

DuPont Performance Building Solutions

# DuPont™ Tyvek® Water-Resistive and Air Barriers Residing Installation Guidelines

For Buildings Less Than 5 Stories and Low-Rise Multi-Family Residential Buildings Less Than 6 Stories.



February 2020

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## Applicable Products

### Water-Resistive Barriers (WRB)

| Product                                 | Dimensions                       | Area                       |
|---|----------------------------------|----------------------------|
| <b>DuPont™ Tyvek® HomeWrap®</b>         | 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<br>10 ft x 150 ft | 1,000 sq ft<br>1,500 sq ft |
| <b>DuPont™ Tyvek® StuccoWrap®</b>       | 5 ft x 200 ft                    | 1,000 sq ft                |
| <b>DuPont™ Tyvek® DrainWrap™</b>        | 9 ft x 125 ft                    | 1,125 sq ft                |
|   | 10 ft x 125 ft                   | 1,250 sq ft                |
| <b>DuPont™ Tyvek® ThermaWrap™ LE</b>    | 5 ft x 150 ft                    | 750 sq ft                  |
|   | 9 ft x 100 ft                    | 900 sq ft                  |
| <b>DuPont™ Tyvek® CommercialWrap®</b>   | 5 ft x 200 ft                    | 1,000 sq ft                |
|   | 10 ft x 125 ft                   | 1,250 sq ft                |
| <b>DuPont™ Tyvek® CommercialWrap® D</b> | 5 ft x 200 ft                    | 1,000 sq ft                |
|   | 10 ft x 125 ft                   | 1,250 sq ft                |

### Flashing Products

| Product  | Width  |
|--|--|
| <b>DuPont™ FlexWrap™ EZ</b>                              | 2.75 in  |
| <b>DuPont™ FlexWrap™</b> (Formerly DuPont™ FlexWrap™ NF) | 6 in<br>9 in   |
| <b>DuPont™ StraightFlash™</b>                            | 4 in<br>9 in   |
|  | <b>DuPont™ VersaFlange™</b> (Formerly DuPont™ StraightFlash™ VF) |
| <b>DuPont™ Flashing Tape</b>                             | 4 in<br>6 in<br>9 in<br>12 in                                    |

### Installation Accessories

| Product  | Type  | Quantity      |
|--|---|---------------|
| <b>DuPont™ Tyvek® Tape</b>   | 2" Bulk Pack                                | 36 rolls/case |
|  | 3" Bulk Pack                                | 24 rolls/case |
| <b>DuPont™ Tyvek® Metallized Tape</b>  | 2" x 100' Rolls                             | 12 rolls/case |
| <b>DuPont™ Tyvek® Wrap Cap Staples</b><br>or other cap staples for Stinger™<br>Cap Stapler | 7/8", 1-1/4", and 1-1/2" lengths            | 2,000/box     |
|  | 3/8" and 5/8" lengths                       | 2,016/box     |
| <b>DuPont™ Tyvek® Wrap Cap nails</b>   | 1" electro-galvanized ring<br>shank nail    | 2,000/box     |
| <b>DuPont™ Tyvek® Wrap Cap screws</b>  | 2" dia. plastic cap,<br>1-3/4" screw length | 1,000/box     |
| <b>DuPont™ Adhesive/Primer</b>   |   |               |
| <b>DuPont™ Window and Door Foam</b>  |   |               |
| <b>DuPont™ Residential Sealant</b>   |   |               |
| <b>DuPont™ RainVent™ Battens</b>   | 5/8 in x 3/8 in x 8 ft                      | 40/pack       |

### Warranty

Please refer to the *DuPont Weatherization Products 10-Year Limited Warranty for Buildings Less Than 5 Stories and Low-Rise Multi-Family Buildings Less Than 6 Stories*. For buildings greater than 4 stories, please refer to the *DuPont Weatherization Products 10-Year Limited Warranty for Buildings Greater Than 4 Stories*.

### Water-Resistive Barrier (WRB) Code Requirements

The 2015 International Residential Code (Section R703.1.1 Water Resistance) requires that "the exterior wall envelope shall be designed and constructed in a manner that prevents the accumulation of water within the wall assembly by providing a water-resistant barrier behind the exterior veneer as required by Section R703.2 and a means of draining to the exterior water that enters the assembly." Section R703.2 (Water-resistive barrier) states that "one layer of No. 15 asphalt felt, free from holes and breaks, complying with ASTM D 226 for Type 1 felt or other approved water-resistive barrier shall be applied over studs or sheathing of all exterior walls. Such felt or material shall be applied horizontally, with the upper layer lapped over the lower layer not less than 2 inches (51 mm). Where joints occur, felt shall be lapped not less than 6 inches (152 mm). The felt or other approved material shall be continuous to the top of walls and terminated at penetrations and building appendages in a manner to meet the requirements of the exterior wall envelope as described in Section R703.1."

The 2015 International Building Code (Section 1403.2 Weather Protection) requires that "exterior walls shall provide the building with a weather resistant exterior wall envelope. The exterior wall envelope shall include flashing, as described in Section 1405.4. The exterior wall envelope shall be designed and constructed in such a manner as to prevent the accumulation of water within the wall assembly by

providing a water-resistive barrier behind the exterior veneer, as described in Section 1404.2, and a means for draining water that enters the assembly to the exterior. Section 1404.2 (Water-resistive barrier) states that “not fewer than one layer of No. 15 asphalt felt, complying with ASTM D 226 for Type 1 felt or other approved materials, shall be attached to the studs or sheathing, with flashing as described in Section 1405.4, in such a manner as to provide a continuous water-resistive barrier behind the exterior veneer.

The **DuPont™ Tyvek® WRBs** listed below qualify as approved water-resistive barriers based on ICC-ES AC308 Acceptance Criteria according to the associated Evaluation Reports:

- ICC-ES Evaluation Report ESR 2375
  - **DuPont™ Tyvek® HomeWrap®**
  - **DuPont™ Tyvek® StuccoWrap®**
  - **DuPont™ Tyvek® DrainWrap™**
  - **DuPont™ Tyvek® CommercialWrap®**
  - **DuPont™ Tyvek® CommercialWrap® D**
- ICC-ESR-1993: **DuPont™ Tyvek® ThermaWrap™ LE**

And Industry Standard ASTM E 2556 Type II Standard Specification for Vapor Permeable Flexible Sheet Water-Resistive Barriers Intended for Mechanical Attachment

Air leakage control and air barriers are required in the IECC-2015 Sections R402.4 and C402.4. Specifically, Section C402.5 identifies three compliance options for air barriers. DuPont™ Tyvek® WRBs comply with the option detailed in Section C402.5.1.2.1:

“C402.5.1.2.1 Materials. Materials with an air permeability no greater than 0.004 cfm/ft<sup>2</sup> (0.02 L/s x m<sup>2</sup>) under a pressure differential of 0.3 inches water gauge (75 Pa) when tested in accordance with ASTM E 2178 shall comply with this section.” **Tyvek® WRBs** have been tested in accordance with ASTM E2178 and have air permeability less than 0.02 L/s x m<sup>2</sup>.

**DuPont™ Tyvek® WRBs** have been tested to the following standards:

- ASTM E 1677 Standard Specification for an Air Retarder (AR) Material or System for Low-Rise Framed Building Walls
- ASTM E 2178 Standard Test Method for Air Permeance of Building Materials
- ASTM E96-05 Water Vapor Transmission
- ATTCC 127 Water Penetration Resistance
- ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials

The application of **Tyvek® WRBs** is governed by the code adopted and enforced by the local jurisdiction. Consult your jurisdiction to assure compliance with the local building code.

## General Instructions

The best time to install **DuPont™ Tyvek® Water-Resistive Barriers** is:

- **AFTER** the roof sheathing is installed
- **AFTER** the step flashings and kickout flashings have been installed
- **BEFORE** the windows and doors are installed.

