

DuPont™ Tyvek® Water-Resistive Barriers Installation Guidelines

FOR OPEN STUD CONSTRUCTION



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Applicable Products

Water-Resistive Barriers (WRB)

PRODUCT	DIMENSIONS	AREA
DuPont™ Tyvek® HomeWrap®	3 ft x 100 ft	300 sq ft
	3 ft x 165 ft	495 sq ft
	5 ft x 200 ft	1,000 sq ft
	9 ft x 100 ft	900 sq ft
	9 ft x 150 ft	1,350 sq ft
	10 ft x 100 ft	1,000 sq ft
	10 ft x 150 ft	1,500 sq ft
DuPont™ Tyvek® StuccoWrap®	5 ft x 200 ft	1,000 sq ft
DuPont™ Tyvek® DrainWrap™	9 ft x 125 ft	1,125 sq ft
	10 ft x 125 ft	1,250 sq ft
DuPont™ Tyvek® ThermaWrap™	5 ft x 150 ft	750 sq ft
	9 ft x 100 ft	900 sq ft

Tapes

PRODUCT	TYPE	ROLLS/CASE
DuPont™ Tyvek® Tape	2" Bulk Pack	36
	3" Bulk Pack	24
	Dispenser	
DuPont™ Tyvek® Metalized Tape	2" x 100' Rolls	12

Required Materials

- DuPont™ Tyvek® Water-Resistive Barrier
- DuPont™ Tyvek® Tape
- DuPont™ Tyvek® Wrap Caps or Approved Fasteners (see step 3)
- Compatible Caulks and Sealants – See the DuPont Building Science Bulletin “Compatibility Guidelines for Building Sealants” for additional guidance.

Water-Resistive Barrier (WRB) Code Requirements

The 2006 International Building Code (Section 1403.2) and the 2006 International Residential Code (Section R703.1) require a water-resistive barrier behind the exterior veneer. This water-resistive barrier must be equivalent to ASTM D226 Type 1 #15 Felt. DuPont™ Tyvek® water-resistive barriers exceed the performance of ASTM D226 felt and are recognized as water-resistive barriers by the following code evaluation reports:

- ICC-ES Legacy Report ER-4000: DuPont™ Tyvek® HomeWrap®, DuPont™ Tyvek® StuccoWrap®, DuPont™ Tyvek® DrainWrap™
- ICC-ES Legacy Report 98-46: DuPont™ Tyvek® HomeWrap®, DuPont™ Tyvek® StuccoWrap®, DuPont™ Tyvek® DrainWrap™
- ICC-ES Legacy Report NER-642: DuPont™ Tyvek® HomeWrap®, DuPont™ Tyvek® StuccoWrap®, DuPont™ Tyvek® DrainWrap™
- ICC-ES Legacy Report 95105D: DuPont™ Tyvek® HomeWrap®, DuPont™ Tyvek® StuccoWrap®
- ICC-ES ESR-1993: DuPont™ Tyvek® ThermaWrap™

General Instructions

If you want to install windows and doors prior to the water-resistive barrier, please refer to the DuPont™ Flashing Systems Installation Guidelines, Flashing **BEFORE** water-resistive barrier section which will direct you back to this guide at the appropriate step.

If the house has windows and doors already installed and they are flashed **be sure to integrate the WRB by following the DuPont™ Flashing Systems Integration section in this guide.**

Note: If DuPont™ FlexWrap™ and apron are used, install the WRB under the apron with DuPont™ Tyvek® and ensure proper shingling. If a non-self adhering sill flashing product is used, please maintain proper shingling.

Cover all of the exterior of the building including attics, dormers and gable ends. Install all water-resistive barriers, window flashings and tape in proper shingle fashion with upper layers covering lower ones.

Use sharp tools to cut all materials. DuPont™ Tyvek® water-resistive barriers can be cut with a sharp utility knife.

Special Considerations

DuPont™ Tyvek® StuccoWrap™ and DuPont™ Tyvek® DrainWrap™ shall be installed with drainage grooves vertical, going up and down.

