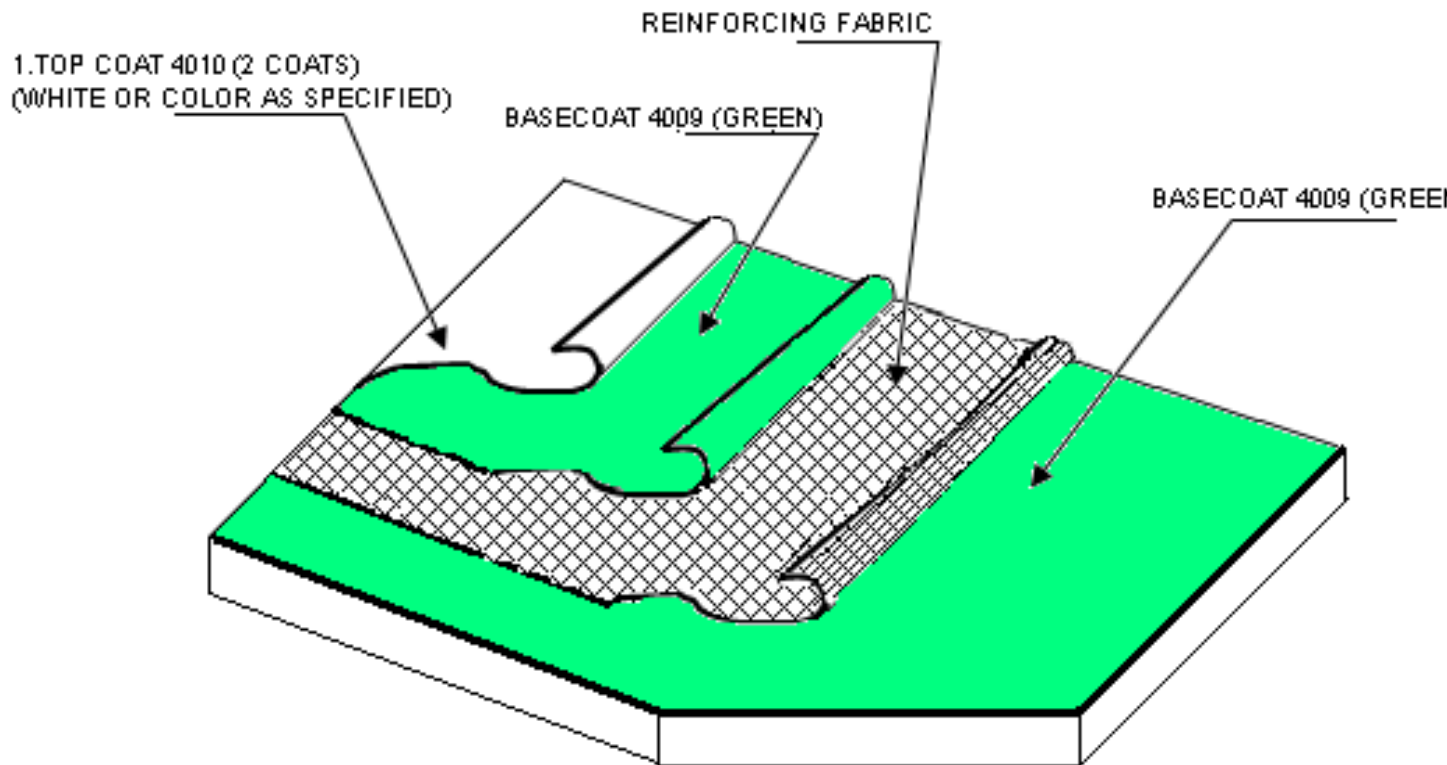
**Polymer Science Corporation develops, manufactures and distributes specialty chemicals, industrial and architectural coatings of highest quality. Ask the people who use them.**

## **SmartRoof System**

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- **For preparation and installation refer to PSC Product Information Sheets.**
- **PSC SmartRoof System consists of 4009 BaseCoat (green), 4010 TopCoat (white) and 4100 Fiberglass Reinforcing Fabric.**
- **For priming specifications for asphalt, concrete, metal, plywood and polyurethane foam, refer to PSC Product Information Sheets.**
- **4009 BaseCoat apply one coat at a rate of 1.5 gallons / 100 sq. ft. Wet film thickness 24 mils.**

- 4100 Reinforcing Fabric; embed into first coat of BaseCoat on flat or low grade surfaces.
- 4009 BaseCoat apply a second coat to saturate the fabric at a rate of 1 gallon / 100 sq. ft. Wet film thickness 16 mils. Backroll into 4100 Reinforcing Fabric.
- 4010 TopCoat; apply two coats at a rate of 1 gallon / 100 sq. ft. each. Combined wet film thickness 32 mils.