**DuPont Self-Adhered Flashing Products are not intended for through-wall flashing applications.**

## Special Considerations

1. Wall assemblies using equivalent fasteners must meet or exceed ASTM E1677 performance requirements of 65 mph equivalent structural load resistance and 15 mph equivalent wind-driven rain water infiltration resistance.
2. When performance requirements exceed ASTM E1677, 65 mph equivalent structural load and 15 mph equivalent wind-driven rain water infiltration for buildings less than 5 stories, it is recommended to install a high pressure skirt to help prevent water intrusion at the sill or threshold and follow the *DuPont™ Tyvek® Mechanically Fastened Air and Water Barrier Installation Guidelines For Buildings Greater Than 4 Stories and High Performance Installations of Any Height and the DuPont Self-Adhered Flashing Systems Installation Guidelines For Buildings Greater Than 4 Stories and High Performance Installations of Any Height*.
3. **Tyvek® StuccoWrap™** and **Tyvek® DrainWrap™** must be installed with drainage grooves vertical, going up and down. No surface preparation is needed for the installation of **Tyvek® WRBs**.
4. **Tyvek® ThermaWrap™ LE** must be installed with shiny, metallic side facing towards a clear ¾ inch minimum air space to obtain the installed R-Value benefits. **ThermaWrap™ LE** will still act as a water-resistive barrier without an air space. Refer to the *DuPont™ Tyvek® ThermaWrap™ LE Fact Sheet* for more information.
5. DuPont requires that **Tyvek® HomeWrap®**, **Tyvek® StuccoWrap®**, **Tyvek® DrainWrap™** and **Tyvek® ThermaWrap™ LE** be covered within 4 months (120 days) of installation. **Tyvek® CommercialWrap®** and **Tyvek® CommercialWrap® D** must be covered within 9 months (270 days) of installation.
6. DuPont requires that **DuPont™ FlexWrap™**, **DuPont™ FlexWrap™ EZ**, **DuPont™ StraightFlash™**, and **DuPont™ VersaFlange™** be covered within nine months (270 days) of installation. DuPont requires that **DuPont™ Flashing Tape** be covered within four months (120 days) of installation.
7. **DuPont Self-Adhered Flashing Products** perform best when installed at temperatures above 25°F (-4°C).
8. **DuPont Self-Adhered Flashing Products** should be installed on clean, dry surfaces that are free of frost. Wipe surfaces to remove moisture, dirt, grease and other debris that could interfere with adhesion.

9. Adverse weather conditions or cold temperatures may require use of a primer to promote adhesion of **DuPont Self-Adhered Flashing Products** to most common building materials.
10. Concrete, masonry, and fiber-faced exterior gypsum board require the use of a compatible adhesive or primer.
11. Remove all wrinkles and bubbles that may allow for water intrusion by smoothing surface and repositioning as necessary during installation of **DuPont Self-Adhered Flashing Products**. Apply pressure along entire surface of flashing for a good bond using firm hand pressure, J-roller, or alternate tool without sharp edges (such as a plastic carpet tuck tool) to assist with application of uniform pressure.

When installing windows and doors prior to the **DuPont™ Tyvek® WRB**, refer to the *DuPont Self-Adhered Flashing Products Installation Guidelines, Installation Instructions for Windows and Doors BEFORE Water-Resistive Barrier (WRB) is Installed*, which will direct you back to this guide at the appropriate step.

If the windows and doors have already been installed and flashed, **integrate the Tyvek® WRB by following the DuPont Self-Adhered Flashing Products Integration section in this guide.**

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

## Installation Instructions

Start at bottom corner of structure to ensure proper shingling throughout the installation. Proper shingling is required to shed water and to prevent water from entering the wall system. Printed stud marks are available on some **DuPont™ Tyvek® WRBs** to aid in aligning with the studs (e.g. studmarks are 8" apart for **DuPont™ Tyvek® HomeWrap®**).

### STEP 1

#### Wall Preparation

If siding is being removed:

- Remove existing siding
- Remove and replace any damaged wall material

If leveling board is being installed over existing siding:

- Remove and repair any damaged wall material
- Install leveling board

### STEP 2

Align roll at bottom corner of structure. Roll should be plumb. Bottom edge of roll must:

- Extend over sill plate interface by at least 1" (2" or greater is recommended)
- Extend to bottom of sill plate for slab on grade foundations, or,
- Be properly integrated with water drainage components such as kick out flashing or weep screed (for stucco exteriors).

When bottom edge of roll is less than 2" over the sill plate interface, it is recommended to seal or skip-seal the **Tyvek® WRB** at the bottom of the wall.\*

### STEP 3

UNWRAP roll starting at corner. Overlap all vertical seams by 6-12".

### STEP 4

Secure **Tyvek® WRB** to the stud or other nail-base material, i.e., wood sheathing. Fasteners should be placed no closer than 6" and no farther than 18" on vertical stud lines. Securing along stud lines will assist in maintaining fastening pattern. Penetrating bandboard or other horizontal members may be

necessary to maintain fastening pattern. Do not install fasteners within 6" of the sills and jambs and within 9" of the head of the window rough openings. Use one or more of the recommended fasteners below for use with **Tyvek® WRBs**:

- **DuPont™ Tyvek® Wrap Cap nails**
- **DuPont™ Tyvek® Wrap Cap screws**
- **DuPont™ Tyvek® Wrap Cap staples** or other cap staples for Stinger™ Cap Stapler\*\*
- Other manufacturers' equivalent fasteners.

Please see "Special Considerations" section above for equivalent fastener requirements and "Temporary Fastening" section below for more information on alternative fastening schedules and requirements.

### STEP 5

Unroll directly over windows and doors. Upper layer of **Tyvek® WRB** should overlap bottom layer by a minimum of 6".

Refer to the DuPont™ Self-Adhered Flashing Systems Installation Guidelines to prepare and flash window and door openings.

**NOTE:** If windows are already installed, the **Tyvek® WRB** must be integrated with proper shingling with window flashings. If **DuPont™ FlexWrap™** and apron are used according to the *DuPont Self-Adhered Flashing Products Installation Guidelines, Installation Instructions for Windows and Doors BEFORE Water-Resistive Barrier (WRB) is Installed*, install the **Tyvek® WRB** under the apron to ensure proper shingling and follow the DuPont Self-Adhered Flashing Systems Integration Section of this guide to tie the **Tyvek® WRB** into the flashing. If non-self adhering sill flashing is used, install the **Tyvek® WRB** under the bottom of the sill flashing to maintain proper shingling.

### STEP 6

Tape all vertical seams with **DuPont™ Tyvek® Tape**. If the **Tyvek® WRB** is not being installed as an air barrier, **Tyvek® Tape** is not required on horizontal seams but is considered a recommended best practice. Use 3" **Tyvek® Tape** for the horizontal seams of **DuPont™ Tyvek® StuccoWrap®** and **DuPont™ Tyvek® DrainWrap™**. Use **DuPont™ Tyvek® Metalized Tape** when taping **DuPont™ Tyvek® ThermaWrap™ LE**.

\*Use **DuPont™ Self-Adhered Flashing products** with **DuPont™ Adhesive/Primer** (or recommended primer) as applicable to seal the **Tyvek® WRB** directly to concrete, wood, or other rough surfaces. The **Tyvek® WRB** can also be sealed to rough surfaces using DuPont™ Residential Sealant (or recommended sealant).

### STEP 7 (FOR AIR BARRIER INSTALLATIONS)

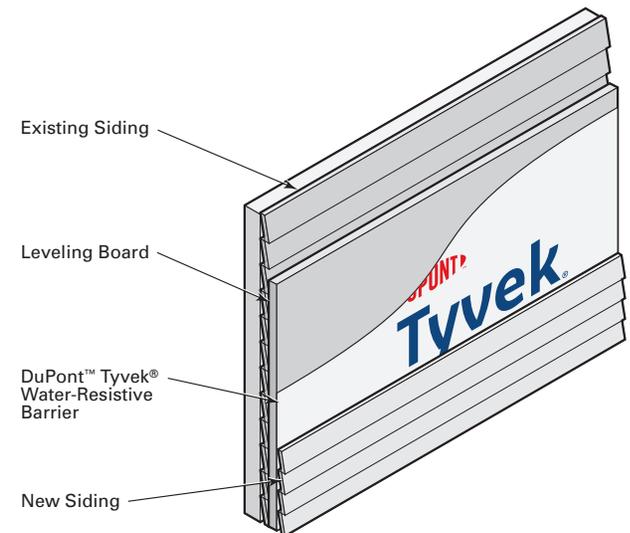
When installing as an air barrier, the horizontal seams must be taped. The use of 3" **Tyvek® Tape** is required for both vertical and horizontal seams of **Tyvek® StuccoWrap®** and **Tyvek® DrainWrap™** for air barrier installations.

