

Technical Service Bulletin

ASTM D4541 Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers

ABSTRACT: ASTM D4541 is a standard test method that is used in order to evaluate the pull-off strength of air barrier membranes. This is a useful test when used to evaluate air barrier installations and set minimum standards to verify product performance and field installations under real conditions.



The following are frequently asked questions in regards to performing the Pull-Off Strength of ExoAir Air Barrier products:

- 1. What kind of epoxy should I use to hold the disc in place?** *5 minute epoxy is recommended to hold the disc in place. Can be purchased at your local hardware store. Cover the entire disc with epoxy in order to guarantee an accurate pull test. Tape the disc in place as well in order to allow the epoxy to dry. Always allow the epoxy to dry completely prior to testing.*
- 2. How do I make sure that I cut just the membrane?** *When testing on exterior sheathing much care and practice needs to be taken to ensure that only the membrane is cut and not the paper face of the exterior sheathing. Cutting the paper face of the exterior sheathing can result in a test failure. Test results can also be affected if the membrane is not cut completely around the disc. If the membrane is not cut completely the values could be higher as the pull tester is not pulling on only the area under the disc.*
- 3. What is a typical value?** *The values will depend on the length of time the air barrier product is in place prior to testing and the substrate. It is acceptable to have a minimum 16psi. That is 16 pounds per square inch. The value on the pull test machine needs to be divided by the area of the disc. The following are typical values for a 4" disc.*

PULL-OFF STRENGTH OF PRODUCT	VALUE ON PULL TEST APPARATUS
16 psi	200
20 psi	250
25 psi	315
30 psi	375

- 4. What kind of mode of failure can be expected?** *A minimum of 16psi must be achieved and the mode of failure should be recorded. The failure could occur with the epoxy to membrane, epoxy to disc, with in the membrane, between the membrane and the substrate, or within the substrate. The mode of failure needs to be recorded as it will help explain if the minimum value of 16psi is not achieved. If the mode of failure was between the substrate and membrane and the results are lower that the minimum requirement verify length of time the membrane has been in place and also ambient temperature during the cure period.*
- 5. How do I repair the tested area?** *The test area needs to be repaired with an additional layer of membrane and should extend 4" beyond the void the test area left. For ExoAir fluids: apply a wet mil layer (ExoAir 120 60 wet/ExoAir 220 70 wet) to achieve 40 dry mils. For ExoAir 110: cut ExoAir 110 to extend 4" beyond the tested area, apply primer 2" beyond the area to which the EA 110 will be applied. Allow primer to dry (to tack for ExoAir 10 Primer, to dry for ExoAir 10WB Primer). Apply the ExoAir 110 onto the dry are of primer and roll aggressive with a seam roller.*

6. Recording of Test Results: Suggest min of Average of 3

Date	Location of Test	Product Tested	Age in place	Temperature at test	Recorded value (size of disk)	Pull-off strength psi	Notable observations
1.							
2.							
3.							