



Integrating DuPont Building Envelope Solutions Products with DuPont Exterior Continuous Insulation

For Single-Family Homes and Wood-Framed Residential Multi-Family Buildings Less Than 6 Stories

DuPont has both the products and the building science expertise to help builders meet the new code and certification requirements for building durable, long-lasting, high R-value walls that contribute to more energy-efficient and comfortable homes and multi-family buildings.

Introduction

The purpose of this bulletin is to provide guidance and information for integrating DuPont™ Tyvek® Water-Resistive and Air Barriers (WRB) and DuPont Self-Adhered Flashing Products with DuPont Exterior Continuous Insulation (CI) on Single-Family Homes and Wood-Framed Residential Multi-Family Buildings Less than 6 Stories. This bulletin contains information on the following:

- Applicable Products
- Installation Sequences and Window Flashing Considerations
- Fastening Requirements
- Interfaces Between Sheathing Materials
- Fire Warnings
- Sealing Penetrations
- Material Compatibility
- Remodeling with Existing Windows
- Façade Considerations
- Summary Table Page

Applicable Products

DuPont™ Tyvek® Water-Resistive and Air Barriers (WRB)

- DuPont™ Tyvek® HomeWrap®
- DuPont™ Tyvek® StuccoWrap®
- DuPont™ Tyvek® DrainWrap™
- DuPont™ Tyvek® ThermaWrap® LE
- DuPont™ Tyvek® CommercialWrap®
- DuPont™ Tyvek® CommercialWrap® D

DuPont Exterior Continuous Insulation (CI)

- DuPont™ Styrofoam™ Brand Extruded Polystyrene (XPS) Insulation*
- DuPont™ Thermax™ Brand Insulation*
- DuPont™ Tuff-R™ Polyisocyanurate Insulation*
- DuPont™ Super Tuff-R™ Polyisocyanurate Insulation*

DuPont Self-Adhered Flashing Products

- DuPont™ FlexWrap™ EZ
- DuPont™ FlexWrap™ (formerly DuPont™ FlexWrap™ NF)
- DuPont™ StraightFlash™
- DuPont™ Flashing Tape

*A former product of The Dow Chemical Company

Installation Sequences and Window Flashing Considerations for Wall Systems with a DuPont™ Tyvek® WRB and DuPont Exterior Continuous Insulation

To ensure optimum water management, the DuPont™ Tyvek® WRB should be installed on the same plane as the window flanges for easier integration with the flashing, which helps provide the most effective performance. In new construction, or in remodeling projects in which the existing windows will be replaced, the DuPont™ Tyvek® WRB can be installed under or over the DuPont Exterior Continuous Insulation based on whether the windows will be aligned with the exterior finished wall or recessed from it. When existing windows are not removed during a remodel project, the alignment of the windows is fixed (see *Remodeling with Existing Windows* on page 10 for more information).

Depending on the window's position relative to the CI, jamb extensions may be needed during window finishing. If extensions are located on the exterior, an exterior grade material should be used. Extensions in the exterior sill should be sloped to the outside.

The following installation sequences and diagrams are based on installation of integral flanged windows; however, the general concepts can be applied to integral flanged doors, brick mold windows and doors, and non-flanged windows and doors. Refer to the applicable *DuPont Self-Adhered Flashing Products Installation Guidelines* available at building.dupont.com for more information.

The following tables summarize several typical conditions and refer to the associated installation sequence and instructions that appear in Sections 1-5 on pages 3-7

Windows Installed BEFORE DuPont™ Tyvek® WRB

Placement of Window Relative to Finished Wall	Placement of Tyvek® WRB vs. DuPont Exterior Continuous Insulation (CI)	Bump Out Frame Installed at Rough Opening	Installation Considerations
Windows Aligned with the exterior wall	WRB OVER CI	YES*	SEE Section 1
Windows Recessed from the exterior wall	WRB UNDER CI	NO	SEE Section 2

Windows Installed AFTER DuPont™ Tyvek® WRB

Placement of Window Relative to Finished Wall	Placement of Tyvek® WRB vs. DuPont Exterior Continuous Insulation (CI)	Bump Out Frame Installed at Rough Opening	Installation Considerations
Windows Aligned with the exterior wall	WRB OVER CI	YES*	SEE Section 3
Windows Recessed from the exterior wall	WRB UNDER CI	NO	SEE Section 4
Windows Aligned with the exterior wall	WRB UNDER CI	YES	SEE Section 5

***NOTE:** When the WRB is installed OVER CI, and CI thickness does not exceed 1-1/2", wood buck bump out frames may not be required around the window rough opening depending on window manufacturer's requirements. If the window manufacturer does not require a wood buck bump out frame, DuPont recommends cutting the DuPont Exterior Continuous Insulation flush with the window rough opening. When installing the window, ensure that fasteners account for the thickness of the CI and are sufficient length to penetrate the framing per window manufacturer's requirements.

Windows Aligned with Exterior Finished Wall

In this case the Tyvek® WRB can be installed either under or over the CI.

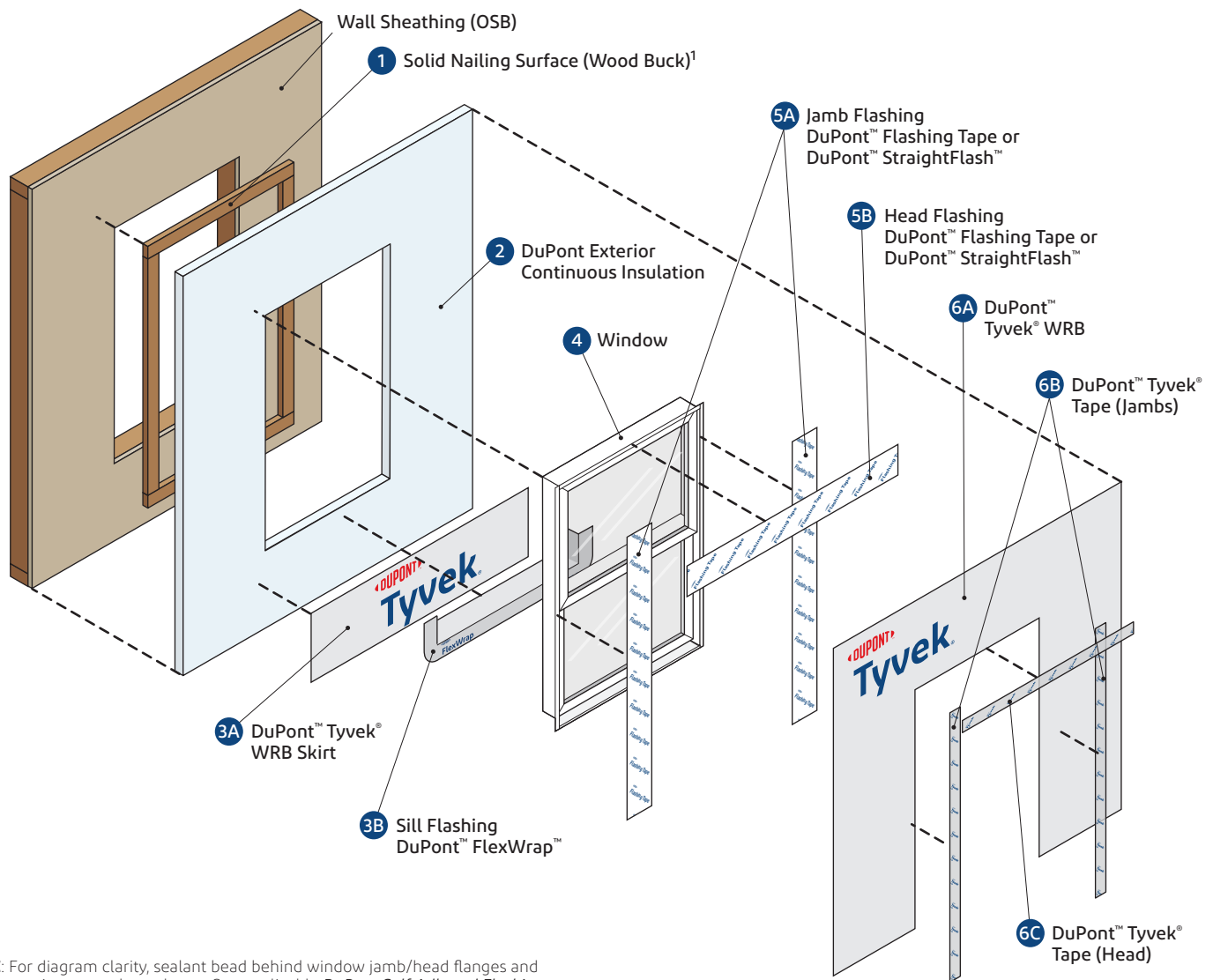
- When the WRB is installed UNDER the CI, a wood buck bump out must be installed around the window rough opening so the window flange will be aligned with the outside of the CI. Flashing details for a wood buck bump out are required. DuPont offers several methods for flashing bump outs. Refer to the applicable *DuPont Self-Adhered Flashing Products Installation Guidelines* available at building.dupont.com for more information.
- When the WRB is installed OVER the CI, prepare window and door openings before installing the CI and the WRB by first installing wood bucks the thickness of the CI to create a solid nailing surface around window and door openings.*