### STEP 8 (FOR AIR BARRIER INSTALLATIONS)

Taping or sealing all terminations of **Tyvek® WRBs** (including, but not limited to, roof-wall and bottom of the wall interfaces) using **Tyvek® Tape**, **DuPont™ Residential Sealant** (or recommended sealant), **DuPont™ StraightFlash™**, or **DuPont™ Flashing Tape** is required when installing as an air barrier.\*

### STEP 9

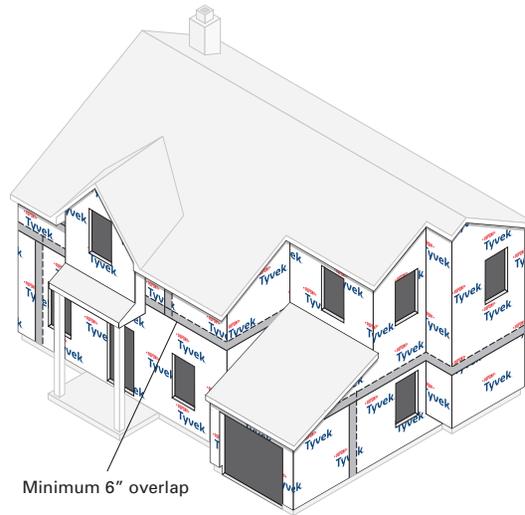
If windows are being replaced along with cladding, flash window openings according to the *DuPont Self-Adhered Flashing Products Installation Guidelines, Installation Instructions for Windows and Doors AFTER Water-Resistive Barrier (WRB) is Installed* to prepare and flash windows and doors.



\*\*Except when installing **DuPont™ Tyvek® WRB** over foam and other non-nail-base sheathings.

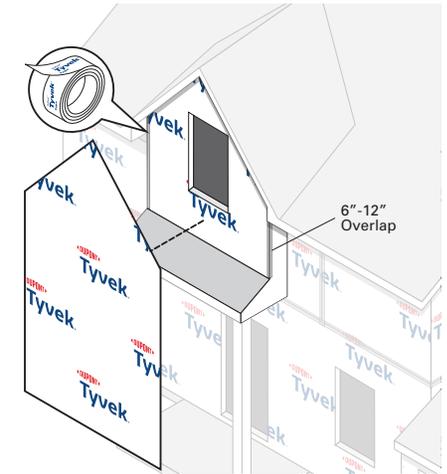
## Continuity

It is important to maintain the continuity of the **DuPont™ Tyvek® WRB** from bottom to top with proper shingling. Starting from the bottom of the structure, continue wrapping all the way up, overlapping the previous layer of **Tyvek® WRB** by a minimum of 6". Wrap the entire wall surface including unconditioned spaces.



## Gable Ends

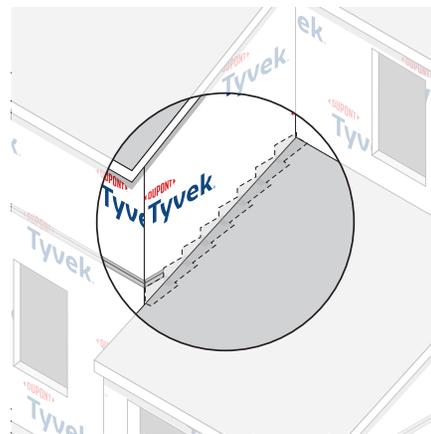
Completely cover the Gable End with the **Tyvek® WRB** including a 6"-12" overlap at each corner. Cut away the excess WRB and tape all seams.



## Terminations

Lap **Tyvek® WRB** over all flashing (e.g. step flashing, wall to roof intersections and through wall flashings).

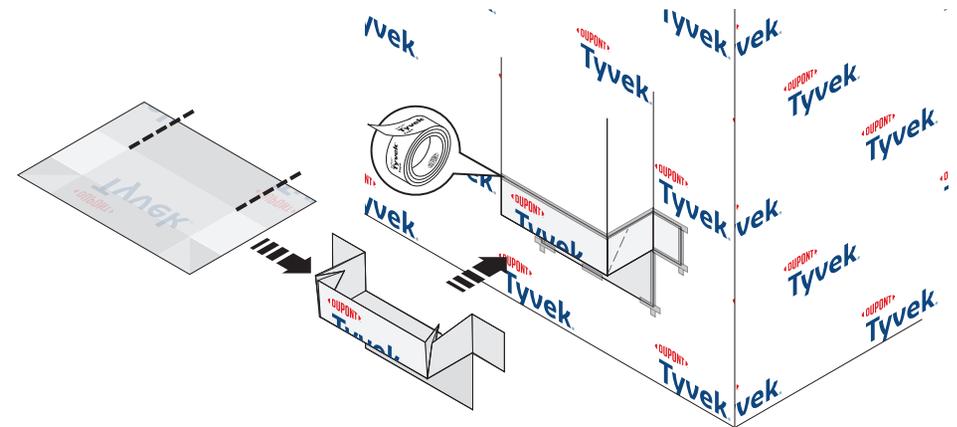
Weep screeds and expansion joints need to be integrated with flashings and the **Tyvek® WRB**.



## Cantilever Floors

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

**NOTE:** Make the inside corner as tight as possible using a 1x4 or similar.



## Installation of Metal Flashing at Façade Transitions

### Option 1: Metal Flashing Terminated onto DuPont™ Tyvek® WRB

#### STEP 1

Install the “Z” or “L” metal flashing over the lower façade and onto the **Tyvek® WRB** with mechanical fasteners or **DuPont™ Adhesive/Primer**.

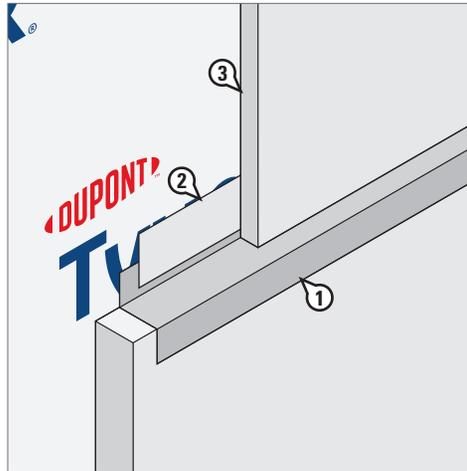
**NOTE:** Do not install **Tyvek® WRB** fasteners where the metal flashing or **DuPont Self-Adhered Flashing Product** will be installed.

#### STEP 2

Terminate the vertical leg of the metal flashing to **Tyvek® WRB** with **DuPont Self-Adhered Flashing Product** so there is a minimum of 2” adhesion onto the **Tyvek® WRB**.

#### STEP 3

Install the upper façade according to the manufacturer’s instructions.



### Option 2: Metal Flashing Terminated onto Sheathing

#### STEP 1

Install the first course of **Tyvek® WRB** so it extends a minimum of 2” beyond where the top edge of the lower façade will be located.

**NOTE:** Do not install **Tyvek® WRB** fasteners where the metal flashing or **DuPont Self-Adhered Flashing Product** will be installed.

#### STEP 2

Install the “Z” or “L” metal flashing along the top edge of the lower façade with the vertical leg overlapping the **Tyvek® WRB**.

#### STEP 3

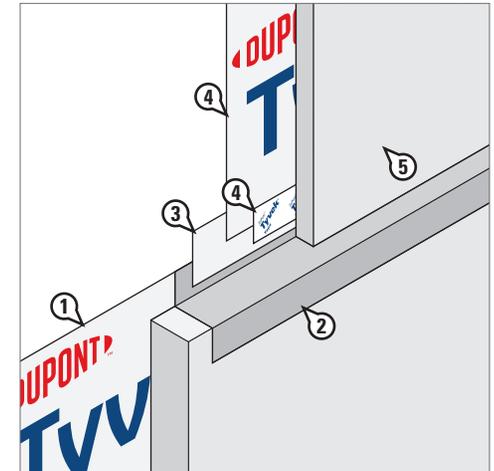
Terminate the vertical leg of the metal flashing directly to the sheathing with **DuPont Self-Adhered Flashing Product** with minimum of 2” adhesion onto the sheathing.

#### STEP 4

Install the next course of **Tyvek® WRB** to overlap the **DuPont Self-Adhered Flashing Products** by a minimum of 2” and seal with **DuPont™ Tyvek® Tape** or **DuPont™ Residential Sealant**.

#### STEP 5

Install upper façade according to the manufacturer’s instructions.