To get the maximum effective R-Value benefits of DuPont™ Tyvek® ThermaWrap™ it must be installed with the shiny, metallic side facing towards a clear ¾" airspace and in accordance with the DuPont™ Tyvek® installation guidelines. Without an airspace, Tyvek® ThermaWrap™ will still act as a water-resistive barrier.

For traditional stucco exteriors the silver side of DuPont™ Tyvek® ThermaWrap™ should be facing the interior wall, even over shear wall, when the majority of the facade is stucco in open stud construction. To improve the thermal performance of your wall system, it is recommended that Tyvek® ThermaWrap™ be installed with an airspace (3/4" is recommended for maximum results).

DuPont requires that DuPont™ Tyvek® be covered within 4 months (120 days) of its installation.

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Installation Instructions

Start at the bottom of the structure to ensure proper shingling occurs throughout the installation. Proper shingling is required to provide for water shedding and to prevent water entering the wall system.

STEP 1

UNWRAP roll at corner, leaving 6" to 12" inches vertical overlap.

Printed stud marks are available on some DuPont™ Tyvek® products to aid in aligning with the studs. (e.g. studmarks are 8" apart for DuPont™ Tyvek® HomeWrap®)

Note: When using DuPont™ Tyvek® ThermaWrap™ under traditional and 1-coat stucco exteriors install silver side facing towards studs.

STEP 2

Roll should be plumb. Bottom roll edge should extend over sill plate interface at least 2". For maximum air leakage reduction (when installing as an air barrier), seal wrap at the bottom of the wall with sealant, DuPont™ Tyvek® Tape, or DuPont™ StraightFlash™. Extend to bottom of sill plate for slab on grade foundations. For stucco exteriors integrate with weep screed.

STEP 3

Secure DuPont™ Tyvek® water-resistive barrier to the stud. Fasteners should be spaced no closer than 6" and no further than 18" on vertical and horizontal stud lines. Use washer head fasteners such as DuPont™ Tyvek® Wrap Caps (nails, screws, staples). Wide staples with a 1.0 inch minimum crown can also be used except when installing DuPont™ Tyvek® over foam sheathing.

STEP 4

Unroll directly over windows and doors. Upper layer of water-resistive barrier should overlap bottom layer of WRB by a minimum of 6".

The DuPont™ Tyvek® water-resistive barrier shall be integrated with proper shingling with window flashings. If DuPont™ FlexWrap™ and apron are used, install the water-resistive barrier under the apron to ensure proper shingling. If non-self adhering sill flashing is used, install the water-resistive barrier under the bottom of the sill flashing to maintain proper shingling.

STEP 5

All vertical seams should be taped with DuPont™ Tyvek® Tape – For maximum air penetration resistance (when installing as an air barrier) all horizontal seams shall also be taped.

