



Building to Resist Bulk Water Penetration

Background

Tyvek® HomeWrap® is used as an air infiltration barrier and secondary weather resistive membrane when applied in exterior walls. The unique properties of Tyvek® allow it to be resistant to liquid water while allowing water vapor to evaporate out of the wall cavity.

This technical information bulletin has been written to provide a better understanding of how to use Tyvek® HomeWrap® to optimize its performance as a secondary weather resistive membrane. Since the exterior siding serves as the primary weather resistive barrier, it is most important that its installation be done properly with appropriate caulking and flashing.

Best Protection

For maximum protection versus bulk water penetration, a system combining a quality exterior facade, a good secondary weather resistive membrane and an exterior sheathing, with particular attention to proper installation of each component is recommended.

Designs with No Exterior Sheathing

In a system where no exterior sheathing is used and Tyvek® is installed directly over the wall studs, exterior facade materials should be selected to insure maximum protection against water intrusion. Careful workmanship installing each component of the wall system is also most important.

Secondary Weather Resistive Membranes

When specifying a secondary weather resistive membrane, two properties are most important: first, the membrane must minimize penetration of water and second, it must maintain its integrity during installation, i.e., remain free from breaks and holes. Among the alternative products available for this application, (papers, woven and non-woven sheets, and films) Tyvek® has the best combination of properties to meet these requirements.

TABLE 1: HYDROHEAD

Hydrostatic head tests based on AATCC 127

Tyvek®	>210 cm
#15 felt (9.4lbs/100sq.ft)	52*cm
10 min Grade D building paper	93 cm
Perforated housewraps	10–27 cm

Hydrohead is a measure of the height of a water column, or the water pressure needed to penetrate a membrane. It is a good measure of a product's performance as a secondary weather resistive membrane. Tyvek® HomeWrap® provides four times the protection of #15 felt and more than twice the protection of Grade D building paper. Perforated housewraps have very low hydrohead values as indicated in Table 1.

TABLE 2: TEAR PROPERTIES

Trapezoid Tear ASTM-D1117

Tyvek®	6.0 lbf
#15 felt (9.4lbs/100sq.ft)	2.0 lbf
10 min Grade D building paper	2.0 lbf



The miracles of science™

It is also important that a secondary weather resistive membrane remain free from holes and breaks during installation. To insure the membrane maintains its integrity, it must have good tear resistance properties. Tyvek® has tear properties much higher than #15 felt and Grade D building paper, thus reducing the risk of water intrusion from accidental tears that may occur during installation.

It should also be noted that surfactants can affect the water holdout performance of all secondary weather resistive barriers. A certain amount of water penetration can also be expected around holes from mechanical fasteners used to install various components of the wall system. Use of exterior sheathing helps reduce these problems and maximizes bulk water resistance of the wall systems.

When no exterior sheathing is used, careful selection and installation of exterior facade materials and secondary weather resistive membrane is important.

**FOR MORE INFORMATION
PLEASE CALL 1-800-44-TYVEK**

www.tyvek.com

©2004 by E.I. du Pont de Nemours and Company, Inc., all rights reserved.
Tyvek®, HomeWrap®, the DuPont Oval, CommercialWrap®, The miracles of science™ and DuPont™ are registered trademarks or trademarks of E.I. du Pont de Nemours and Company, Inc.

K05033 (09/04)

DuPont™
Tyvek®
HomeWrap®



The miracles of science™