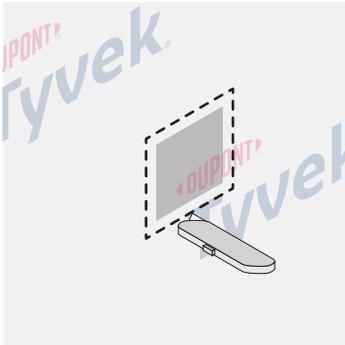


## Penetrations

Seal around plumbing pipes, HVAC components, electrical outlets, exterior lights, flashing panels, and other objects that penetrate the **DuPont™ Tyvek® WRB**. Always use positive shingling by installing **Tyvek® WRBs** and Self-Adhered Flashing products from bottom to top, with upper layer installed over lower layer. **NOTE:** A backing support for flashing made of solid OSB or wood sheathing must be installed around the penetration before the **Tyvek® WRB** and flashing for open stud applications.

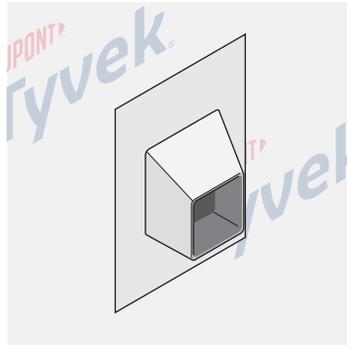
### Flashing Integral Flanged Products Installed AFTER DuPont™ Tyvek™ WRB

#### Method 1



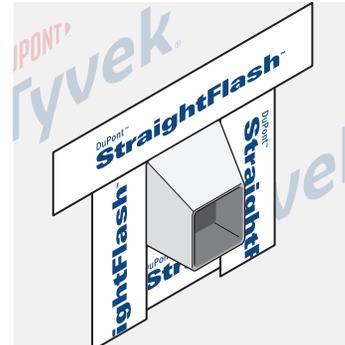
#### STEP 1

Install **Tyvek® WRB** and cut as necessary to accommodate integral flanged product.



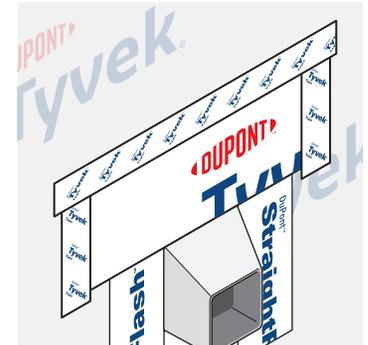
#### STEP 2

Install integral flanged product per manufacturer's instructions.



#### STEP 3

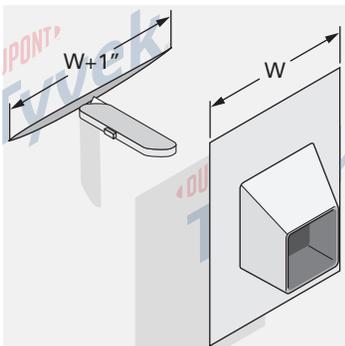
Install **DuPont Self-Adhered Flashing Product** onto sides and top flange, extending onto **Tyvek® WRB** by a minimum of 2". **NOTE:** Also install at bottom flange as a recommended best practice and for air barrier installations.



#### STEP 4 (OPTIONAL)

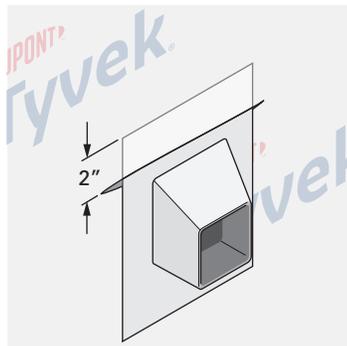
Install a piece of **Tyvek® WRB** to overlap the top edge of the **DuPont Self-Adhered Flashing Product**. Seal sides and top with **DuPont™ Tyvek® Tape**.

#### Method 2



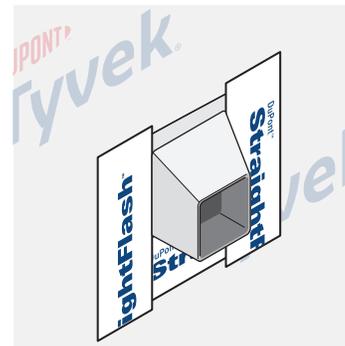
#### STEP 1

Install **Tyvek® WRB** and make horizontal cut a minimum of 1" wider than flange.



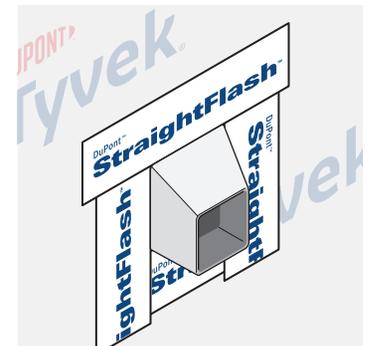
#### STEP 2

Slide top flange into slit with minimum 2" overlap of **Tyvek® WRB**, and install per manufacturer's instructions.



#### STEP 3

Adhere **DuPont Self-Adhered Flashing Product** onto side flanges, extending onto **Tyvek® WRB** by 2". **NOTE:** Also install at bottom flange as a recommended best practice and for air barrier installations.

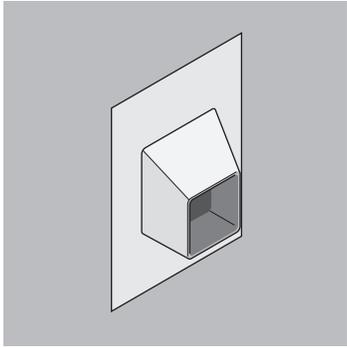


#### STEP 4

Install **DuPont Self-Adhered Flashing Product** to top flange, extending beyond **DuPont Self-Adhered Flashing Product** on side flanges.

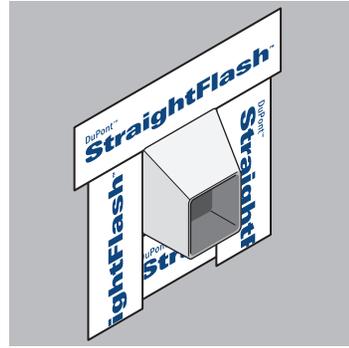
## Flashing Integral Flanged Products – Installed BEFORE DuPont™ Tyvek™ WRB

### Method 1



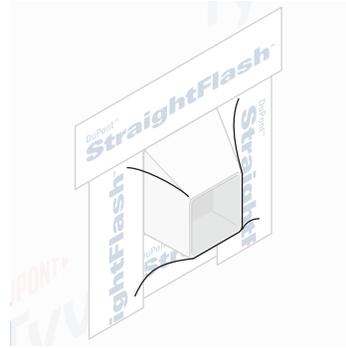
#### STEP 1

Install integral flanged product onto sheathing per manufacturer's instructions.



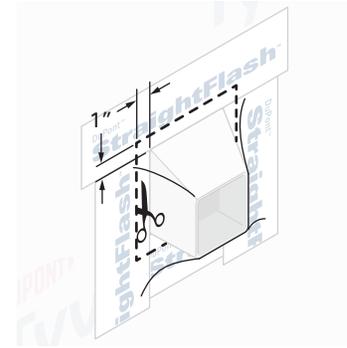
#### STEP 2

Install **DuPont Self-Adhered Flashing Product** onto flanges, extending onto sheathing by a minimum of 2".



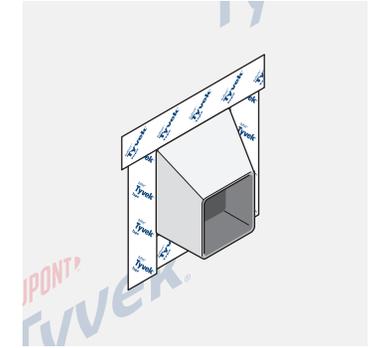
#### STEP 3

Install **Tyvek® WRB**.



#### STEP 4

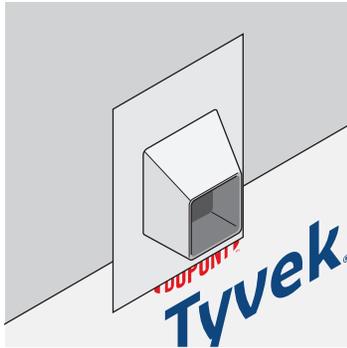
Make cut in **Tyvek® WRB**, ensuring a minimum of 1" gap for adhesion of **DuPont™ Tyvek® Tape**.