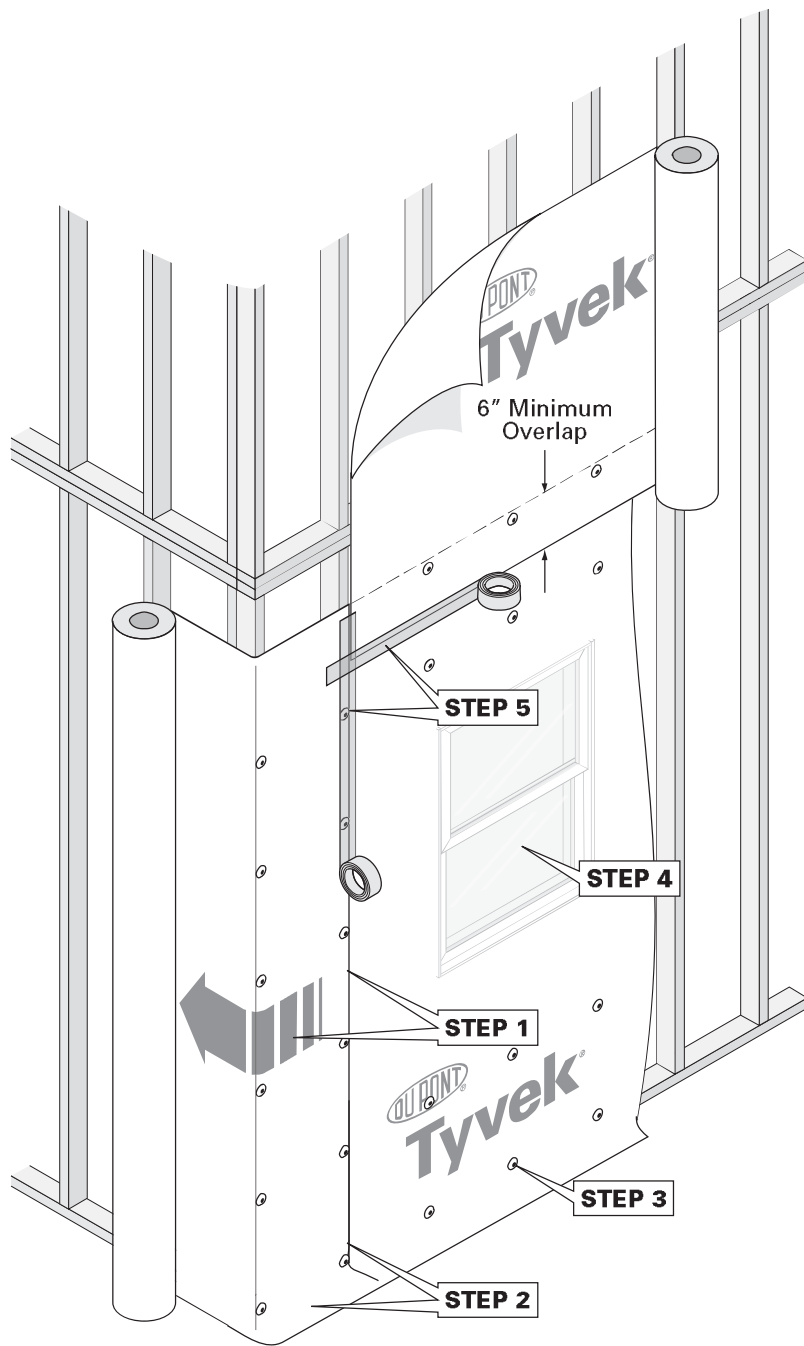
Taping all vertical and horizontal seams is part of the requirement to obtain the DuPont™ Tyvek® Products Material and Labor Residential 10-year Limited Warranty.

Recommend three inch (3") DuPont™ Tyvek® Tape when taping horizontal laps for DuPont™ Tyvek® StuccoWrap™ and DuPont™ Tyvek® DrainWrap™. DuPont™ Tyvek® Metalized Tape is required for taping DuPont™ Tyvek® ThermaWrap™ except when installing under traditional and 1-coat stucco exteriors with the silver side facing towards the studs.

STEP 6

If windows and doors have not been installed reference DuPont™ Flashing Systems Installation Guidelines to prepare the rough opening.

If windows and doors are already installed and flashed, then follow the DuPont™ Flashing Systems Integration steps on page 6 to tie the water-resistive barrier into the flashing.



DuPont™ Tyvek® Water-Resistive Barriers Installation Guidelines for Open Stud Construction