Windows Recessed from Exterior Finished Wall

In this case the Tyvek® WRB should be installed UNDER the DuPont Exterior Continuous Insulation. DuPont™ Tyvek® DrainWrap™, Tyvek® StuccoWrap®, or Tyvek® CommercialWrap® D is recommended for enhanced drainage. Windows should be flashed and integrated with the WRB. The window will be recessed from the finished wall and the surrounding CI product must be protected.

Section 1 – Windows Installed BEFORE the WRB & Windows Aligned with Exterior Wall: **WRB OVER CI**

If the windows will be installed BEFORE the DuPont™ Tyvek® WRB and will be aligned with the exterior wall, then the WRB must be installed OVER the DuPont Exterior Continuous Insulation. Follow these steps:



NOTE: For diagram clarity, sealant bead behind window jamb/head flanges and interior perimeter seal not shown. See applicable *DuPont Self-Adhered Flashing Products Installation Guidelines*.

1. Prepare window opening — install solid nailing surface around rough opening (wood buck).¹
2. Install DuPont Exterior Continuous Insulation.
3. Protect window sill with Tyvek® WRB apron and DuPont Flashing Products per current *DuPont Self-Adhered Flashing Products Installation Guidelines*.²
4. Install window per manufacturer's guidelines.
5. Flash window per current *DuPont Self-Adhered Flashing Products Installation Guidelines*.³
6. Install Tyvek® WRB per current *DuPont™ Tyvek® Water-Resistive and Air Barrier (WRB) Installation Guidelines*.

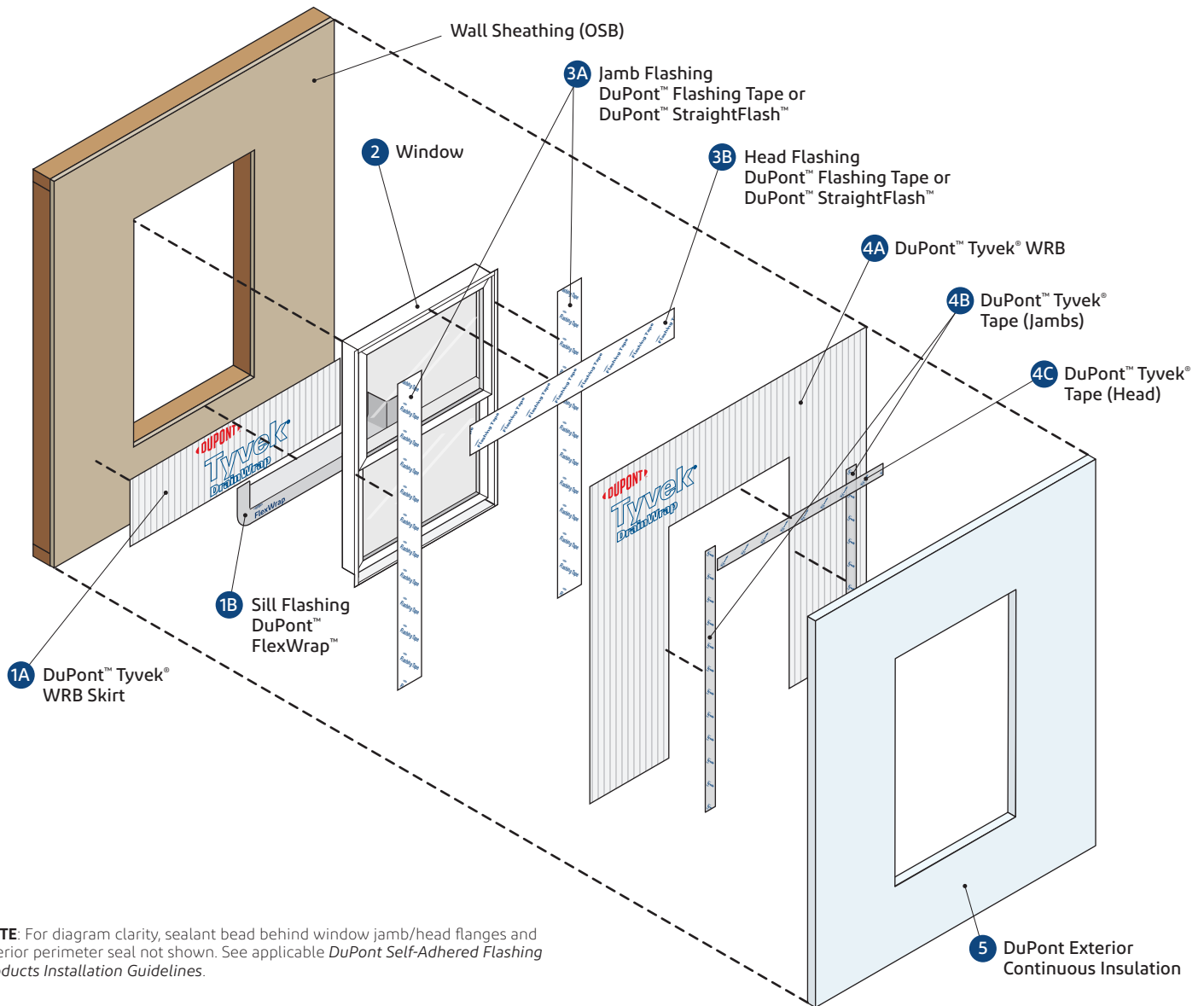
NOTE: When the WRB is installed OVER CI, and CI thickness does not exceed 1-1/2", wood buck bump out frames may not be required around the window rough opening depending on window manufacturer's requirements. If the window manufacturer does not require a wood buck bump out frame, DuPont recommends cutting the DuPont Exterior Continuous Insulation flush with the window rough opening. When installing the window, ensure that fasteners account for the thickness of the CI and are sufficient length to penetrate the framing per window manufacturer's requirements.