#### STEP 5

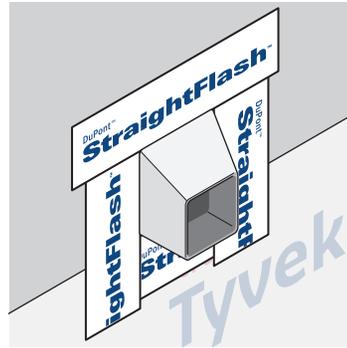
Seal edges of **Tyvek® WRB** with **Tyvek® Tape**.

### Method 2



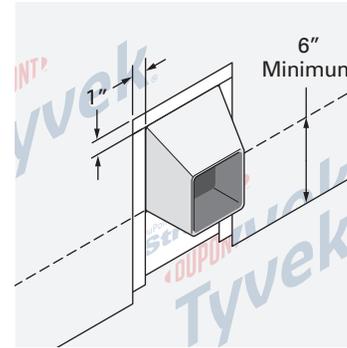
#### STEP 1

Install **Tyvek® WRB** under bottom flange.



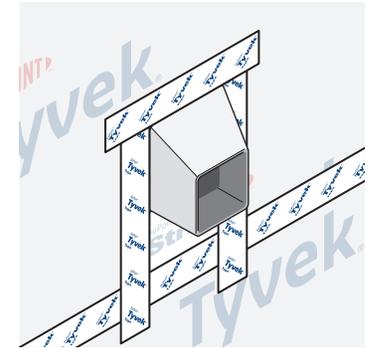
#### STEP 2

Adhere **DuPont Self-Adhered Flashing Product** onto sides and top flange. **NOTE:** Also install at bottom flange as a recommended best practice and for air barrier installations.



#### STEP 3

Install next course of **Tyvek® WRB** with a minimum of 6" overlap. Cut back 1" to expose flanges.



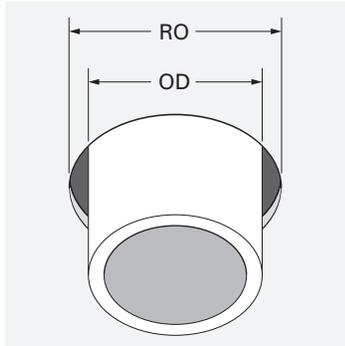
#### STEP 4

Seal seams using **Tyvek® Tape**.

## Flashing Non-Flanged Products – Installed AFTER DuPont™ Tyvek™ WRB

### Method 1: Flashing Non-Flanged Products Using DuPont™ FlexWrap™ EZ

For non-flanged products with **OD GREATER** than 2"

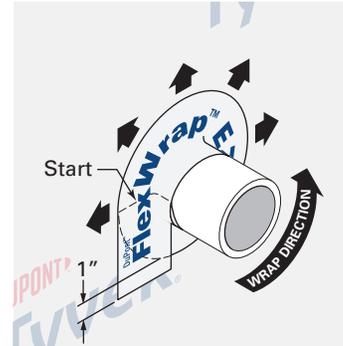


Use **FlexWrap™ EZ** only when penetration rough opening (RO) is not more than 1/2" larger than the outside diameter/dimension (OD) of non-flanged product.



#### STEP 1

Install **Tyvek® WRB** over non-flanged product and cut around penetration.



#### STEP 2

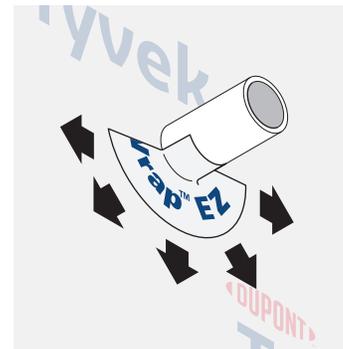
Cut a piece of **FlexWrap™ EZ** longer than the circumference of non-flanged product to ensure a minimum 1" overlap onto the **Tyvek® WRB**. Starting at the horizontal position on either side, adhere around penetration and onto **Tyvek® WRB**.

For non-flanged products with **OD LESS** than 2"



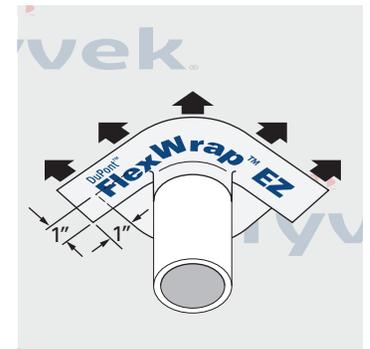
#### STEP 1

Install **Tyvek® WRB** over non-flanged product and cut around penetration.



#### STEP 2

Cut a piece of **FlexWrap™ EZ** the length of 1/2 the circumference of the non-flanged product. Adhere onto bottom section and fan out onto **Tyvek® WRB**.



#### STEP 3

Cut a second piece of **FlexWrap™ EZ** the length of the pipe circumference. Adhere onto top section and fan out onto face of wall with a minimum of 1" overlap of the edges of **FlexWrap™ EZ** below.

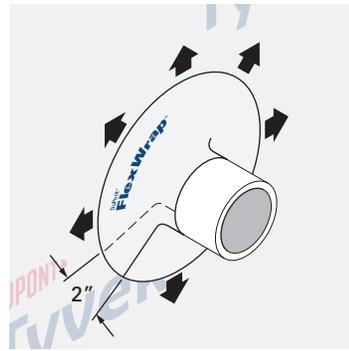
## Method 2: Flashing Non-Flanged Products Using DuPont™ FlexWrap™

FlexWrap™ installed onto DuPont™ Tyvek® WRB around penetration



### STEP 1

Install Tyvek® WRB over non-flanged product and cut around penetration.



### STEP 2

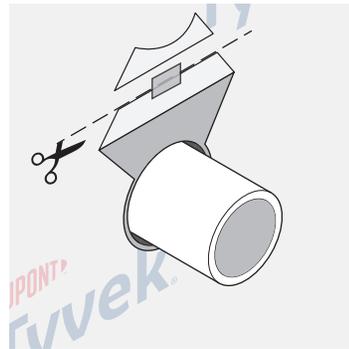
Starting at the horizontal position on either side, install FlexWrap™ around penetration with a minimum 2" overlap.

FlexWrap™ adhered to sheathing above penetration\*



### STEP 1

Install Tyvek® WRB over non-flanged product and cut around penetration.



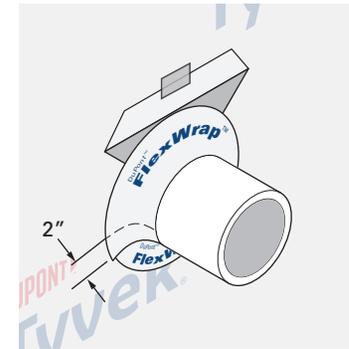
### STEP 2

Cut diagonal flap in Tyvek® WRB, trim back ~1" to make straight edge, and temporarily secure.



### STEP 3

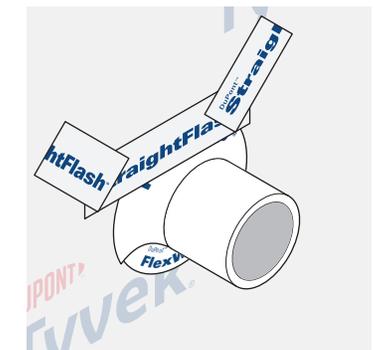
Install FlexWrap™ around bottom of penetration.



### STEP 4

Install FlexWrap™ around top of penetration, overlapping bottom layer of FlexWrap™ by 2" on

either side.



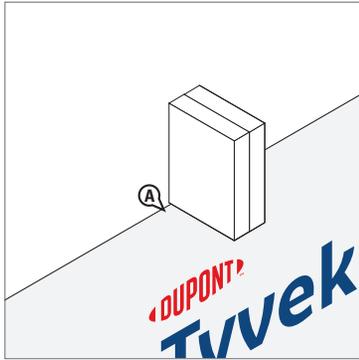
### STEP 5

Flip down and secure head flap using DuPont Self-Adhered Flashing Product.

\*Allows positive shingling of Tyvek® WRB

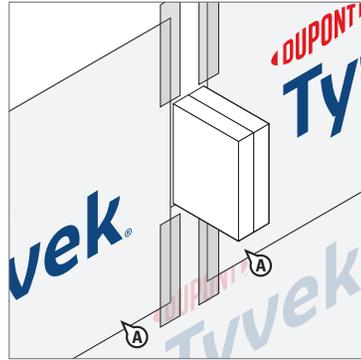
## Flashing Beam Penetrations

**NOTE:** A backing support for flashing made of solid OSB or wood sheathing must be installed around the beam before the **DuPont™ Tyvek® WRB** and flashing for open stud applications.