DuPont™ Flashing Systems Integration

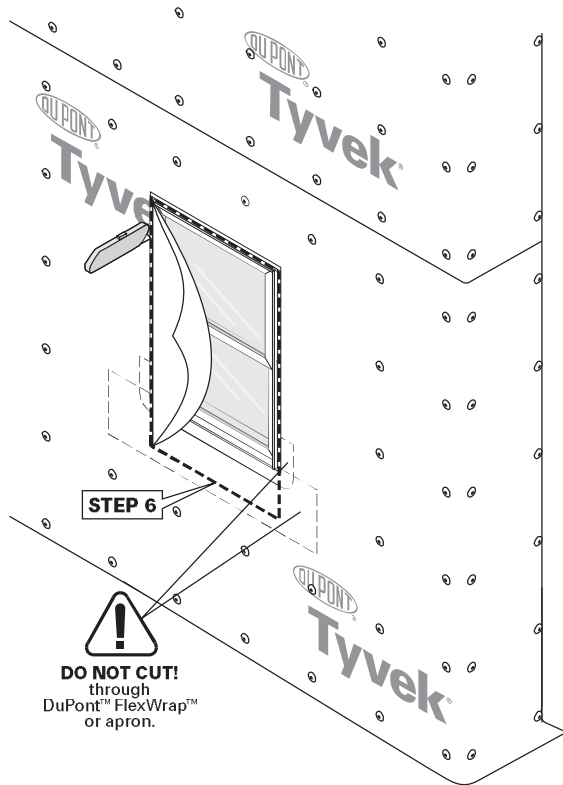
If windows and doors have not been installed reference the DuPont™ Flashing Systems Installation Guidelines to prepare the rough opening.

If windows and doors are already installed and flashed, then follow these last 2 integration steps to tie the water-resistive barrier into the flashing.

STEP 1

Verify that the DuPont™ Tyvek® is properly shingled with the bottom of the apron (sill flashing).

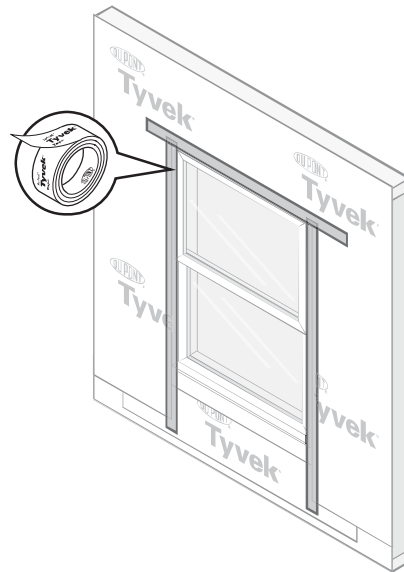
Cut as shown to expose window and apron (sill flashing). **Do not cut through apron.**



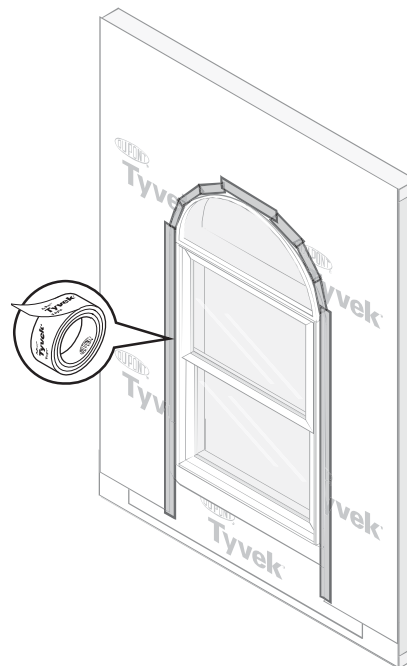
STEP 2

For maximum air penetration resistance, tape all seams as shown. **DO NOT TAPE** at bottom of window.

For Rectangular windows



For Roundtop windows



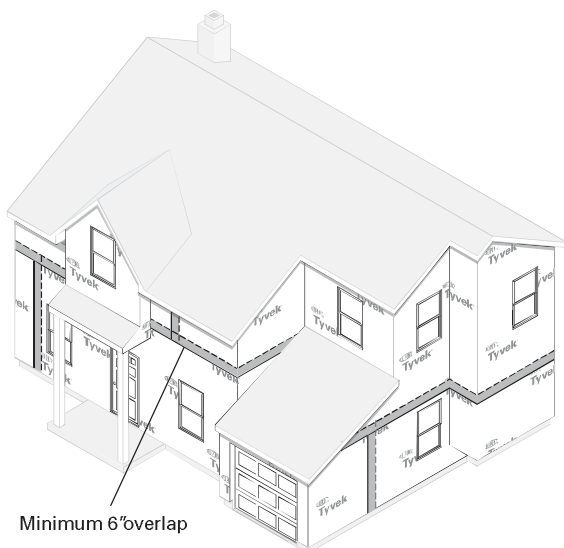
Continuity

Terminations

It is important to maintain the continuity of the water-resistant barrier from top to bottom with proper shingling. Continue wrapping all the way up the structure. The entire wall surface shall be wrapped, including unconditioned spaces.

