

DuPont™ Tyvek® HomeWrap® vs. PinkWrap™ Housewrap

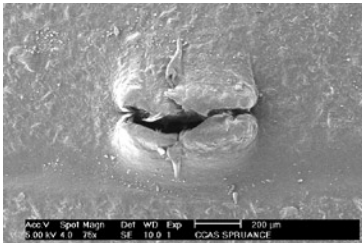
BUILDING SCIENCE BULLETIN



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

Defining the Difference

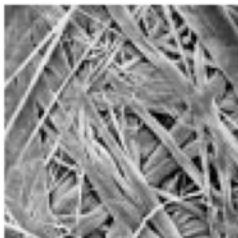
PinkWrap™ is a perforated housewrap. The same product is also licensed to Pactiv under the trade name GreenGuard® Classic. It is made starting with a course woven polypropylene slit film. The fact that it is a woven structure similar to the webbing on some lawn chairs makes it inherently poor at resisting air and water penetration. To improve air and water resistance, a thin film of polypropylene is coated over the weave, which seals the breaks and locks the weave in place. At this stage of manufacturing, the product becomes a vapor barrier. Since being a vapor barrier is an undesirable state for a housewrap, the product is subsequently "micro-perforated" or poked with thousands of tiny pin holes. These micro-perforations allow the product to pass or "breathe" a small amount of moisture vapor. As would be expected, these holes reduce the effectiveness of the housewrap to resist air and water penetration, a basic function of a secondary weather barrier. When it comes to perforated housewraps, there is always a trade off between air resistance, water resistance, and moisture vapor permeability.



PinkWrap™ Housewrap (magnified 75x) are loosely arranged. The product is pin-perforated, compromising water holdout and air infiltration resistance.

DuPont™ Tyvek® is Very Different!

DuPont™ Tyvek® HomeWrap® is a continuous non-woven, non-perforated sheet made by spinning extremely fine continuous high-density polyethylene (HDPE) fibers that are fused together to form a strong uniform web. This tough and unique structure is not susceptible to property losses inflicted by stresses in any direction. The fibrous structure is engineered to create millions of extremely small pores that resist bulk water and air penetration while allowing moisture vapor to pass through. No punched holes are needed with DuPont™ Tyvek® to permit moisture vapor permeability. There are no trade-offs with DuPont™ Tyvek®.



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



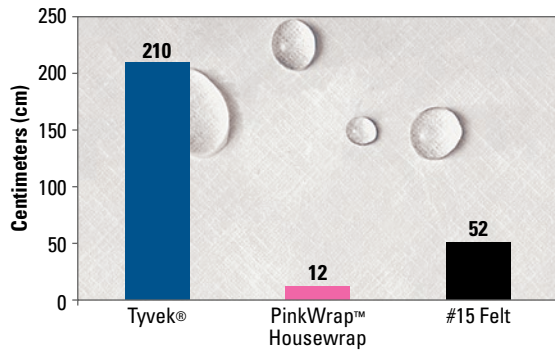
The miracles of science™

DuPont™
Tyvek®
HomeWrap®

How to Outperform the Competition

Water Resistance

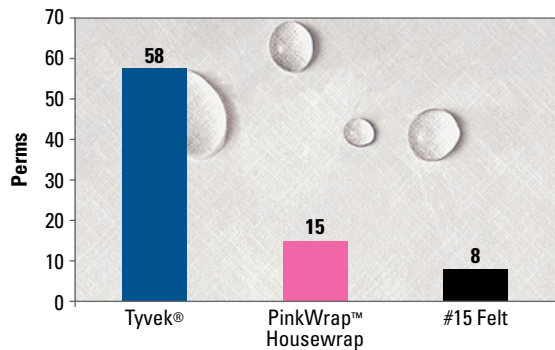
FIGURE 1: WATER HOLDOUT – AATCC-127



The ability of a housewrap to hold out bulk water is one of the most basic and important requirements of any secondary weather barrier. DuPont™ Tyvek® has over 17 times greater the water holdout than PinkWrap™ as tested in accordance with the Hydrostatic Head Test (AATCC-127). Additionally, PinkWrap™ is over 4x lower in water hold-out than #15 felt, the most basic moisture barrier. All testing was conducted by an independent laboratory on commercially available rolls of DuPont™ Tyvek®, PinkWrap™ and #15 felt.

Moisture Vapor Permeability

FIGURE 2: MOISTURE VAPOR TRANSMISSION – AATCC-127

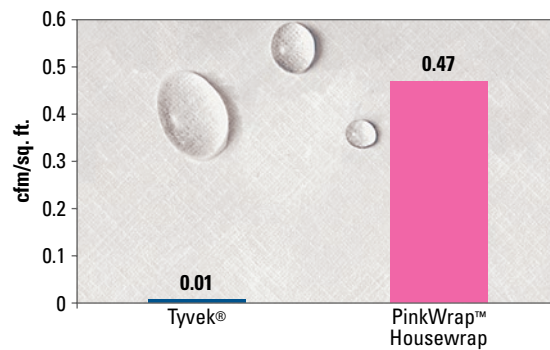


Not only do the perforations in PinkWrap™ allow incidental moisture to pass through, they slow the drying process, because the product can only breathe at these specific locations.

The building industry continues to face challenges for moisture related issues from a failure to design and build forgiving wall systems that can manage incidental moisture that enters a wall cavity. The combination of high bulk water resistance and high drying potential are key components of creating a well built and forgiving wall system. A housewrap should have a high perm rating, so that the natural ability of a wall system to dry is not impeded. As you can see from Figure 2, the Moisture Vapor Transmission Rate (MVTR) of DuPont™ Tyvek® is approximately 4 times greater than that of PinkWrap™. The punched holes only allow the PinkWrap™ product to transmit moisture vapor in the locations of the holes while the rest of the surface area remains a vapor barrier. The increased moisture vapor permeability of DuPont™ Tyvek® reduces wall cavity drying times, thereby decreasing the potential for rot and harmful mold growth.

Air Infiltration

FIGURE 3: AIR INFILTRATION – ASTM E-283 (AT 75PA OR 1.57 PSF)



Note: #15 Felt is not considered an air barrier

Another basic function of a housewrap is to help insulation maintain its R-Value by keeping air from infiltrating the wall system. The ability of a secondary weather barrier in preventing air infiltration directly relates to the energy costs of heating and cooling a home. As you can see from the graph above (Figure 3), DuPont™ Tyvek® has much better air resistance than PinkWrap™. Therefore, the insulation will be more effective and energy costs will be lower in a home wrapped with DuPont™ Tyvek®.



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For more information about DuPont™ Tyvek® Weatherization Systems please call 1-800-44-TYVEK or visit us on the web at www.Construction.Tyvek.com