NOTE: *DuPont Self-Adhered Flashing Products Installation Guidelines* require 2" to 3" of adhesion of DuPont™ FlexWrap™ onto the face of the wall. Depending on the thickness of the CI, consider using 9" DuPont™ FlexWrap™.

³Reference: Integral Flanged Window (BEFORE Installation of DuPont™ Tyvek® WRB) or Brick Mold, Non-Flanged, and Field Applied Flanged Window (BEFORE Installation of DuPont™ Tyvek® WRB)

Section 2 – Windows Installed BEFORE the WRB & Windows Recessed from Exterior Wall: **WRB UNDER CI**

If the windows will be installed BEFORE the DuPont™ Tyvek® WRB and will be recessed from the exterior wall, then the WRB must be installed UNDER the DuPont Exterior Continuous Insulation. Follow these steps:



NOTE: For diagram clarity, sealant bead behind window jamb/head flanges and interior perimeter seal not shown. See applicable *DuPont Self-Adhered Flashing Products Installation Guidelines*.

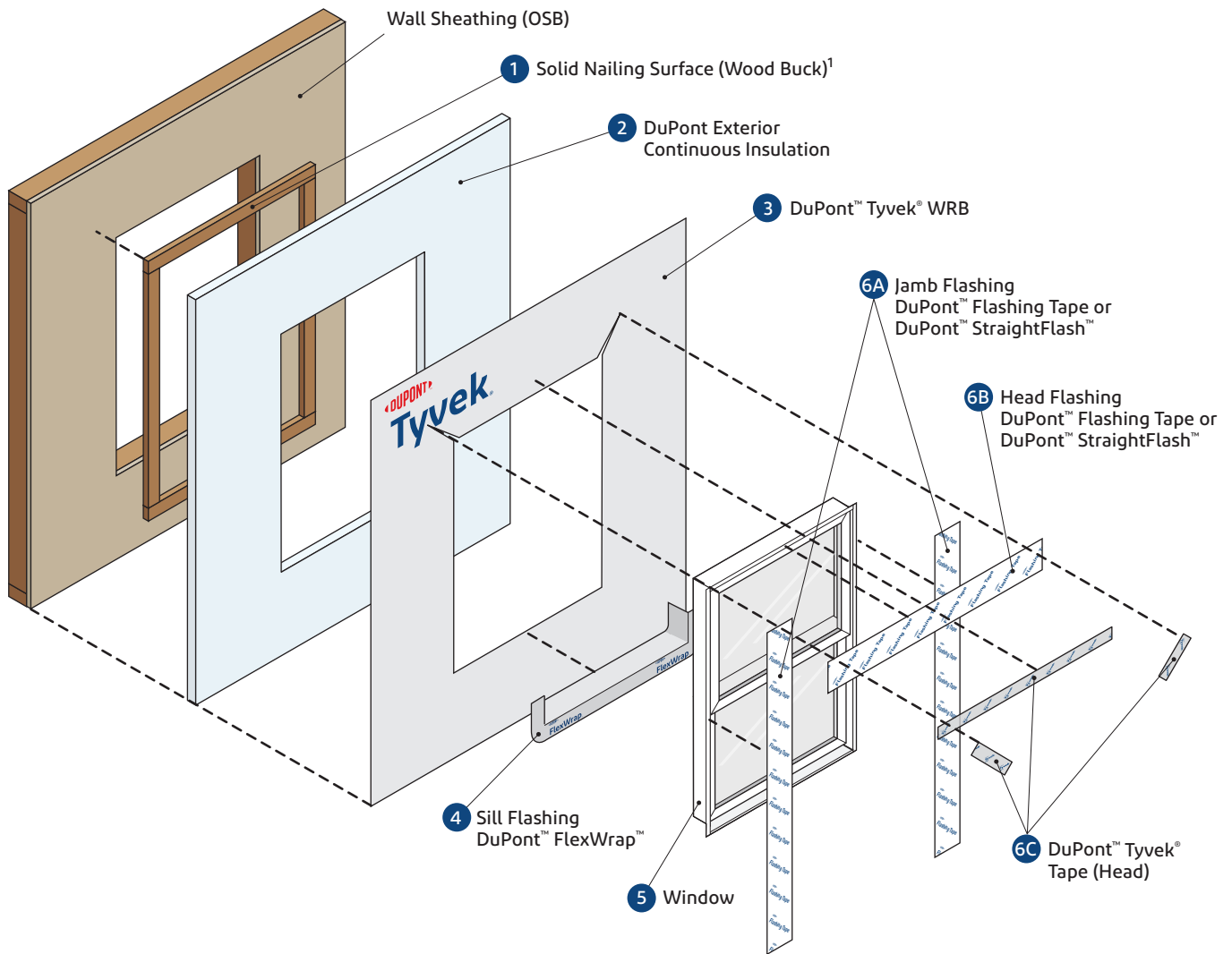
1. Protect window sill per current *DuPont Self-Adhered Flashing Products Installation Guidelines*.
2. Install window per manufacturer's guidelines.
3. Flash window per current *DuPont Self-Adhered Flashing Products Installation Guidelines*.¹
4. Install DuPont™ Tyvek® WRB per current *DuPont™ Tyvek® Water-Resistive and Air Barrier (WRB) Installation Guidelines*. DuPont™ Tyvek® DrainWrap™, Tyvek® StuccoWrap®, or Tyvek® CommercialWrap® D is recommended for enhanced drainage.
5. Install DuPont Exterior Continuous Insulation.

¹Reference: Integral Flanged Window (BEFORE Installation of DuPont™ Tyvek® WRB) or Brick Mold, Non-Flanged, and Field Applied Flanged Window (BEFORE Installation of DuPont™ Tyvek® WRB)

NOTE: Jamb extensions may be needed during window finishing depending on the window's position relative to the CI. For extensions located on the exterior, an exterior grade material should be used, and exterior sill extensions should be sloped to the outside.

Section 3 – Windows Installed AFTER the WRB & Windows Aligned with Exterior Wall: **WRB OVER CI**

If the windows will be installed AFTER the DuPont™ Tyvek® WRB and they will be aligned with the exterior wall, then the WRB must be installed OVER the DuPont Exterior Continuous Insulation. Follow these steps:



NOTE: For diagram clarity, sealant bead behind window jamb/head flanges and interior perimeter seal not shown. See applicable *DuPont Self-Adhered Flashing Products Installation Guidelines*.

1. Prepare window opening - install solid nailing surface (wood buck).¹
2. Install DuPont Exterior Continuous Insulation.
3. Install Tyvek® WRB per current *DuPont™ Tyvek® Water-Resistive and Air Barrier (WRB) Installation Guidelines*.
4. Protect window sill per current *DuPont Self-Adhered Flashing Products Installation Guidelines*.²
5. Install window per manufacturer's guidelines.
6. Flash window per current *DuPont Self-Adhered Flashing Products Installation Guidelines*.³