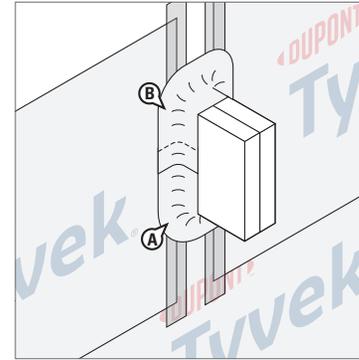
### STEP 1

Install the first course of **Tyvek® WRB** so the top edge is flush with the bottom of the beam.



### STEP 2

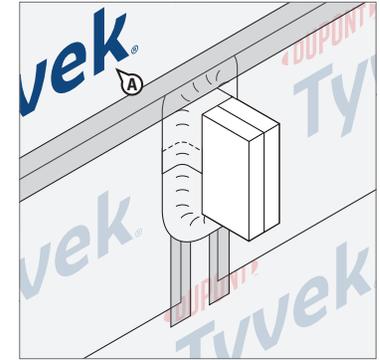
Cut pieces of **Tyvek® WRB** to fit between beams. The pieces should extend a minimum of 7" above the beams and overlap the course below by a minimum of 6". Seal the vertical seams with **DuPont™ Tyvek® Tape**. **NOTE:** For air barrier installations, seal all vertical and horizontal seams.



### STEP 3

Seal around the beam using two pieces of 6" wide **DuPont™ FlexWrap™**.

- A. Cut the first piece of **FlexWrap™** long enough to wrap around the bottom half of the beam. Break the perforation in the release paper by folding the **FlexWrap™** top sheet to the inside of the fold. With the **FlexWrap™** still folded, remove the narrow piece of release paper and adhere the exposed butyl to the bottom and up each side of the beam. Remove the remaining release paper and fan the **FlexWrap™** out onto the **Tyvek® WRB** on the face of the wall.
- B. Cut the second piece of **FlexWrap™** long enough to wrap around the top half of the beam, overlapping the first piece of **FlexWrap™** on each side by 2". Install along the top of the beam and down each side, overlapping the lower piece of **FlexWrap™** by 2" using the method above.



### STEP 4

Install the top course of the **Tyvek® WRB**, overlapping the **Tyvek® WRB** below with 1" gap above the beam. Tape all vertical seams with **Tyvek® Tape**. **NOTE:** For air barrier installations, seal all vertical and horizontal seams.

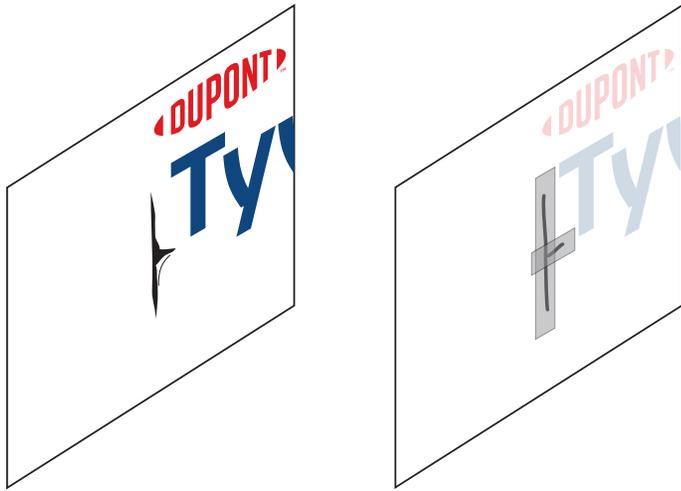
## Handling Tears and Holes

During the course of installing the **DuPont™ Tyvek® 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 Self-Adhered Flashing Products**.

Larger holes (greater than 1") may require cutting a piece of **Tyvek® WRB** to cover the hole, maintaining proper shingling.

Cut a slit 2" above the hole and extending a minimum of 2" on each side of the hole. Measure and cut a piece of **Tyvek® WRB** to fit into the slit and cover the hole. Tuck the cut piece of **Tyvek® WRB** into the slit. Tape along the perimeter by starting at the bottom of the patch, shingling upper tape over bottom tape.

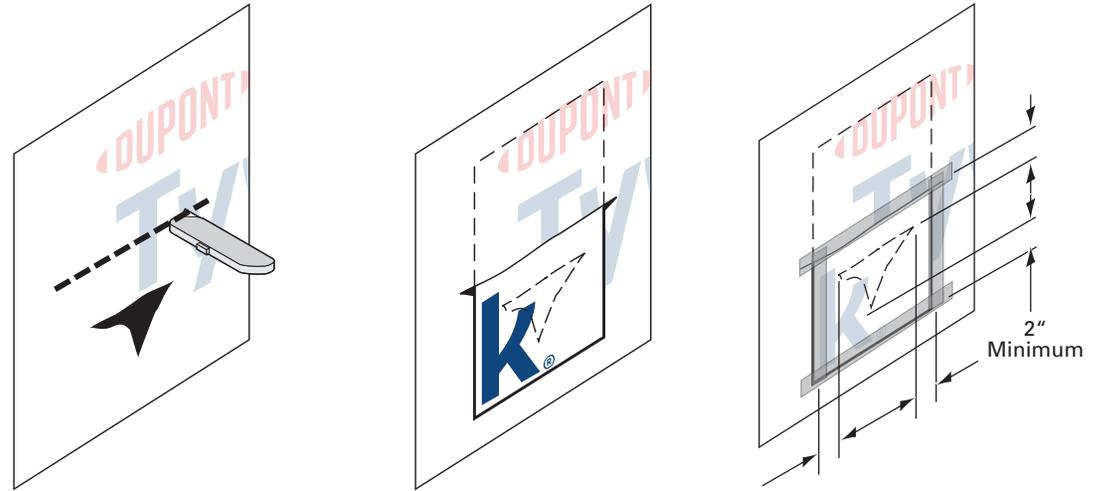
### Tears



STEP 1

STEP 2

### Holes



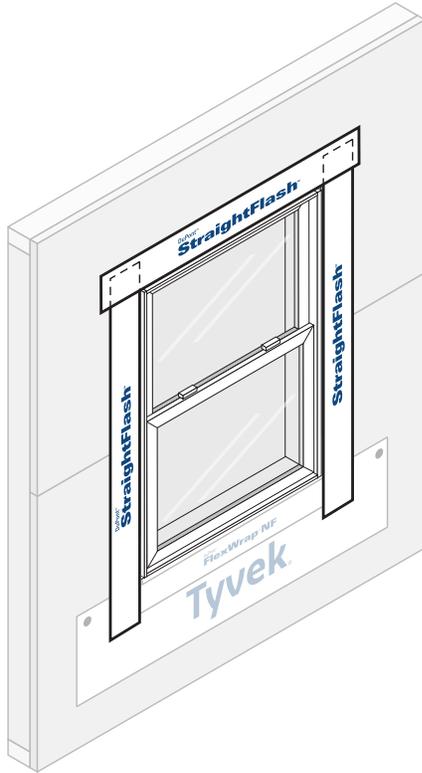
STEP 1

STEP 2

STEP 3

## DuPont Self-Adhered Flashing Products Integration

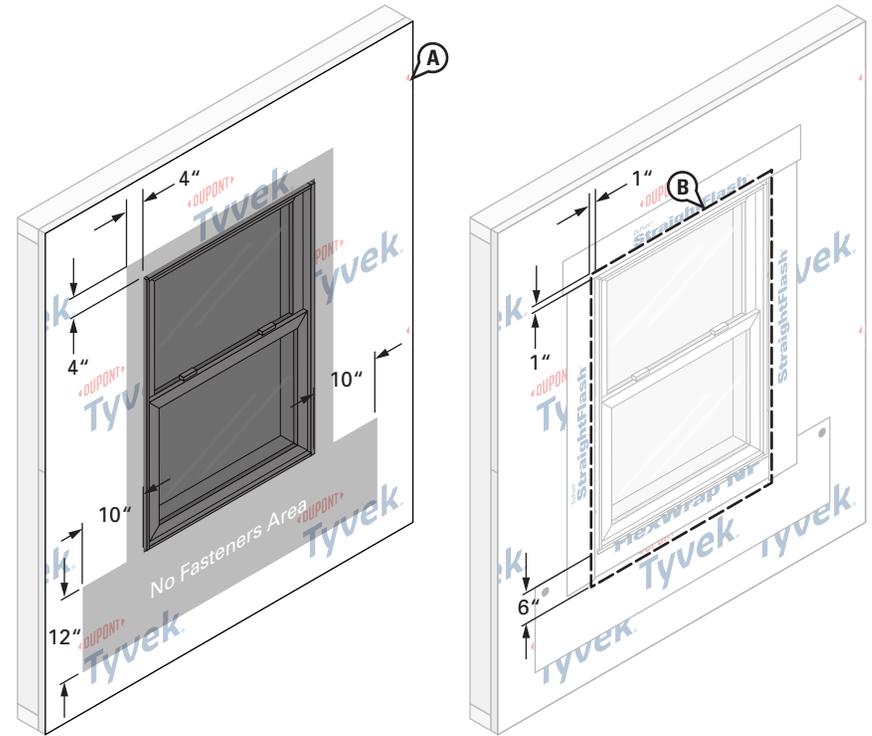
If windows and doors have not been installed, reference the *DuPont Self-Adhered Flashing Product Installation Guidelines*, Installation Instructions for Windows and Doors AFTER Water-Resistive Barrier (WRB) is Installed to prepare the rough opening.