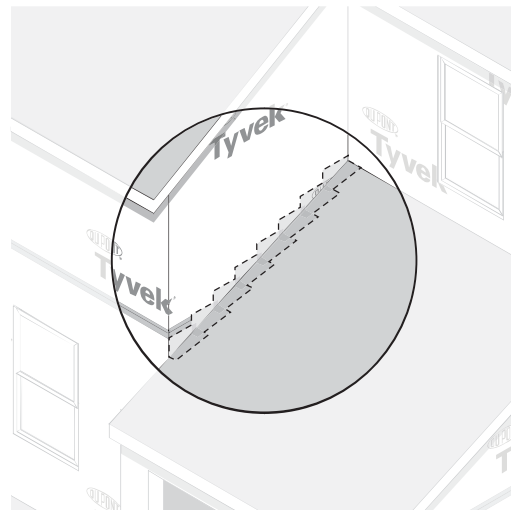
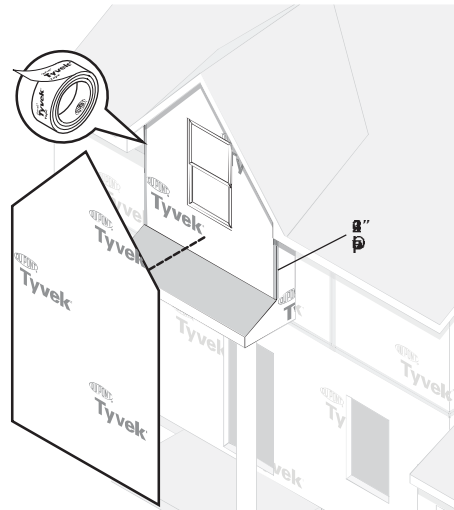
Lap DuPont™ Tyvek® over all flashing (e.g. wall to roof intersections and thru-wall flashings).

Weep screeds and expansion joints need to be integrated with flashings and the water-resistant barrier.



Gable End

Continue to wrap and cut away the excess WRB to completely cover the Gable End.



Lap DuPont™ Tyvek® over all flashing (e.g. wall to roof intersections and thru-wall flashings).

Cantilever Floor

Wrap the DuPont™ Tyvek® under and up the Cantilever floor and fold the DuPont™ Tyvek® up the sides of the Cantilever wall a minimum of 6". Tape all corners. Top layer of WRB should go over bottom layer a minimum of 6".

Note: Get the inside corner as tight as possible using a 1x4 or similar.

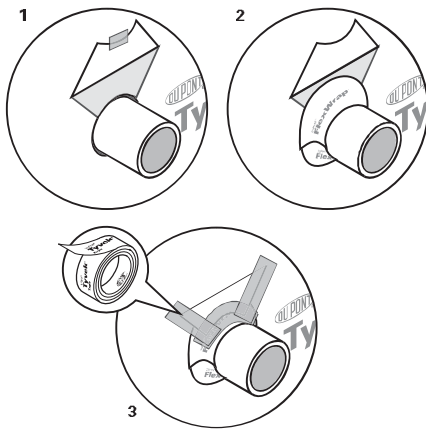
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Penetrations

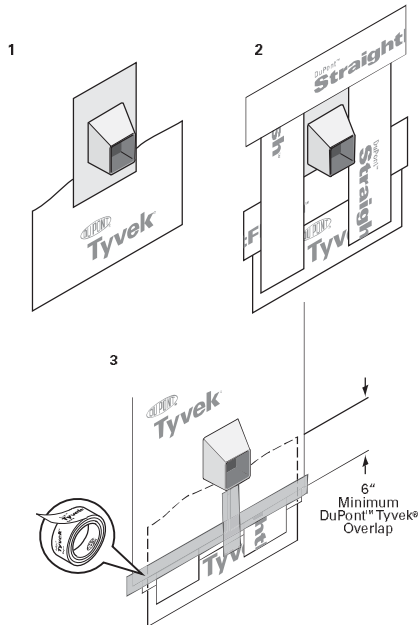
There are many types of penetrations including dryer vents, bathroom exhaust fans, exterior electrical outlets, exterior lights, gas lines, etc.