1. 4010 TopCoat (white) two coats.
2. 4009 BaseCoat (green).
3. 4100 Reinforcing Fabric.

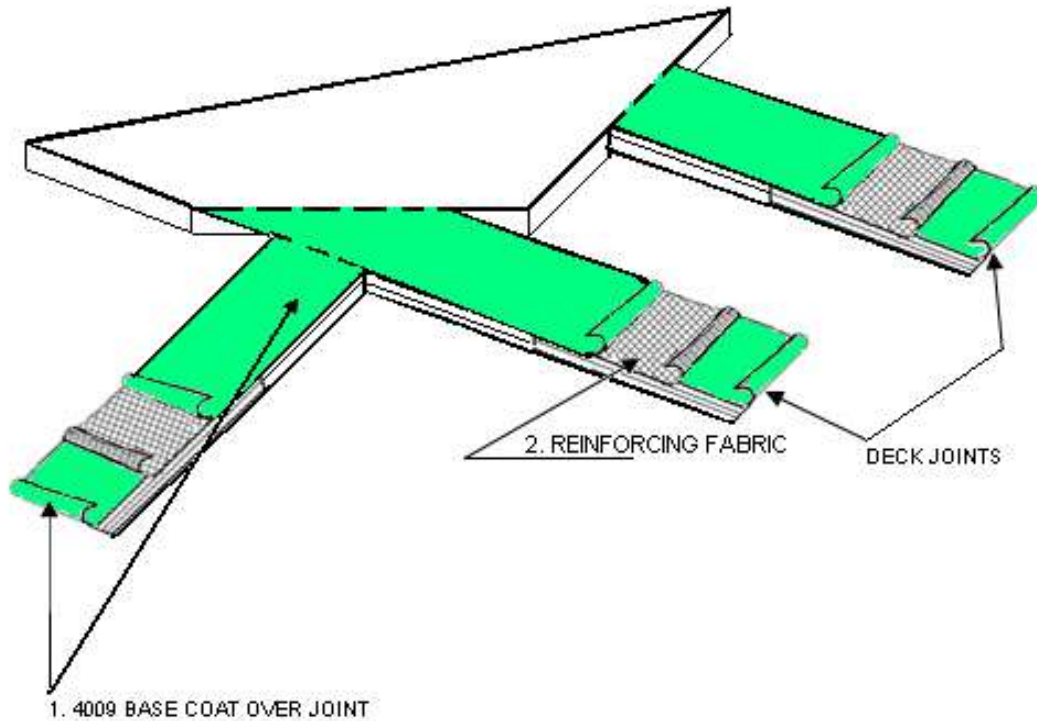
### SmartRoof System

#### Preparation for plywood substrates

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- For preparation and installation refer to PSC Product Information Sheets.
- PSC SmartRoof System consists of 4009 BaseCoat (green), 4010 TopCoat (white) and 4100 Fiberglass Reinforcing Fabric.
- For priming specifications for asphalt, concrete, metal, plywood and polyurethane foam, refer to PSC Product Information Sheets.
- 4009 BaseCoat apply one coat at a rate of 1.5 gallons / 100 sq. ft. Wet film thickness 24 mils.
- PSC 4100 Reinforcing Fabric; embed into first coat of BaseCoat on flat or low grade surfaces.

- **4009 BaseCoat** apply a second coat to saturate the fabric at a rate of 1 gallon / 100 sq. ft. Wet film thickness 16 mils. Backroll into **4100 Reinforcing Fabric**.
- **4010 TopCoat**; apply two coats at a rate of 1 gallon / 100 sq. ft. each. Combined wet film thickness 32 mils.



- **For joints** apply only **4009 BaseCoat** and **4100 Reinforcing Fabric** as mentioned above. Apply the **SmartRoof** system as specified over the whole application.

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