### STEP 1

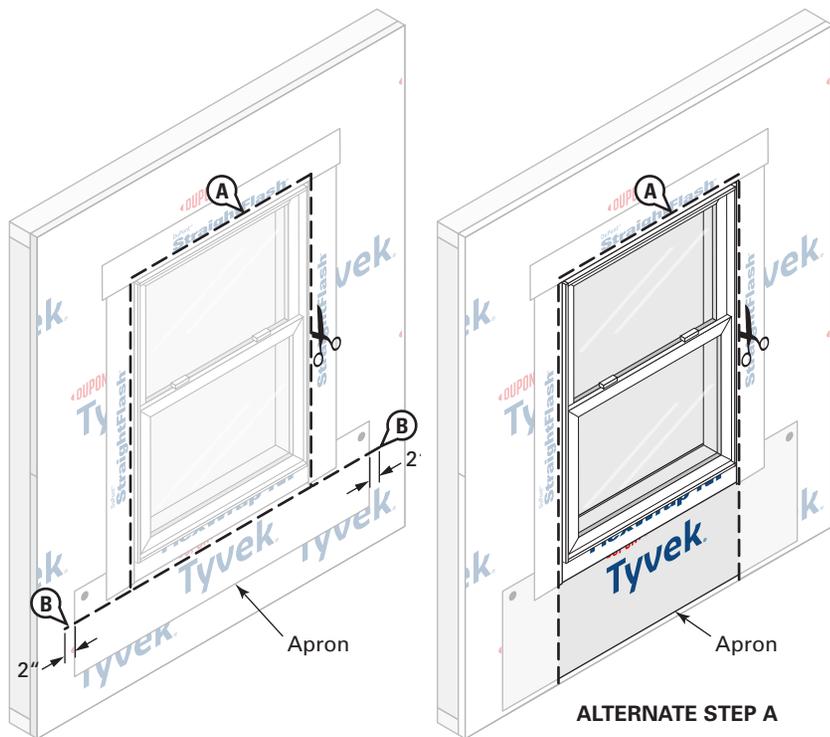
Install flashing and the window or door following the steps detailed in the *DuPont Self-Adhered Flashing Product Systems Installation Guidelines*, Installation Instructions for Windows and Doors BEFORE Water-Resistive Barrier (WRB) is Installed.

If windows and doors will be installed before the WRB, then follow these last 4 integration steps to tie the **DuPont™ Tyvek® WRB** into the flashing.



### STEP 2

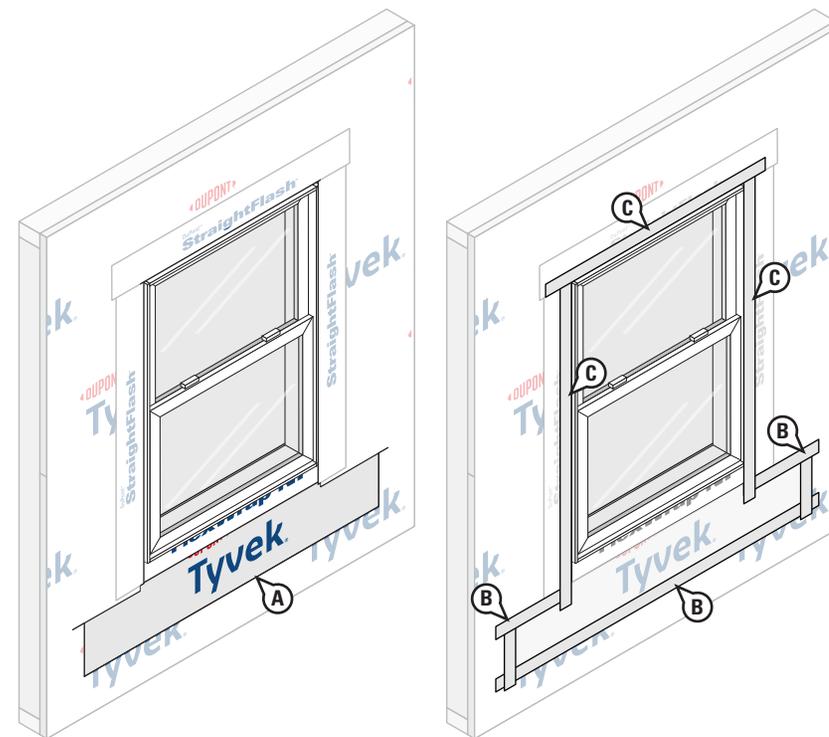
- Install the **DuPont™ Tyvek® WRB**. Do not install fasteners within 4" of the window frame at jambs and head, and within 12" of the window frame at sill or location of apron.
- Mark a perimeter on the **DuPont™ Tyvek® WRB** around the rough opening a minimum of 1" from the jambs and head of the window frame, and 6" below the sill of the window frame.



### STEP 3

- A. Cut the **DuPont™ Tyvek® WRB** along perimeter marking to expose window. Do not cut through the **DuPont Self-Adhered Flashing Products** or **DuPont™ Tyvek® WRB** apron underneath.
- B. Create horizontal slits in the **DuPont™ Tyvek® WRB** at each lower corner of the perimeter cut that extend a minimum of 2" beyond **DuPont™ Tyvek® WRB** apron.

**ALTERNATE STEP A:** If apron extends far enough below the sill rough opening to overlap the sill plate, base of wall flashing, or the **DuPont™ Tyvek® WRB** below, the **DuPont™ Tyvek® WRB** can be cut along jambs and head only to overlap apron.



### STEP 4

- A. Bring the bottom portion of the **DuPont™ Tyvek® WRB** apron through the sill perimeter cut and horizontal slits so it laps over the top layer of **DuPont™ Tyvek® WRB**.
- B. Working from bottom to top, install **DuPont™ Tyvek® Tape** to secure horizontal and vertical seams of **DuPont™ Tyvek® WRB** apron.
- C. Install **DuPont™ Tyvek® Tape** along jambs and head to seal **DuPont™ Tyvek® WRB** around window.

## Facade Considerations

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

### Stucco and Direct-Applied Stone

When stucco is installed over wood-based sheathing, the 2015 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 E 2556, 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 2015 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. 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

The 2015 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

The 2015 International Building Code (Section 1405.10) requires two layers of water resistive barrier (WRB) 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. **Tyvek® WRBs** should be separated from the stone and mortar 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. 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 rigid foam board 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. Foam sheathing panels often have low vapor permeability, and therefore can cause moisture to accumulate on the back of siding and cause staining, buckling and damage to finish coats. As a result, 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 a 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 a 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.

### Exterior Insulation

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

**NOTE: DuPont™ RainVent™ Battens** can be used to improve the ventilation and draining space behind wood, stucco or stone masonry, vinyl, and fiber cement cladding types.

## Temporary Fastening

Selection and use of temporary fastening methods is an option dependent on building schedule, cladding options, and local building practices. Temporary fasteners should not be relied upon to permanently attach **DuPont™ Tyvek® WRBs** due to the limited holding power of these fastening methods. If temporary fasteners are used, permanent fastening should be applied as soon as practically possible in order to maintain the integrity and performance of the **Tyvek® WRB**. Permanent fasteners include cladding fasteners such as brick ties, lath fasteners for traditional stucco, exterior foam board fasteners, or siding installed with nails.

