

**MEMORANDUM**

Date: December 22, 2006  
To: File  
From: Richard Keleher  
Subject: **House Wrap Comparison**

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Characteristic:	<b>Air Leakage</b>	<b>Water Vapor Transmission</b>	<b>Hydrostatic Pressure Resistance</b>	<b>Water Ponding Water Holdout</b>
Test Protocol:	ASTM E 2178 or ASTM E 283	ASTM E 96 Method B	AATCC 127	CCMC Technical Guide MF-07193

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Product:

Tyvek HomeWrap	.007 cfm/sf@1.57psf	58 perms	210 cm	Pass
Tyvek CommercialWrap	.001 cfm/sf@1.57psf	28 perms	280 cm	Pass
Typar HouseWrap	.016 cfm/sf@1.57psf	11.7 perms	865 cm	Pass

The above having been said, I'd like to quote Joe Lstiburek:

“Comparing housewraps. In general, it’s no use comparing one housewrap to another, at least in terms of water holdout characteristics. It’s how you use them that counts. The housewrap marketing people love to compare performance. But they do it based on a totally meaningless test. The standard test method is to fasten the housewrap over the bottom of a glass cylinder and see how high a column of water you can pour into the cylinder before the water comes through the wrap... That’s great, but in the real world we don’t build houses with little glass cylinders. We staple the housewrap to the wall and nail siding over it. We put thousands of holes in it. That means the real performance of the system is about the holes — and whatever the ads say about housewrap performance, when you put nail holes in them, they’re all the same.

“And for the system as a whole, the key thing to understand is that the air space [between the siding and the drainage plane] makes all the difference. Water is like a politician: It always does the easiest thing possible. Whatever housewrap you have, and however many nail holes there are in it, if water can go down, it will go down, instead of sideways through the nail holes. As long as there is an air space, every housewrap works and every felt paper works. So forget about comparing housewraps: Make sure there’s an air space, and then concentrate on the flashings.”

Given that the purpose of the housewrap is not to “hold out” water or to resist hydrostatic pressure, a housewrap that has better water vapor transmission is a safer choice because it is better at drying if it

does get wet. Hence, I would prefer the Tyvek products to the Tytar product listed above. The Commercial Wrap is a thicker, tougher product, more suitable to commercial applications and applications with high winds. You give up some of the drying capability for toughness.

Also, note that housewraps are designed to be used with a siding to hold the housewrap against the underlying sheathing at frequent intervals, such as with clapboards. Also housewrap should not be used with brick veneer because brick absorbs large amounts of water and when the sun hits it the moisture is driven into the building if there is no vapor retarder on the outer face of the backup wall. This is especially true if the building is air conditioned, because the air conditioning increases the thermal gradient driving the moisture inwards. The use of housewrap with metal panels, etc. is also questionable, in my opinion, due to the question of whether the air barrier membrane (the housewrap) is adequately secured to the backup wall, since it will be taking the full negative force of the wind.

So, to quote Joe Lstiburek again, the four fundamental requirements are:

1. "Drainage plane: ...Every single flashing must tie into the drainage plane and dump on top of it, not behind it. There are no exceptions: One reverse lap or unflashed penetration can ruin your whole wall.
2. "Drainage space
3. "Flashings [see above]
4. "Weep holes"