Seal the DuPont™ Tyvek® around all electrical, HVAC and plumbing penetrations with sealant, DuPont™ Tyvek® Tape, or DuPont™ Flashing Systems products.

Start taping or flashing at bottom of penetrations, shingling upper tape over bottom tape.



Products that have flanges should be integrated into the water-resistive barrier using DuPont™ Tyvek® Tape or DuPont™ Flashing Systems products.

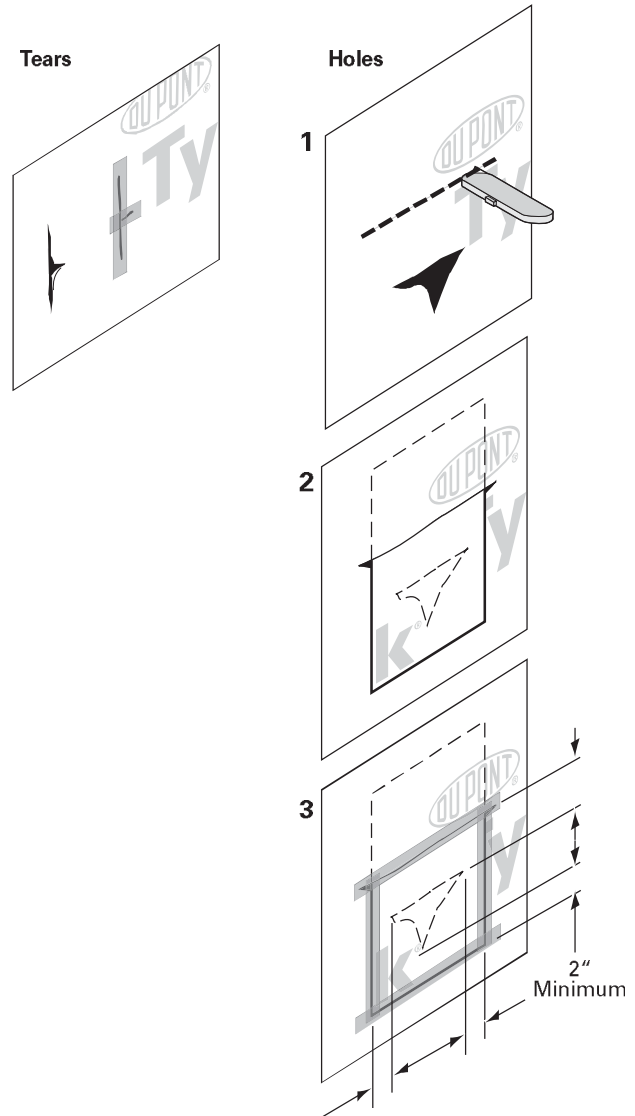


Handling Tears and Holes

During the course of installing the WRB, minor tears may occur. Be sure to tape all tears. Tears can easily be covered with DuPont™ Tyvek® Tape (2" or 3") or DuPont™ Flashing Systems products.

Larger holes (greater than 1") may require you to cut a piece of DuPont™ Tyvek® WRB to cover the hole. Keep in mind shingling.

Make a cut 2" above the hole and extending a minimum of 2" on each side of the hole. Measure and cut a piece of DuPont™ Tyvek®. Tuck the cut piece of DuPont™ Tyvek® underneath the tear. Tape along the perimeter by starting at bottom of tear, shingling Upper tape over bottom tape.



Façade Considerations

Water-resistive barrier performance is dependent upon the ability of the façade to drain. You must consider the following for specific façades.