Temporary fastening methods:

- DuPont fasteners or equivalent alternate fasteners at a reduced schedule of 24" to 48".
- **DuPont™ Adhesive/Primer** or other recommended adhesive applied in vertical strips at 24" to 36" spacing or along every other stud line. Vertical strips may be applied to the outer face of the sheathing or directly to the studs for open stud construction. When using adhesives, care must be taken to avoid excessive surface coverage as this may impact the vapor permeability of the **Tyvek® WRB** in that area.
- If staples without caps are used to temporarily fasten **Tyvek® WRBs** to OSB, plywood, or exterior gypsum sheathing, the fastening schedule must not exceed 24" to 36" vertically, with fasteners at every other stud. Horizontal spacing will be 32" for 16" o.c. framing. **NOTE:** 24" o.c. framing will require horizontal fastening on every stud, with 24" to 36" fastener spacing vertically. Staples should not be used with fiberboard or foam sheathing.

**NOTE:** These Temporary Fastening Guidelines are subject to change based on new technology or testing information and may be superseded at any time. It is always important to follow the latest guidelines which may be found on [building.dupont.com](http://building.dupont.com). For additional guidance, please consult your local DuPont™ Tyvek® Specialist.

## Key Installation Requirements for DuPont™ Tyvek® WRBs

### Continuity

It is important to maintain the continuity of the WRB throughout the building envelope. The entire wall surface shall be wrapped, including unconditioned spaces. Special attention should be given to ensure a proper 6" overlap at all terminations, seams, penetrations, and transitions to maintain a continuous downward drainage plane and WRB. Installing the **Tyvek® WRB** as an air barrier is the preferred installation method. However, skip-taping terminations and untaped horizontal seams is allowed when the **Tyvek® WRB** is being installed as a water-resistive barrier only for buildings less than 5 Stories and low-rise multi-family buildings less than 6 Stories with design requirements that don't exceed ASTM E1677, 65 mph equivalent structural load and 15 mph equivalent wind-driven rain water infiltration. All vertical seams must be taped for both air barrier and water-resistive barrier installations.

## Penetrations

Seal **Tyvek® WRBs** around all penetrations (electrical, HVAC and plumbing, etc.) with the appropriate DuPont™ Flashing Systems product, **DuPont™ Tyvek® Tape**, **DuPont™ Residential Sealant** or recommended sealant. Products that have flanges should be integrated into the **Tyvek® WRB**. **DuPont™ StraightFlash™**, **DuPont™ Flashing Tape** or DuPont recommended alternate patches should be applied behind fastening plates (brick tie base plates, metal fastening clips, metal channels, etc.) when building envelope design requirements exceed ASTM E1677, 65 mph equivalent structural load and 15 mph equivalent wind-driven rain water infiltration resistance. Please contact 1-800-448-9835 for recommended sealants and recommended alternate patches behind fastening plates.

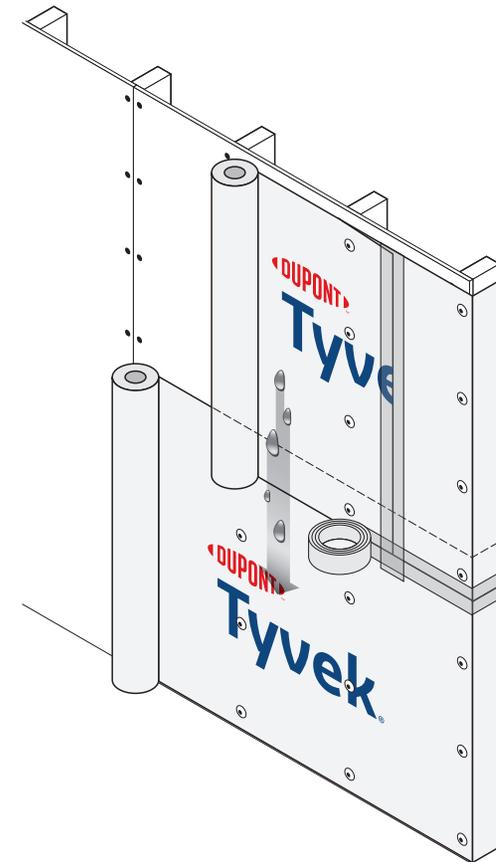
## Fasteners

Use DuPont or equivalent fasteners per the fastening schedule included in this installation guideline. Examples of recommended fasteners include:

- **DuPont™ Tyvek® Wrap Cap Nails** (for wood frame construction)
- **DuPont™ Tyvek® Wrap Cap Staples** or other cap staples for Stinger™ Cap Stapler (for wood frame construction)
- Other manufacturers' equivalent 1" plastic cap screws, nails, and staples (for wood frame construction).
- **DuPont™ Tyvek® Wrap Cap** or other manufacturers' equivalent 2" plastic cap screws (for steel or wood frame construction)
- 1-1/4" metal gasketed washers with screws (for steel frame construction)
- 2" metal gasketed washers with screws (for steel frame construction)
- Tapcon® fasteners with 2" plastic caps (for masonry construction)

If temporary fasteners are used, permanent fastening must be installed as soon as practically possible. In this case, permanent fasteners include cladding fasteners such as brick ties, lath fasteners for traditional stucco, exterior foam board fasteners, or siding installed with nails. Cladding shall be installed according to applicable building codes and industry standards.

## Proper Overlap for Water Management



- A. Lap all components from bottom of the wall to the top of the wall.
- B. Treat the walls of the building just like a roof.

**NOTE:** In order to make a claim under the DuPont 10-Year Limited Product and Labor Warranty on DuPont Performance Building Solutions Products, you must have met all of the terms and conditions of the warranty, including use of the applicable DuPont Installation Guidelines. In the event that a specific detail or installation technique is not covered in the DuPont Installation Guidelines at the time you are building, then the Key Installation Requirements outlined in this document must have been followed in order to make a claim under the warranty. Compliance prior, during and post construction with the Key Installation Requirements are at the sole discretion of DuPont. Please contact DuPont or a DuPont™ Tyvek® Specialist if you have any questions in connection with any DuPont Installation Guideline.

## Technical Specifications

**DuPont Self-Adhered Flashing Products** are made from a synthetic rubber adhesive and a laminate of polyethylene film, polypropylene film, elastic fiber, synthetic rubber adhesive, polyurethane adhesive, and a top sheet of flash spunbonded high density polyethylene fibers or polypropylene film. Additives have been incorporated into these materials to provide ultraviolet light resistance. DuPont requires that **DuPont™ FlexWrap™**, **DuPont™ FlexWrap™ EZ**, and **DuPont™ StraightFlash™** be covered within nine months (270 days) of installation. DuPont requires that **DuPont™ Flashing Tape** be covered within four months (120 days) of installation.

## Warning

**DuPont Self-Adhered Flashing Products** and their release paper are slippery and should not be walked on. Remove release paper from work area immediately. **DuPont Self-Adhered Flashing Products** will melt at temperatures greater than 250°F (121°C). **DuPont Self-Adhered Flashing Products** are combustible and should be protected from flames and other high heat sources. **DuPont Self-Adhered Flashing 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 1-800-448-9835.

**DuPont™ Residential Sealant** is irritating to skin, eyes, and respiratory tract. For proper usage, follow directions stated on the product label. For health information, refer to the Material Safety Data Sheet or call Chemtrec at 1-800-424-9300.

## Note

When installed in conjunction with other building materials, **DuPont Self-Adhered Flashing Products** must be properly shingled with these materials such that water is diverted to the exterior of the wall system. DuPont™ Tyvek® products are air and water barriers and not the primary water barrier. The outer facade is the primary barrier. You must follow facade manufacturer's installation and maintenance requirements for all facade systems in order to maintain water holdout properties and ensure performance of **DuPont™ Tyvek® WRBs**. Use of additives, coatings or cleansers on or in the facade system may impact the performance of **DuPont™ Tyvek® WRBs**. DuPont Performance Building Solutions products are to be used as outlined in this installation guideline. **DuPont Self-Adhered Flashing Products** should only be used to seal penetrations and flash openings in houses or buildings. **DuPont Self-Adhered Flashing Products** are not to be used in roofing applications. For superior protection against bulk water penetration, DuPont suggests a system combining a quality exterior facade, a good secondary air and water barrier and exterior sheathing, high quality windows and doors, and appropriate flashing materials paying attention to proper installation of each component. In a system where no exterior sheathing is used and **Tyvek® WRBs** are 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 visit [building.dupont.com](http://building.dupont.com) or call 1-800-448-9835.

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For more information about DuPont Weatherization Systems, please call 1-800-448-9835 or visit us at [building.dupont.com](http://building.dupont.com)