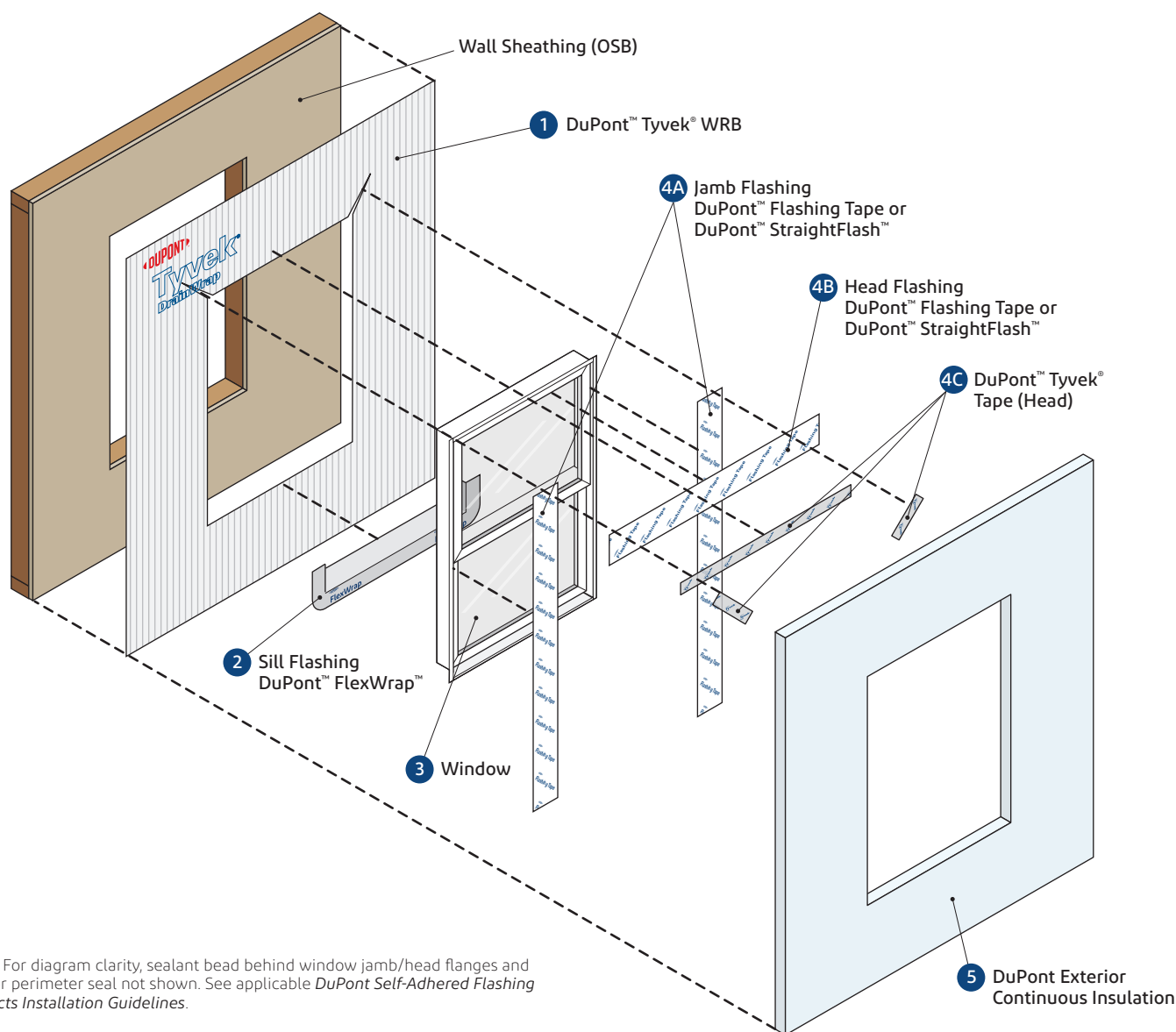
NOTE: When the WRB is installed OVER CI, and CI thickness does not exceed 1-1/2", wood buck bump out frames may not be required around the window rough opening depending on window manufacturer's requirements. If the window manufacturer does not require a wood buck bump out frame, DuPont recommends cutting the DuPont Exterior Continuous Insulation flush with the window rough opening. When installing the window, ensure that fasteners account for the thickness of the CI and are sufficient length to penetrate the framing per window manufacturer's requirements.

NOTE: *DuPont Self-Adhered Flashing Products Installation Guidelines* require 2" to 3" of adhesion of DuPont™ FlexWrap™ onto the face of the wall. Depending on the thickness of the CI, consider using 9" DuPont™ FlexWrap™.

³Reference: Integral Flanged Window (AFTER Installation of DuPont™ Tyvek® WRB) or Brick Mold, Non-Flanged, and Field Applied Flanged Window (AFTER Installation of DuPont™ Tyvek® WRB)

Section 4 – Windows Installed AFTER the WRB & Windows Recessed from Exterior Wall: **WRB UNDER CI**

If the windows will be installed AFTER the DuPont™ Tyvek® WRB and they will be recessed from the exterior wall, then the WRB must be installed UNDER the DuPont Exterior Continuous Insulation. Follow these steps:



1. Install Tyvek® WRB per current *DuPont™ Tyvek® Water-Resistive and Air Barrier (WRB) Installation Guidelines*. DuPont™ Tyvek® DrainWrap™, Tyvek® StuccoWrap®, or Tyvek® CommercialWrap® D is recommended for enhanced drainage.

2. Protect window sill per current *DuPont Self-Adhered Flashing Products Installation Guidelines*.

3. Install window per manufacturer's guidelines.

4. Flash window per current *DuPont Self-Adhered Flashing Products Installation Guidelines*.¹

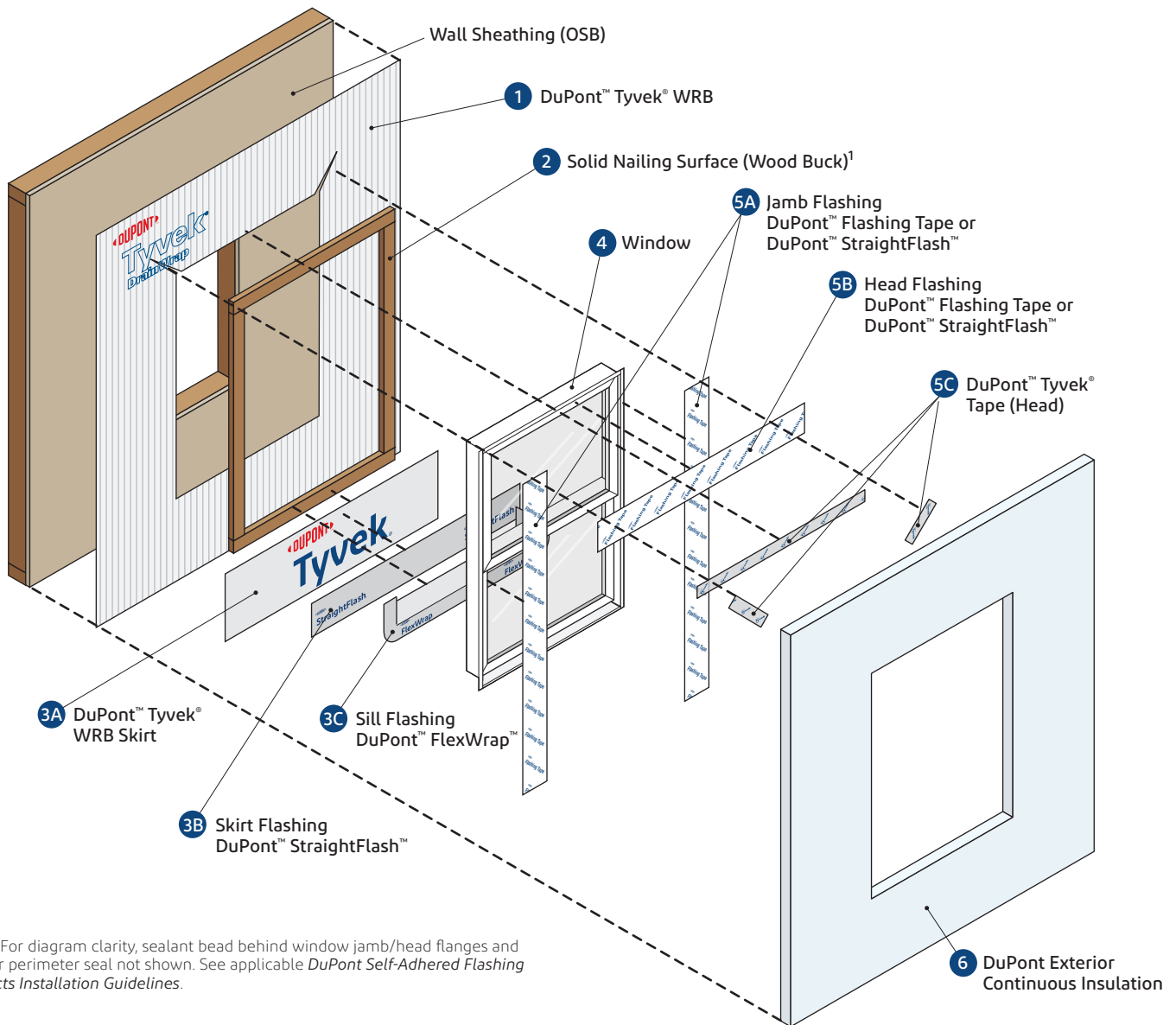
5. Install DuPont Exterior Continuous Insulation.

