

FEATURE ARTICLE

PULL ADHESION – THE ABAA TEST METHOD FOR THE AIR AND WATER RESISTIVE BARRIER INDUSTRY



The Air Barrier Association of America (ABAA) QAP requires that the installer tests the adhesion of the installed air and water resistive barrier (AWB) material daily. When an ABAA audit is conducted, an adhesion test is performed to confirm that the installer

is conducting the test properly and that the results of the tests meet the installation requirements. If the installer is not onsite at the time of the audit, then the auditor would conduct the test themselves.

ABAA has established minimum pull-off value of 16 psi for air and water resistive barrier materials and as a part of the material evaluation process, the manufacturer provides a pull adhesion laboratory test report for reference. However, on the jobsite, if a project specification calls for a higher value, then the installer must meet the higher value in the project specification.

If the higher value (project specification or ABAA) is met, then automatically both requirements will have been met. ABAA's requirements do not undermine project specification requirements if they are more stringent. In other words, if the project specifications require a higher value than 16 psi, the installer must meet the higher value. When ABAA's QAP was introduced, the closest test method that was published by a standards development organization was ASTM D4541 Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers. ABAA adopted this method for evaluating pull adhesion, but through the audit process, became aware that results may not be repeatable or reproducible due to the various modifications incorporated by different installers, namely, the size of disks, variations in the rate of the pull and whether scoring around the disk occurred. For example, a simple thing like the rate of pull can produce a different pull-off value. If you use the rate of pull suggested in ASTM D4541, you will get a different number than when using a hand crank and turning it very slowly.

With air and water resistive barrier materials, it is also important to determine where the failure occurred. The installer needs to prove that the material installed stuck to the substrate or if a failure within the substrate occurred. If there was a substrate failure, for example the facing releasing from a gypsum board, that needs to be recorded, but it is not considered to be a failure of the installation of the air and water resistive barrier material.

As the industry evolved, it was apparent that there was

a need to develop a test method that was specific for the air and water resistive barrier industry. The ABAA Research Committee worked on the development of a pull adhesion test method, which documented the current practice in the industry and standardized the process. Careful consideration was given to develop a test method that could be used both in the laboratory and in the field so that the manufacturer's test results could be compared to field results.

The test method was vetted by the ABAA Research Committee and approved. The document was then submitted to the ABAA Board for final approval as an ABAA document. The result of this work is the published document ABAA T0002-2019 Standard Test Method for Pull-Off Strength of Adhered Air and Water Resistive Barriers Using an Adhesion Tester. The document can be found [HERE](#).

The differences between the ABAA T0002 test method and the ASTM D4541 and the ASTM D7234 test methods include;

- a.** Cutting the material – ABAA's requirement is to separate the material under the disk from the balance of the material so that the value obtained is for the size of the disk – other test methods, you do not separate the material. The values are completely different
- b.** Load rate – ABAA's requirement is one revolution per ten seconds (58 psi/m) – other materials require 150 psi/s or 30 psi/s. A quick sharp loading will produce very high results whereas a low loading rate will produce low results
- c.** Test duration - ABAA's requirement is test until failure – other test methods are 100 or 30 seconds
- d.** Termination of test - ABAA's requirement is to continue the test until there is a rupture in the layers. Other test methods are to a specific load
- e.** Number of pulls - ABAA's requirement is for three pulls in a 39 inch by 39 inch area to be considered one test – other test methods requires three pulls in a representative area
- f.** Size of disk - ABAA's requirement is for a 2.25 inch diameter disk – other test methods allows for any size of disk typically 0.75 to 3 inches
- g.** ABAA's requires a digital gauge whereas other test methods allow analog gauges.

ABAA requires that the installers and the auditors use ABAA T0002.

This test method is a step forward in the evolution of the air and water resistive barrier industry. As the test method reflects what is already being done on the construction site, there are not a lot of changes that need to be made.