Stucco

When stucco is installed over wood-based sheathing the 2006 International Building Code (Section 2510.6) and the 2006 International Residential Code (Section R703.6.3) require “a water-resistive vapor-permeable barrier with a performance at least equivalent to two layers of Grade D paper” or a layer of water-resistive barrier which is separated from the stucco by an “intervening layer”. When DuPont™ Tyvek® water-resistive barriers are used behind stucco they should be separated from the stucco by second layer of DuPont™ Tyvek® water-resistive barrier, a layer of Grade D building paper, felt, rigid foam board or the paper backing of paper-backed lath. The first layer (directly over sheathing or studs) serves as the wall system’s water-resistive barrier and is integrated with window and door flashings, the weep screed at the bottom of the wall and any through-wall flashings or expansion joints. Lath shall be installed over the intervening layer in accordance with ASTM C1063-03 Standard Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster and applicable codes. Rigid foam board, when installed over DuPont™ Tyvek® water-resistive barrier as an intervening layer, will provide enhanced structural support to the DuPont™ Tyvek® layer and if installed within 24 hours of the DuPont™ Tyvek® layer may reduce the required number of fasteners used for the attachment of the DuPont™ Tyvek® water-resistive barrier.

Brick

The 2006 International Residential Code (Section R703.7.4.2) requires a minimum 1 inch airspace separating the brick from the water-resistive barrier. The Brick Industry Association recommends a 1 inch air-space in front of wood stud construction and a 2 inch air-space in front of steel stud construction. Consistent with these requirements and recommendations, DuPont™ Tyvek® water-resistive barriers shall be separated from the brick veneer by a minimum 1 inch air-space. Window and door flashing, and through-wall flashing shall be integrated with the DuPont™ Tyvek® layer ensuring proper shingling. For maximum moisture management and drying of the wall system the airspace in front of the DuPont™ Tyvek® shall be vented to the exterior at the top and bottom of the wall. Some types of brick ties will act as additional fasteners for water-resistive barriers, and, if installed within 24 hours of the DuPont™ Tyvek® layer may reduce the required number of fasteners used for the initial attachment of the DuPont™ Tyvek® water-resistive barrier.

Stone Veneer

The 2006 International Building Code (Section 1405.6) requires two layers of water-resistive barrier behind stone (natural, cultured, synthetic) veneers over wood frame construction. When used behind stone veneer, DuPont™ Tyvek® water-resistive barriers shall be installed in a similar manner as they are installed behind stucco. DuPont™ Tyvek® water-resistive barriers should be separated from the stone and mortar by a second layer of DuPont™ Tyvek® water-resistive barrier, a layer of grade D building paper, felt, rigid foam board or the paper backing of paper-backed lath. The first layer (directly over sheathing or studs) serves as the wall system’s water-resistive barrier and shall be integrated with window and door flashings, the weep screed at the bottom of the wall and any through-wall flashings or expansion joints.

Wood Siding

DuPont™ Tyvek® water-resistive barriers and wood siding shall be installed according to manufacturer’s instructions, industry standards and applicable codes. As recommended by the Western Red Cedar Lumber Association and U. S. Forest Product Laboratory, wood siding should be primed on all six sides before installation. In high exposure installations, enhanced drainage and water management may be provided by using DuPont™ Tyvek® DrainWrap™, by installing a drainage mesh over the water-resistive barrier or by creating rainscreen cladding with a larger airspace behind the siding using furring strips. If furring is installed over DuPont™ Tyvek® water-resistive barrier to create a rainscreen, the primary fastener spacing can exceed 18”.

Fiber Cement Siding

DuPont™ Tyvek® water-resistive barriers and fiber cement siding shall be installed according to manufacturer’s instructions, industry standards and applicable codes. In high exposure installations, enhanced drainage and water management may be provided by using DuPont™ Tyvek® DrainWrap™ by installing a drainage mesh over the water-resistive barrier or by creating rainscreen cladding with a larger airspace behind the siding using furring strips. If furring is installed over DuPont™ Tyvek® water-resistive barrier to create a rainscreen, the primary fastener spacing can exceed 18”.