¹Reference: Integral Flanged Window (AFTER Installation of DuPont™ Tyvek® WRB) or Brick Mold, Non-Flanged and Field Applied Flanged Window (AFTER Installation of DuPont™ Tyvek® WRB)

NOTE: Jamb extensions may be needed during window finishing depending on the window's position relative to the CI. For extensions located on the exterior, an exterior grade material should be used, and exterior sill extensions should be sloped to the outside.

Section 5 – Windows Installed AFTER the WRB & Windows Aligned with Exterior Wall: **WRB UNDER CI**

If the windows will be installed AFTER the DuPont™ Tyvek® WRB and they will be aligned with the exterior wall, a wood buck bump out must be installed and the WRB is installed UNDER the DuPont Exterior Continuous Insulation. Follow these steps:



1. Install Tyvek® WRB per current DuPont™ Tyvek® Water-Resistive and Air Barriers Installation Guidelines. DuPont™ Tyvek® DrainWrap™, Tyvek® StuccoWrap®, or Tyvek® CommercialWrap® D is recommended for enhanced drainage.
2. Install wood buck bump out frame around window rough opening.
3. Protect bottom of wood bump out frame and window sill per current DuPont™ Self-Adhered Flashing Products Installation Guidelines.¹ **NOTE:** There are several methods for flashing a wood buck bump out. Refer to the applicable Installation Guidelines for more information.

4. Install window per manufacturer's guidelines.
5. Flash window per current DuPont Self-Adhered Flashing Products Installation Guidelines with a Wood Buck Bump Out.
6. Install DuPont Exterior Continuous Insulation.

NOTE: DuPont Self-Adhered Flashing Products Installation Guidelines require 2" to 3" of adhesion of DuPont™ FlexWrap™ onto the face of the wall. Depending on the thickness of the DuPont Exterior Continuous Insulation, consider using 9" DuPont™ FlexWrap™.

DuPont™ Tyvek® WRB Fastening Requirements

When installing Tyvek® WRBs UNDER DuPont CI products, follow the current, applicable *DuPont™ Tyvek® Water-Resistive and Air Barrier (WRB) Installation Guidelines* available at building.dupont.com.

Temporary Fastening as specified in the Installation Guidelines can be utilized when CI is installed over the WRB as soon as practically possible to maintain the integrity and performance of the WRB.

Rigid foam sheathing has little or no nail-holding power and should not be used as a nailing base for the WRB or cladding. When the WRB is applied over the CI, the WRB should be fastened through the CI into the framing or underlying nail-base sheathing. Nail lengths must account for the thickness of the applicable wall assembly components at the time of attachment to secure to the framing as shown in Figures 1 and 2. Fastener spacing should be followed per the applicable *DuPont™ Tyvek® Water-Resistive and Air Barrier (WRB) Installation Guidelines*. Avoid over-driving nails, which can result in dimpling of the siding due to the compressible nature of the CI. Extra caution is necessary if power-driven nails are used for attachment.

Figure 1: New Construction – WRB UNDER CI

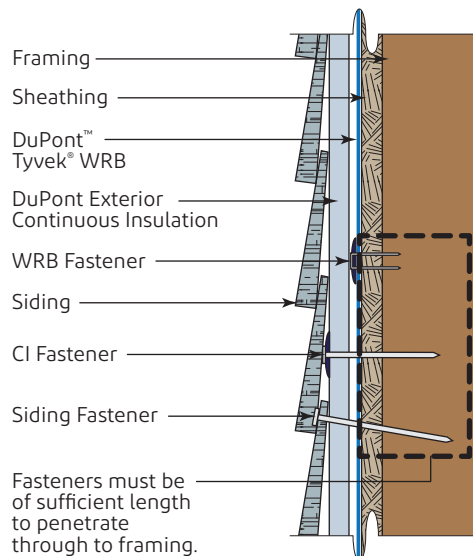
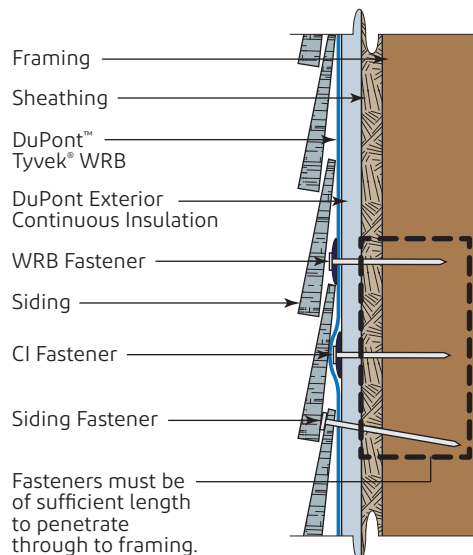


Figure 2: New Construction - WRB OVER CI



DuPont Exterior Continuous Insulation Fastening Requirements:

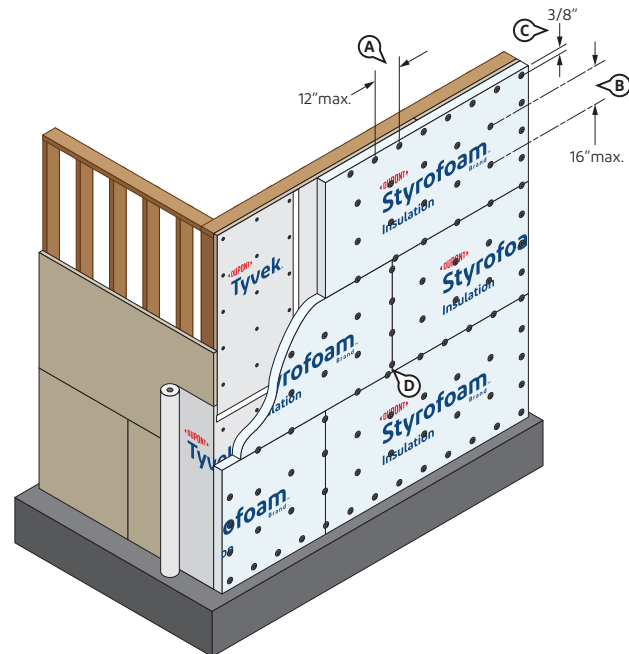
When installing DuPont Exterior Continuous Insulation Products, secure insulation boards to framing with printed side facing to the exterior. Insulation boards may be installed horizontally or vertically. Abut boards tightly together, ensuring vertical board joints align with studs. Common practice is to stagger boards, but it is not required.

