



## ADHESION TEST PROCEDURES



*Adhesion Testing*

Roof restoration coatings offer a cost-effective solution for maintaining and extending the life of an existing roof. Developments in technology have made these coatings easy to apply and the non-intrusive application results in minimal downtime to building operations. In addition to extending the life of the existing roof system, coatings may provide enhanced water resistance, aesthetics, and energy savings, as well as helping to reduce the heat island effect in urban areas. After determining a roof system is a candidate for coating restoration, the substrate should be carefully evaluated to establish which components are required for successful restoration. When considering coating restoration, the existing roof material type must first be identified to determine suitability of the substrate for coating and what type of coating is compatible with the substrate. In addition to compatibility, the building utility, desired finish attributes, and exposure should be considered in coating selection. Finally, the substrate should be evaluated to verify the surface preparation requirements for acceptable coating adhesion. This will include a thorough cleaning, rinsing, and possible priming of the surface. Primers may also perform as an intermediate barrier layer between the coating and the substrate. Consult GSP coating specifications to determine typical cleaning and priming recommendations. A contractor should perform adhesion tests with and without primers prior to bidding to ensure all necessary components are properly considered in a bid. To address potential variability, a minimum of three separate roof areas should be tested with and without primer to assess these requirements.

### **Adhesion tests**

For a coating to perform as designed, it must adhere to the substrate. The ability for a coating to adhere may vary by substrate type, texture, manufacturer, age, environmental exposure, contamination, and even application method. Aged substrate conditions will vary significantly, therefore adhesion tests are essential to determine the surface preparation required. In addition to a thorough cleaning, some substrates will require primers to achieve acceptable coating adhesion. Fabric strips embedded in the coating are used to assess the coating system's suitability for a given substrate. Acceptable adhesion is generally defined as two pounds force per inch of fabric width (2 PLI).



# TECHNICAL BULLETIN

The following procedure is intended to summarize the steps required to perform the adhesion tests.

**1**



**Typical tools required**

- Reinforcing fabric
- Brush
- Gloves
- Towels/wipes
- Cutting knife
- Safety glasses
- Fabric gripping method
- Digital scale (luggage or fish style)

**4**



Clean three representative areas approximately 12" x 12" or greater per manufacturer recommendations. Use Green Shield Membrane Cleaner where needed. If unable to power wash the area, use a new scrub pad or rag to clean the surface. Thoroughly rinse the area prior to the assessment since any film or residue may interfere with primer and coating adhesion. Allow to dry.

**2**



Identify substrate type to be coated and compatible coating to be used.

**5**



Prime part of sample area with the recommended GreenPrime primer and allow to dry.

**3**

Identify a minimum three representative areas on the roof to be tested. Additional areas should be considered for roofs larger than 10,000 square feet.

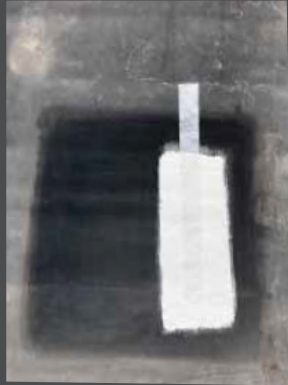
**6**



Evenly coat the area with approximately 15 wet mils of selected Green Shield coating to be tested.

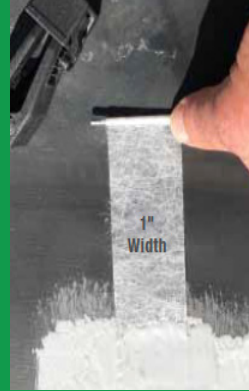


7



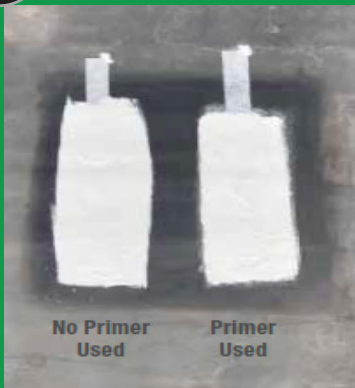
Embed 6-9 inches of a 1" x 12" strip of polyester test fabric into the wet coating. Wider strips may be used. Leave at least 3" of dry fabric hanging past the coated area.

8



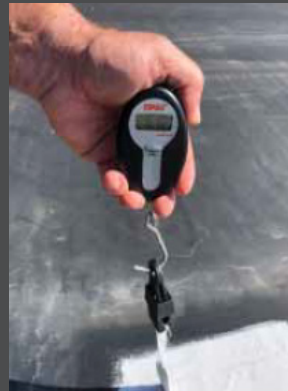
Grip the fabric uniformly to facilitate testing the pull strength. For illustration, a small nail is rolled into the fabric strip and a tarp clip used to securely grab the fabric strip.

9



Immediately coat the fabric strip with an additional 16 wet mils of coating, ensuring fabric is fully wetted with no air bubbles. Repeat steps 6, 7, and 8 for unprimed area.

10



Using a digital scale, pull the fabric at a 90-degree angle. Pull at a slow and steady rate. Observe the digital scale readout. A minimum two pounds force per inch of fabric width (2 PLI) is required for acceptance.

11

Allow coating to cure a minimum of 24 hours prior to testing. Cure time may vary based on climate conditions and type of coating. A cure time of 3-7 days is preferred.

12

Observe the mode of coating separation. If the coating pulls off clean, this is known as "adhesive" mode. If the coating separates within the coating layers, this is known as "cohesive" mode. A cohesive mode is preferred. Record the average force required and the mode of separation for each test strip.