

DUPONT BUILDING SCIENCE

BULLETIN

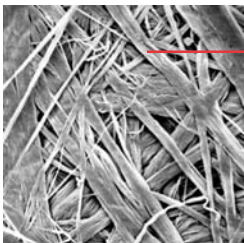


Tyvek® HomeWrap® vs. Dow Styrofoam Housewrap

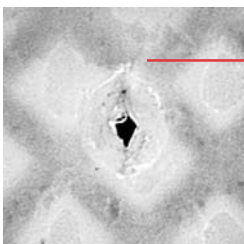
When using Tyvek® HomeWrap® you can be assured you are using THE brand leader in secondary weather membranes. DuPont™ Tyvek® created Tyvek® HomeWrap® to have the optimum balance of properties for superior performance against the elements AND the competition. So, let's define the difference:

Defining the Difference

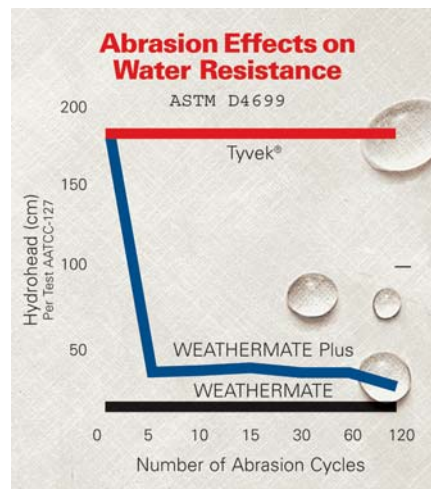
Simply put, Tyvek® outperforms both Dow* STYROFOAM* housewraps due to a fundamental difference in sheet structure. As shown in the picture below, Tyvek® is a continuous nonwoven, non-perforated sheet made by spinning extremely fine high-density polyethylene (HDPE) fibers that are fused together to form a strong, uniform web. This tough structure is engineered to create millions of extremely small pores that resist bulk water and air penetration while allowing moisture vapor to pass through.



Tyvek® fibers (magnified 75x) form a strong, uniform web that maintains excellent breathability and water holdout.



Dow WEATHERMATE fibers (magnified 75x) are loosely arranged. The film is pin-perforated, compromising water holdout and air infiltration resistance.



On the other hand, Dow STYROFOAM WEATHERMATE* is a woven, perforated, polyethylene slit film material resulting in a very open structure incapable of providing sufficient bulk

water or air infiltration resistance. To counter this limitation, the product must be laminated with a film and then pin perforated to meet minimum code specifications. Perforating the product significantly compromises its performance in the critical areas of water holdout, air infiltration resistance and breathability (MVTR).

Also unlike Tyvek®, Dow STYROFOAM WEATHERMATE* Plus is a laminated housewrap consisting of a layer of nonwoven fabric and a film. The film is necessary for the product to achieve the minimum barrier properties required in housewraps, such as water holdout, air infiltration resistance and breathability. However, because the product relies on a fragile film coating, it is susceptible to abrasion and delamination, potentially compromising the product's real world performance.

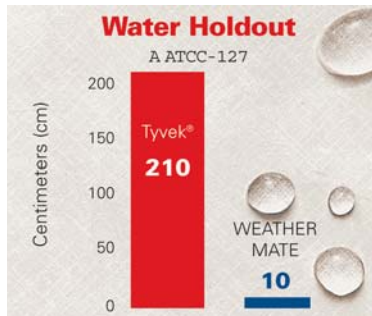


The miracles of science™

How to Outperform the Competition

WATER RESISTANCE

The ability of a housewrap to hold out bulk water is one of the most basic and important requirements for any secondary weather barrier. However, as reported in *ENERGY DESIGN UPDATE*, "Dow introduced... WEATHERMATE, which isn't designed to keep bulk water out."¹

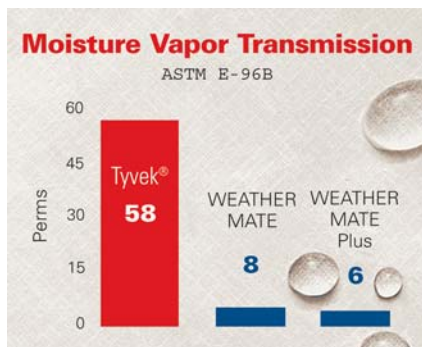


After being subjected to standard abrasion test ASTM D4699, which simulates the rigors of normal job site activity, Tyvek® outperforms both Dow STYROFOAM housewraps in water holdout, as can be seen in the graph

above, left. Dow WEATHERMATE Plus actually loses 90% of its water holdout after only five abrasion cycles. Because Tyvek® doesn't rely on a fragile film layer, Tyvek® maintains its original water holdout even after 120 abrasion cycles with overall performance 9 times greater than WEATHERMATE Plus. Tyvek® also exceeds Dow WEATHERMATE in water holdout by the Hydrostatic Head Test (AATCC-127) both before and after abrasion. All testing was conducted by an independent laboratory on commercially available rolls of Tyvek® HomeWrap® and Dow STYROFOAM WEATHERMATE and WEATHERMATE Plus.

BREATHABILITY

The building industry has endured years of crumbling homes, crumbling profits and rising litigation costs as a result of failing to design forgiving wall systems that can manage incidental moisture that inevitably enters a wall cavity. Builders know that all primary facades leak, increasing the chance water will enter the wall cavity. Therefore, the wall must be designed to have the greatest potential of drying out that moisture. It is the drying potential, coupled with high bulk water resistance, that is important in creating a well-built wall system.



Not only do the perforations in Styrofoam WEATHERMATE allow incidental moisture to pass through, they slow the drying process, because the product can only breathe at these specific locations.

Thus, a housewrap should have a high perm rating so the natural drying rate of the wall cavity is not impeded in any manner. As you can see in the graph below, the Moisture Vapor Transmission Rate (MVTR) of Tyvek® is 7 times greater than that of WEATHERMATE and almost 10 times greater than WEATHERMATE Plus. The increased breathability of Tyvek® allows quicker wall cavity drying times, thereby decreasing the potential for rot and harmful mold and mildew growth.

Support and Innovation Make the Difference

TIME TESTED, QUALITY ASSURED

At DuPont, our knowledge of wall system dynamics and the desired attributes of a secondary weather barrier system are the result of 20 years of research and development. Simply offering just a housewrap is not sufficient to meet the stringent performance demands placed on secondary weather barrier systems in today's wall assemblies.

Understanding builders' requirements for managing moisture in a variety of wall systems is our core competency. We have developed a family of complementary products, each designed to manage water and air infiltration in different areas of the wall, including:

- Tyvek® HomeWrap®
- Tyvek® StuccoWrap®
- Tyvek® CommercialWrap®
- Tyvek® Contractor Tape
- Tyvek® Wrap Caps Fasteners
- and Tyvek® FlexWrap™ – designed to protect against water infiltration around doors and windows. This innovative, flexible flashing tape uniquely conforms to various geometric shapes, providing seamless protection in many challenging areas.

Only Tyvek® continues to deliver superior products combined with unparalleled product innovation and field support, including our network of more than 110 Tyvek® Specialists, trained to answer all your building science related questions.

Tyvek® has made millions of homes more energy efficient and water resistant because of the extra layer of protection it offers. Our product's performance has been proven on more homes, over a longer period of time, than any other competitor. Time Tested. Quality Assured.

Simply put, it should be easy to see the difference between Tyvek® and Dow WEATHERMATE products.

For more information please call
1-800-44-TYVEK
www.tyvek.com

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