Insulation boards can be installed using 3/8" head galvanized nails, 1-inch crown galvanized staples, or 1-inch head plastic cap nails or equivalent fasteners long enough to penetrate framing a minimum of 3/4 inch.

Refer to Figure 3. Fasten insulation boards maximum 12" on center at wall perimeters (A), and fasten insulation boards maximum 16" on center into framing around openings and along stud lines in field of the wall (B). Set back perimeter fasteners 3/8" from board edges and ends (C).

For fasteners with caps/washers 1" in diameter or greater, one fastener can be used at the intersection of 2 boards, but use at least 2 fasteners at the intersection of 3 or more boards (D). For multi-family buildings, a larger cap may be necessary when using one fastener at the intersection of 2 boards. See the note below for when the number of fasteners per board can be reduced.

Figure 3: DuPont Exterior Continuous Insulation Products Fastening Schedule



NOTE: To ensure optimal thermal efficiency, minimize the total number of fasteners used to attach the DuPont Exterior Continuous Insulation product and the DuPont™ Tyvek® WRB. The number of fasteners is based on building performance specifications, type of fastener used, wall installation sequencing, and local weather conditions expected during the wall construction process. The CI may be installed with a reduced fastener schedule if the time between installation of the CI and WRB and the installation of the cladding is sufficiently brief and weather conditions are sufficiently mild, as determined by Project Construction Management. For installations of the Tyvek® WRB UNDER CI, the cladding should be installed before weather conditions arise that would require additional fastening for the CI. For WRB OVER continuous insulation installations, the WRB should be installed with the prescribed fasteners and schedule in the applicable *DuPont™ Tyvek® Water-Resistive and Air Barrier (WRB) Installation Guidelines* before weather conditions arise that would require additional fastening of the continuous insulation.

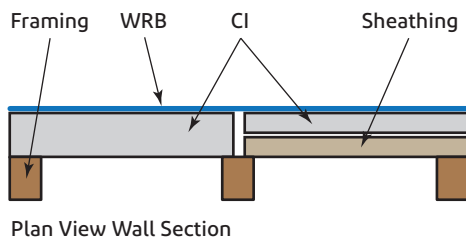
Interfaces Between Sheathing Materials

DuPont Exterior Continuous Insulation Products are not a structural material. Adequate diagonal and lateral bracing for structural framing is required in accordance with job and service load conditions and all applicable building codes. Follow local building codes and requirements for structural bracing when using DuPont Exterior Continuous Insulation Products as the primary sheathing over wood framing.

Where DuPont Exterior Continuous Insulation Products are installed directly to the studs without a structural sheathing, the continuous insulation product and thickness must be able to resist transverse wind loads per ANSI/SBCA FS 100.

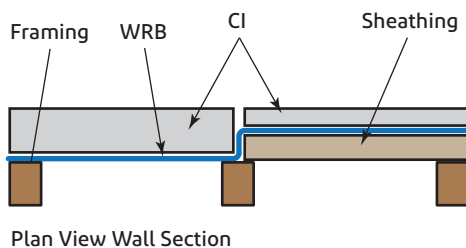
Many different types of bracing and sheathing materials may be used on a single dwelling. Continuity is maintained by integrating the WRB over the continuous insulation product, as shown in Figure 4.

Figure 4: WRB Continuity OVER CI



Care must be taken to maintain the continuity of the WRB across the dissimilar sheathing material interfaces. Figure 5 details an alternate example where a portion of a wall uses only continuous insulation in place of wood sheathing, and the other portion of the wall uses wood sheathing to provide structural support. The WRB should be installed continuously to integrate the sheathing materials and provide a continuous air and water-resistive barrier.

Figure 5: WRB Continuity UNDER CI



Fire Warnings

Consult a DuPont™ Tyvek® Specialist/DuPont Representative and/or your local building codes for additional details, as installation of 1/2" gypsum wallboard or other approved thermal barrier material on the inside surface of the wall may be required for fire protection when DuPont Exterior Continuous Insulation is used.

For multi-family buildings falling under the International Building Code (IBC), when DuPont Exterior Continuous Insulation Products are used on exterior walls of Types I, II, III, and IV, the assembly must comply with Section 2603.5 of the 2018 IBC. Section 2603.5 includes requirements for NFPA 285 compliant assemblies. For more information on NFPA 285 and code compliance, consult with a DuPont Representative.

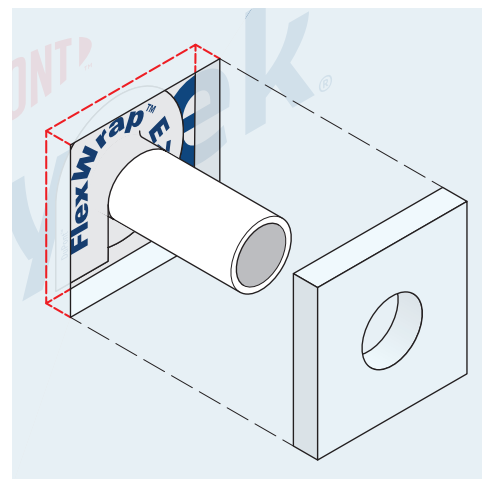
Sealing Penetrations

Mechanical, electrical, plumbing, and HVAC wall penetrations must be sealed to the Tyvek® WRB drainage plane. Follow guidance in the *DuPont™ Tyvek® Water-Resistive and Air Barrier (WRB) Installation Guidelines* for using DuPont Self-Adhered Flashing Products to seal the penetration to the WRB. The penetration details apply to installations where the WRB is installed either UNDER or OVER the CI.

Penetrations can often be made late in the construction process after the WRB and/or CI has been installed. There are different considerations depending whether the WRB is installed UNDER or OVER the CI:

- Sealing a penetration where the Tyvek® WRB is installed UNDER CI requires first carefully cutting and removing a section of the insulation around the perimeter of the penetration. The section of insulation cut away must be wide enough for the DuPont Self-Adhered Flashing Product to seal around the penetration and adhere to the WRB. Extra care must be taken when cutting the insulation to ensure the WRB behind the insulation is not damaged. Once the penetration is flashed or sealed per the applicable methods, the piece(s) of insulation that were cut away can be reinstalled.

Figure 6: Sealing Penetration - CI OVER WRB



- When the WRB is installed OVER the CI, the penetration can be sealed directly to the Tyvek® WRB since it is the outermost layer.

Material Compatibility

The integrity of the DuPont Exterior Continuous Insulation can be impacted by petroleum based solvents. Care should be taken to prevent contact between DuPont Exterior Continuous Insulation and these solvents. Wood siding is occasionally treated with water repellents or wood preservatives. If siding has been treated, check to ensure that the treatment is dry to avoid a chemical reaction with the CI or Tyvek® WRB. Sealants, primers/adhesives, and self-adhered flashings should be checked for compatibility with Tyvek® WRBs and DuPont Exterior Continuous Insulation prior to use. Refer to [Chemical Compatibility of Representative Building Sealants and Adhesives/Primers](#) for more information about chemical compatibility.

