

Wood-Framed Multi-Family and Light Commercial User's Bulletin for Installation of DuPont Building Envelope Solutions Products

For Type III and Type V Wood-Framed Structures

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Additionally, "light commercial" buildings are sometimes built to the same type of construction and performance criteria as multi-family buildings, such as a fast food restaurants built with wood framing and sheathing.

This document will help guide builders, designers, consultants, installers, and others understand the appropriate installation details for the building envelope when using DuPont Building Envelope Solutions Products in order to meet performance and warranty requirements.

The below paragraphs reference specific performance test standards. For more information regarding these standards, see the *Building Envelope Performance Requirements* section within this document.

Specifically, this Wood-Framed Multi-Family and Light-Commercial User's Bulletin applies to buildings meeting the following definitions (must meet **ALL** criteria):

- Constructed of wood-based structural exterior framing of Type III or Type V Construction* (IBC Chapter 6); and
- Does not exceed 2018 IBC max height (Table 504.3) for Type V construction (70 ft.) or Type III construction (85 ft.), including allowances for Automatic Sprinkler height increase (IBC 504.1 and Table 504.4) and "podium" structures outlined in the Special Provisions* (IBC Section 510); and
- Design requirements for the building envelope do not exceed air barrier performance of ASTM E1677 (10.8 psf structural load, 65 mph equivalent wind load), and water infiltration resistance criteria of 6.24 psf (50 mph equivalent wind-driven rain) when tested in accordance with ASTM E331, ASTM E1105, or equivalent.

*Special Provisions (IBC Section 510) allows for a "horizontal building separation", or "podium", to be built under the wood-framed Type III or Type V building. The podium is typically constructed of steel framing or concrete. Podium-style buildings are included under "Wood-Framed Multi-Family and Light Commercial Buildings", as long as all other definition criteria (a. through c. above) are met.

In contrast, Single-Family Residential applications include fully-detached one- or two-family structures, as well as townhouse structures not more than three stories above grade plane as defined in the 2018 International Residential Code (IRC) section R101.2, both to the extent they are exclusively Residential-Use building structures. See the [Single-Family User's Bulletin For Installation of DuPont Building Envelope Solutions Products](#) for further discussion about product and installation considerations for single-family applications.

Steel-based, concrete, or concrete masonry unit (CMU) structures of any height, as well as those of any height or construction-type designated as high performance (air barrier performance criteria exceeding ASTM E1677 and/or water-infiltration resistance criteria exceeding 6.24 psf per ASTM E331, E1105, or equivalent), do not fall under the scope of this bulletin and should follow the Commercial Installation Guidelines.

Allowable Building Height and Number of Stories

This bulletin specifically addresses Type III and Type V structures. Chapter 5 of the 2018 International Building Code (IBC) contains information regarding the maximum height and number of stories for buildings of Group R Occupancy Classification (IBC Section 310). Including increased allowances for automatic sprinklers and a "podium" horizontal building separation (Section 510), Group R buildings of Type III or Type V construction can have the following maximum heights above grade plane:

Buildings with Group R (Residential) Occupancy Classification

Type of Construction	Maximum Building Height in Feet Per 2018 IBC Table 504.3
VA	70
VB	60
IIIA	85
IIIB	75

For Wood-Framed Multi-Family and Light Commercial buildings up to 70 feet in height, any DuPont™ Tyvek® Water-Resistive and Air Barriers (WRBs) can be used. For buildings between 70 and 85 feet, as well as those which require NFPA 285 compliance, DuPont™ Tyvek® CommercialWrap® and Tyvek® CommercialWrap® D **must** be used on **ALL** above-grade wood-framed exterior walls. See building.dupont.com for more information on DuPont NFPA 285 documentation.

Applicable Products and Product Descriptions for the Wood-Framed Multi-Family/Light Commercial Market

Applicable DuPont Building Envelope Solutions Products include Tyvek® WRBs, DuPont Self-Adhered Flashing Products, DuPont™ Tyvek® Fluid Applied Products, and installation accessories such as fasteners, seam tape, primers, and sealants. Below is a description of each DuPont Building Envelope Solutions Product that can be used as part of the complete building envelope.

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

Tyvek® WRBs are made from a tough, spunbonded polyethylene breathable membrane with microscopic pores that resist air penetration while allowing moisture vapor to pass through. When properly installed, these materials also act as a secondary barrier to bulk water that may penetrate the exterior plane to help reduce the likelihood of mold/rot/degradation and include:

- **DuPont™ Tyvek® HomeWrap®** – Helps prevent air and water infiltration but allows water vapor to escape to help prevent rot and mold inside walls. Tyvek® HomeWrap® offers a drainage efficiency >90% per ASTM E2273, *Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies*.
- **DuPont™ Tyvek® StuccoWrap®** – Used in applications with a two-layer WRB system for traditional stucco or as a single WRB for EIFS applications. Designed with a grooved texture to provide enhanced drainage and offers a drainage efficiency of >98% per ASTM E2273.
- **DuPont™ Tyvek® DrainWrap™** – Designed with a grooved texture to provide enhanced drainage and offers a drainage efficiency of >98% per ASTM E2273.