Vinyl Siding

Vinyl Siding is installed directly over DuPont™ Tyvek® water-resistive barriers. Vinyl siding shall be installed in accordance with manufacturer’s instructions, industry standards and applicable codes, including ASTM D4756-06 Standard Practice for Installation of Rigid Poly(Vinyl Chloride) (PVC) Siding and Soffit.

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Technical Specifications

DuPont™ Tyvek® water-resistive barriers used in construction products is made from 100% flash spunbonded high density polyethylene fibers which have been bonded together by heat and pressure, without binders or fillers, into a tough, durable sheet structure. Additives have been incorporated into the polyethylene to provide ultraviolet light resistance. DuPont requires that DuPont™ Tyvek® water-resistive barriers be covered within four months (120 days) of installation.

DuPont™ Flashing Systems products are made from a synthetic rubber adhesive and a laminate of polyethylene film, elastic fiber, synthetic rubber adhesive, polyurethane adhesive, and a top sheet of flash spunbonded high density polyethylene fibers. Additives have been incorporated into these materials to provide ultraviolet light resistance. DuPont requires that DuPont™ Flashing Systems products be covered within four months (120 days) of installation.

Warning

DuPont™ Tyvek® water-resistive barriers are slippery and should not be used in any application where it will be walked on. In addition, because it is slippery, DuPont recommends using kickjacks or scaffolding for exterior work above the first floor. If ladders must be used, extra caution must be taken to use them safely by following the requirements set forth in ANSI Standards 14.1, 14.2 and 14.5 for ladders made of wood, aluminum, and fiberglass, respectively. DuPont™ Tyvek® is combustible and should be protected from a flame and other high heat sources. DuPont™ Tyvek® will melt at 275°F (135°C) and if the temperature of DuPont™ Tyvek® reaches 750°F (400°C), it will burn and the fire may spread and fall away from the point of ignition. For more information, call 1-800-44-Tyvek.

DuPont™ Flashing Systems products and their release paper are slippery and should not be walked on. Remove release paper from work area immediately. DuPont™ Flashing Systems products will melt at temperatures greater than 250°F (121°C). DuPont™ Flashing Systems products are combustible and should be protected from flame and other high heat sources. DuPont™ Flashing Systems products will not support combustion if the heat source is removed. However, if burning occurs, ignited droplets may fall away from the point of ignition. For more information, call 1-800-44-Tyvek.

Note

When installed in conjunction with other building materials, DuPont™ Flashing Systems products must be properly shingled with these materials, such that water is diverted to the exterior of the wall system. DuPont™ Tyvek® products are water-resistive barriers not the primary water barrier (the outer facade is the primary barrier). Contamination of any DuPont™ Tyvek® water-resistive barriers and building papers with building site chemicals which increase their wettability (e.g., surfactants) will adversely affect their water resistance and therefore, their contribution to the overall water resistance of the wall system. DuPont™ Tyvek® Weatherization Systems products are to be used as outlined in this installation guideline. DuPont™ Flashing Systems products are not suggested for use on roof windows. For superior protection against bulk water penetration DuPont suggests a system combining a quality exterior facade, a good secondary water-resistive barrier and an exterior sheathing, appropriate flashing materials and details; and high quality windows and doors with particular attention to proper installation of each component. In a system where no exterior sheathing is used and DuPont™ Tyvek® is installed directly over the wall studs, exterior facade materials should be selected to ensure maximum protection against water intrusion. Careful workmanship and proper installation of each component is very important.

DuPont believes this information to be reliable and accurate. The information may be subject to revision as additional experience and knowledge is gained. It is the user's responsibility to determine the proper construction materials needed.

For complete warranty information please see the full Warranty at www.Construction.Tyvek.com. To submit a warranty claim, please contact DuPont at www.Construction.Tyvek.com or call 1-800-44-Tyvek. Warranty coverage requires submission of proof of purchase of the DuPont™ Tyvek® at issue.

This information is not intended to be used by others for advertising, promotion or other publication for commercial purposes.

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



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