

The purpose of this field test is to measure the adhesive strength of the traffic coating to determine whether the installation has been completed properly. Release or separation during the test will occur along the weakest part of the material, or bond between the material and the substrate.

Poor adhesion may be caused by poor substrate preparation, the surface being contaminated by water or dirt, not properly cured or improper primer application to name a few. For a traffic coating to function properly there must be proper adhesion.

Quantitative Traffic Coating Field Adhesion Test Method ASTM D4541 Pull Off Adhesion Strength

To determine whether proper adhesion has been achieved, on-site testing needs to be conducted. The basic principle is very simple:

1. Attach a steel or plywood disc to the coating material.
2. Cut around the material so you are pulling on that specific area (this will allow no damage to material around the area of the test.)

When attaching the adhesion tester (test dolly) to the coating material (traffic coating) with the recommended adhesive¹, ensure the specimen is not being pre-stressed by bumping or bending. You may slightly abrade the surface of the material to remove any surface film that could interfere with the recommended adhesive material. Make sure you clean the abraded area with Pecora recommended cleaning agent² as to not affect the material or leave residue. Before conducting the pull test, make sure the deck coating application is fully cured (min 48 hours). It is very important the test area be flat as to achieve proper adhesion to the disc.

After the material has fully cured, perform the following test set up procedures:

1. Apply the adhesive to the dolly and the surface of the coating material, press the disc onto the prepared surface and allow for approximately 1/16" to 1/8" final adhesive thickness removing excess adhesive pressed out from the side of the dolly. Allow the adhesive to cure in accordance to the manufacturer's instructions.
 - a. Do not twist or move the dolly as that could result in incorrect values during testing.
2. Typically, an Elcometer pull tester or comparable device is utilized for recording the force necessary to cause coating failure. Options include, but not limited to, the following:
 - a. Elcometer 106 Adhesion Tester (top right photo)
 - b. Com-Ten Industries Digital Extractor – Construction Pull Tester (bottom right photo)
3. When a base support ring is required, place it evenly around the dolly so there is equal support being applied to the tester.
4. To ensure the correct amount of force is being used, apply it in a smoother continuous manner. The force should be applied to the dolly by turning the handle not more than one revolution per minute (rpm) in accordance with ASTM D4541, method B. The gauge will display the force being applied, and the limit stop dial will register the peak force just before there is a separation.



Once the test is complete, you will need to analyze the material for maximum force achieved, the type of release, the surface in which the release occurred, and the percentage of release on each surface. This information should be noted in a test report using lbs. from the gauge.

In order to determine the pull-off value calculation:

1. Use table provided by test apparatus manufacturer
2. In the absence of test jig calculation recommendations use the following:
 - a. Measure diameter of disc utilized
 - b. Record lbs. force from dial indicator at failure
 - c. Use the following calculation to determine max pull off value in PSI
 - i. $\text{Max force from dial indicator} / (3.14 * (\text{diameter}/2)^2) = \text{force in PSI}$

Note: A minimum of 200 PSI is required for warranty purposes.

Any errors in the test should be examined to find its cause. If you discover that this error was caused from improper test procedures, do not include it on your report and perform another test. Any material that was damaged in the pull test needs to be replaced in accordance to Pecora's instructions.

For more information, testing questions, or deck coating application recommendations, contact the Pecora Corporation Technical Services Group by email techservices@pecora.com or by phone (800) 523-6688.

¹The recommended adhesive is the Pecora Dynapoxy EP-1200 two-part epoxy sealant/adhesive. Be aware that the adhesive will require an overnight cure. Field kits of the Dynapoxy EP-1200 can be provided upon request.

²Depending on the project location, generally Xylene is recommended as the cleaning agent. Otherwise, an alternative VOC compliant solvent with quick evaporation is recommended.