Remodeling with Existing Windows

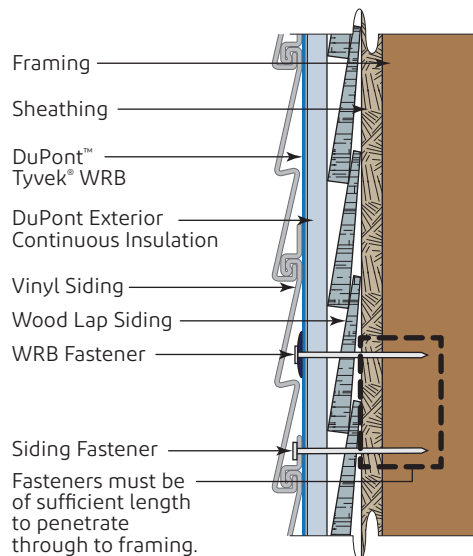
The most effective installation of DuPont Building Envelope Solutions Products is accomplished when the windows are installed on the same plane as the DuPont™ Tyvek® WRB.

However, for remodeling projects where the existing windows are not being replaced, the installer should examine the existing window flashing details and integrate them with the new WRB using sealant, tape and flashing so that water and air management are achieved. If there are signs of existing water leakage or damage, it's recommended that the windows be removed. Repair damaged materials, then install and flash the windows per the applicable *DuPont Self-Adhered Flashing Products Installation Guidelines*.

When installing additional layers of DuPont Exterior Continuous Insulation, the installer may choose to install the WRB either over or under the CI. The following items should be considered in making the decision:

- The placement of the WRB over or under the CI will impact how the WRB and existing flashing integration is accomplished.
- For remodeling projects where the existing siding is retained and leveling board is installed, the WRB should be installed over the CI.
- If the WRB is installed under the CI, consider using DuPont™ Tyvek® DrainWrap™, Tyvek® StuccoWrap®, or Tyvek® CommercialWrap® D for enhanced drainage.

Figure 7: Residing – WRB OVER CI



DuPont™ Tyvek® Specialist Network

A national group of highly trained field representatives is available to assist you with your installations. From the latest updates on building codes, to keeping up with current trends and challenges, your local DuPont™ Tyvek® Specialist can provide on-site consulting and training to help make sure the job gets done right.

Limited Warranty

DuPont™ Tyvek® Water-Resistive and Air Barriers, DuPont Flashing Products, and DuPont Exterior Continuous Insulation are backed by a Limited Warranty. Please refer to current Warranty documentation for more information.

DuPont™ Tyvek® Certified Installers

The DuPont Certified Installer Program is one more way to put the building science expertise of DuPont right at your fingertips. Your DuPont™ Tyvek® Certified Installer provides trained installation services to help ensure the building envelope has been properly sealed and maintained. To locate a certified installer in your area, please visit building.dupont.com.

Complete System of Products

For optimal protection on all your building projects, use the complete line of DuPont Building Envelope Solutions Products and DuPont Exterior Continuous Insulation Products:

DuPont™ Tyvek® Water-Resistive and Air Barrier (WRB)

- DuPont™ Tyvek® HomeWrap®
- DuPont™ Tyvek® CommercialWrap®
- DuPont™ Tyvek® CommercialWrap® D
- DuPont™ Tyvek® StuccoWrap®
- DuPont™ Tyvek® DrainWrap™
- DuPont™ Tyvek® ThermaWrap® LE

DuPont Exterior Continuous Insulation

- DuPont™ Styrofoam™ Brand Extruded Polystyrene (XPS) Insulation
 - DuPont™ Styrofoam™ Brand Scoreboard XPS Insulation*
 - DuPont™ Styrofoam™ Brand Square Edge Insulation*
 - DuPont™ Styrofoam™ Brand Tongue and Groove Insulation*
 - DuPont™ Styrofoam™ Brand UtilityFit™ XPS Insulation*
 - DuPont™ Styrofoam™ Brand Duramate™ Plus XPS Insulation*
- DuPont™ Tuff-R™ (ci) Polyisocyanurate Insulation
- DuPont™ Super Tuff-R™ Polyisocyanurate Insulation
- DuPont™ Thermax™ Brand Insulation

DuPont Self-Adhered Flashing Products

- DuPont™ FlexWrap™
- DuPont™ FlexWrap™ EZ
- DuPont™ StraightFlash™
- DuPont™ VersaFlange™ (formerly DuPont™ StraightFlash™ VF)
- DuPont™ Flashing Tape

Installation Accessories

- DuPont™ Tyvek® Tape
- DuPont™ Residential Sealant
- DuPont™ Tyvek® Wrap Cap Fasteners
- Great Stuff Pro™ Window & Door Polyurethane Foam Sealant*
- Great Stuff Pro™ Gaps & Cracks Polyurethane Foam Sealant*

*A former product of The Dow Chemical Company

Façade Considerations

Water-resistive barrier performance is dependent upon the ability of the facade to drain. The following must be considered for specific facades.

Stucco

When stucco is installed over wood-based sheathing, the 2018 International Building Code (Section 2510.6) requires a water-resistive vapor-permeable barrier with a performance at least equivalent to two layers of water resistive barrier complying with ASTM E2556, Type I, or a water resistive barrier which is separated from the stucco by an intervening, substantially nonwater-absorbing layer or drainage space. When stucco is installed over wood-based sheathing, the 2018 International Residential Code (Section R703.7.3) requires a water-resistive vapor-permeable barrier with a performance at least equivalent to two layers of Grade D paper or a water-resistive barrier which is separated from the stucco by an intervening, substantially nonwater-absorbing layer or designed drainage space. The individual layers shall be installed independently such that each layer provides a separate continuous plane and any flashing intended to drain to the water-resistive barrier is directed between the layers. DuPont™ Tyvek® WRBs used behind stucco should be separated from the stucco by a second layer of Tyvek® WRB, a layer of Grade D building paper, felt, rigid foam board or the paper backing of paper-backed lath. DuPont™ Tyvek® DrainVent™ Rainscreen can also be used as the intervening layer over the WRB. 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 Tyvek® WRB as an intervening layer, will provide enhanced structural support to the Tyvek® WRB and may reduce the required number of fasteners used for the attachment of the Tyvek® WRB if installed as soon as practically possible. DuPont™ Tyvek® StuccoWrap®, Tyvek® DrainWrap™ or Tyvek® CommercialWrap® D is recommended for this application.

Brick (or Other Stacked/Anchored Masonry Veneers)

The 2018 International Residential Code (Section R703.8.4) requires a nominal 1 inch airspace separating the brick from the water-resistive barrier (WRB). 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, Tyvek® WRBs shall be separated from the brick veneer by a nominal 1 inch air-space. Window and door flashing, and through-wall flashing shall be integrated with the Tyvek® WRB layer ensuring proper shingling. For maximum moisture management and drying of the wall system the airspace in front of the Tyvek® WRB 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 Tyvek® WRBs, and, if installed as soon as practically possible after the Tyvek® WRB, may reduce the required number of fasteners used for the initial attachment of the Tyvek® WRB.

Stone Veneer (or Other Adhered Masonry Veneers)

The 2018 International Building Code (Section 1404.7) requires two layers of air and water barrier behind stone veneers over wood frame construction. When used behind stone veneer, Tyvek® WRBs shall be installed in a similar manner as they are installed behind stucco. The Tyvek® WRB should be separated from the stone and mortar by a second layer of Tyvek® WRB, a layer of grade D building paper, felt, exterior continuous foam insulation or the paper backing of paper-backed lath. Tyvek® DrainVent™ Rainscreen can also be used as the intervening layer over the WRB. The first layer (directly over sheathing or studs) serves as the wall system's air and water barrier and shall be integrated with window and door flashings, the weep screed at the bottom of the wall and any through wall flashing or expansion joints. Lath shall be installed over the intervening layer (second 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. When exterior continuous foam insulation is used as the second layer, it is installed over the Tyvek® WRB. Tyvek® StuccoWrap®, Tyvek® DrainWrap™ or Tyvek® CommercialWrap® D is recommended for this application.

Wood Siding

The Tyvek® WRB 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. When installed over exterior continuous insulation, the Western Red Cedar Lumber Association and other wood siding manufacturers recommend that furring strips are used to create an air space between foam sheathing and siding. Other recommendations that should be followed to minimize potential problems are:

- Use thicker siding patterns in widths of 8 inches or less. Thick, narrow siding is more stable than thinner, wider patterns and better able to resist dimensional changes.
- Use kiln-dried siding over rigid foam sheathing.
- Proper pre-finishing is essential.
- Use light color finish coats to maximize heat reflection and reduce dimensional movement.
- Tyvek® StuccoWrap®, Tyvek® DrainWrap™ or Tyvek® CommercialWrap® D applied over the foam sheathing is recommended for this application.

In high exposure installations, enhanced drainage and water management may be provided by using Tyvek® StuccoWrap®, Tyvek® DrainWrap™ or Tyvek® CommercialWrap® D, by installing Tyvek® DrainVent™ Rainscreen or other drainage mesh over the water-resistive barrier, or by creating rainscreen cladding with a larger air space behind the siding using furring strips. If furring is installed over the Tyvek® WRB to create a rainscreen, the primary fastener spacing can exceed 18".

Fiber Cement Siding

DuPont™ Tyvek® WRBs and fiber cement siding shall be installed according to manufacturer's instructions and industry standards. In high exposure installations, enhanced drainage and water management may be provided by using DuPont™ Tyvek® StuccoWrap®, Tyvek® DrainWrap™ or Tyvek® CommercialWrap® D, by installing DuPont™ Tyvek® DrainVent™ Rainscreen or other drainage mesh over the water-resistive barrier, or by creating rainscreen cladding with a larger air space behind the siding using furring strips. If furring is installed over the Tyvek® WRB to create a rainscreen, the primary fastener spacing can exceed 18". In high wind areas at gable end walls, FEMA recommends fiber cement siding be installed over wood sheathing rather than over plastic foam sheathing. Tyvek® WRBs and fiber cement siding shall be installed according to manufacturer's instructions, industry standards and applicable codes.

Vinyl Siding

Vinyl Siding is installed directly over Tyvek® WRBs. Vinyl siding shall be installed in accordance with manufacturer's instructions, industry standards and applicable codes, including ASTM D4756-15 Standard Practice for Installation of Rigid Poly(Vinyl Chloride) (PVC) Siding and Soffit. In high wind areas at gable end walls, FEMA recommends vinyl siding be installed over wood sheathing rather than over plastic foam sheathing.

EIFS

Tyvek® WRBs and EIFS cladding shall be installed according to manufacturer's instructions and industry standards. In order to promote drainage, it is recommended that Tyvek® StuccoWrap®, Tyvek® DrainWrap™ or Tyvek® CommercialWrap® D be installed behind the exterior insulation. Window and door flashing, and through wall flashing shall be integrated with the Tyvek® WRB layer ensuring proper shingling. The successful installation and performance of EIFS cladding is dependent upon the proper design and construction of the adjacent materials and systems of the structure.

Metal Panel

Tyvek® WRBs and metal panel cladding systems shall be installed according to manufacturer's instructions and industry standards. DuPont™ StraightFlash™, DuPont™ Flashing Tape, or recommended alternate patch can be installed behind all metal installation brackets and hat-channels fasteners for additional air and water infiltration resistance. NOTE: The maximum in-service temperature for Tyvek® WRBs, DuPont Self-Adhered Flashing Products, and DuPont™ Tyvek® Fluid Applied Products is 180°F.

Considerations for DuPont™ Tyvek® WRB Installed UNDER and OVER DuPont Exterior Continuous Insulation

Topic	WRB UNDER CI	WRB OVER CI
Window Flashing Considerations	Window flashing must be integrated with WRB layer. DuPont™ Tyvek® DrainWrap™, StuccoWrap®, or CommercialWrap® D recommended. Windows may be aligned with exterior finished wall or recessed from it. For windows to be aligned with exterior wall, a wood buck bump out frame is required around window rough openings and bump out flashing details are required per the applicable <i>DuPont Self-Adhered Flashing Products Installation Guidelines</i> . If windows are recessed from exterior wall, exposed CI must be protected.	Window flashing must be integrated with WRB layer. Windows will be aligned with exterior finished wall. A wood buck bump out may be required around window rough openings; however if CI thickness does not exceed 1-1/2", bump out frames may not be required depending on window manufacturer's requirements. If the window manufacturer does not require a wood buck bump out frame, DuPont recommends cutting DuPont Exterior Continuous Insulation flush with the window rough opening. When installing the window, ensure that fasteners account for the thickness of the CI and are sufficient length to penetrate the framing per window manufacturer's requirements.
Fastening DuPont™ Tyvek® WRB	Follow applicable <i>DuPont™ Tyvek® Water-Resistive and Air Barrier (WRB) Installation Guidelines</i> . Temporary Fastening per applicable <i>DuPont™ Tyvek® Water-Resistive and Air Barrier (WRB) Installation Guidelines</i> is acceptable.	Cap fasteners must be used. Nail lengths must account for the thickness of the DuPont Exterior Continuous Insulation. Follow fastener schedule per applicable <i>DuPont™ Tyvek® Water-Resistive and Air Barrier (WRB) Installation Guidelines</i> .
Fastening DuPont Exterior Continuous Insulation	Install DuPont Exterior Continuous Insulation using 3/8" head galvanized nails, 1-inch crown galvanized staples, or 1-inch head plastic cap nails or equivalent fasteners long enough to penetrate framing minimum of 3/4 inch. Fasten insulation boards maximum 12" on center at wall perimeters and maximum 16" on center along stud lines in field of the wall and into framing around openings and. Set back perimeter fasteners 3/8" from board edges and ends. NOTE: The number of CI fasteners may be reduced depending on whether the WRB is installed under/over the CI, the type of fastener, wall installation sequencing, and job site weather conditions. For fasteners with caps/washers 1" in diameter or greater, one fastener can be used at the intersection of 2 boards, but use at least 2 fasteners at the intersection of 3 or more boards. For multi-family buildings, a larger cap may be necessary when using one fastener at the intersection of 2 boards.	
Fire Warnings	Local building codes may require 1/2" gypsum wallboard or other approved thermal barrier at inside surface of wall. Multi-family buildings of Types I-IV construction must comply with 2018 IBC Section 2603.5 and NFPA 285.	
Compatibility	Ensure sealants, primers/adhesives, self-adhered flashings, wood siding, etc. that come into contact with Tyvek® WRBs or with DuPont Exterior Continuous Insulation are chemically compatible and exhibit adequate adhesion (if applicable) for the intended use. Refer to Chemical Compatibility of Representative Building Sealants and Adhesives/Primers for more information about chemical compatibility.	
Cladding Attachment	Longer cladding fasteners required to secure per manufacturer's requirements, project specifications, and local code requirements.	
Sealing Penetrations	Penetrations must be sealed to the WRB. Additional steps are required to properly seal a penetration if it is added after DuPont Exterior Continuous Insulation has been installed over the WRB.	Penetrations must be sealed to the WRB. Penetrations can be sealed directly to the WRB since it is the outermost layer.

For more information visit
building.dupont.com
or call 1-833-338-7668



This bulletin is limited to the installation details outlined herein. Please refer to the applicable DuPont Performance Building Solutions Installation Guidelines available at building.dupont.com for details not included in this bulletin.

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