- **DuPont™ Tyvek® ThermaWrap™ LE** – Designed with a metallized, low-emission (low-e) surface that reflects solar radiation away from the building to help improve energy efficiency.
- **DuPont™ Tyvek® CommercialWrap®** – Designed for commercial applications with increased durability, resistance to air, water, and UV exposure and offers a drainage efficiency of >90% per ASTM E2273.
- **DuPont™ Tyvek® CommercialWrap® D** – Designed for commercial applications with increased durability, resistance to air, water, and UV exposure. The grooved texture provides enhanced drainage and offers a drainage efficiency of > 98% per ASTM E2273.

In general, Tyvek® CommercialWrap® or Tyvek® CommercialWrap® D are recommended for Wood-Framed Multi-Family and Light Commercial Buildings due to their increased durability and UV exposure limit which can help accommodate longer construction times. See the *Product Composition and UV Stability* section in the Installation Guidelines for more information.

DuPont Self-Adhered Flashing Products

DuPont Self-Adhered Flashing Products work with DuPont™ Tyvek® WRBs to help seal the building envelope. The flashing is made from a butyl adhesive that performs through extreme temperatures, adheres to most common building materials, and contains no asphalt.

- **DuPont™ FlexWrap™** – A conformable self-adhered flashing used for sill applications and round-top windows.
- **DuPont™ FlexWrap™ EZ** – A formable self-adhered flashing specifically designed to seal wall penetrations such as pipes, electrical boxes, vents, or wires.
- **DuPont™ Flashing Tape** – A self-adhered flashing membrane used for heads and jambs of rectangular windows and doors.
- **DuPont™ StraightFlash™** – A high-performance self-adhered flashing used for heads and jambs of rectangular windows and doors.
- **DuPont™ VersaFlange™** – A self-adhered flashing with a versatile flange used for PTAC units, brick mold and non-flanged windows and doors.

DuPont™ Tyvek® Fluid Applied Products

Tyvek® Fluid Applied Products provide a continuous WRB and includes fluid-applied sealant, and flashing and joint compound. These products are most typically used in commercial or high-performance installations; however, they can also be used in hybrid details in wood-framed multi-family and light commercial buildings. Hybrid details involve the use of a Tyvek® WRB and DuPont Self-Adhered Flashing Product transitioning to a Tyvek® Fluid Applied Product. See the Installation Guidelines for more information.

- **DuPont™ Tyvek® Fluid Applied WB+™** – A 99% solids silyl terminated polyether (STPE) fluid applied product that can be easily applied in one coat by roller or spray. Tyvek® Fluid Applied WB+™ offers low shrinkage during curing, superior elongation and recovery, and an ideal combination of vapor permeability, 9 months of UV exposure, and air and water holdout performance.

- **DuPont™ Tyvek® Fluid Applied Flashing and Joint Compound+** – A full-bodied vapor permeable STPE-based liquid flashing that can be applied by brush or trowel. It combines the functions of both a flashing and joint treatment, and offers 9 months of UV exposure.
- **DuPont™ Sealant for Tyvek® Fluid Applied System** – A high quality, non-vapor permeable sealant specifically designed to work with DuPont™ Tyvek® Fluid Applied Products. DuPont™ Sealant for Tyvek® Fluid Applied System can be used to seal around windows, doors, and penetrations.

DuPont Building Envelope Solutions Installation Accessories

DuPont offers a number of accessory products that work with Tyvek® WRBs and DuPont Self-Adhered Flashing Products to provide superior air and water barrier protection for durable, energy-efficient buildings.

- **DuPont™ Tyvek® Wrap Cap Fasteners (nails, screws, staples)** – Designed to increase holding power and help reduce tears when fastening DuPont Building Envelope Solutions Products.
- **DuPont™ Tyvek® Tape** – Used for sealing the seams of Tyvek® WRBs to help provide a continuous barrier against air and water infiltration.
- **Great Stuff Pro™ Window & Door Polyurethane Foam Sealant** – A low-pressure, flexible polyurethane foam sealant specifically formulated to seal gaps between window and door frames.
- **Tower® Residential Sealant (formerly DuPont™ Residential Sealant)** – A urethane modified acrylic, formulated to bond with DuPont Building Envelope Solutions Products.

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

Product	Dimensions	Area
DuPont™ Tyvek® HomeWrap®	3 ft x 100 ft	300 sq ft
	3 ft x 165 ft	495 sq ft
	5 ft x 200 ft	1,000 sq ft
	9 ft x 100 ft	900 sq ft
	9 ft x 150 ft	1,350 sq ft
DuPont™ Tyvek® StuccoWrap®	10 ft x 100 ft	1,000 sq ft
	5 ft x 200 ft	1,000 sq ft
DuPont™ Tyvek® DrainWrap™	9 ft x 125 ft	1,125 sq ft
	10 ft x 125 ft	1,250 sq ft
DuPont™ Tyvek® ThermaWrap® LE	5 ft x 150 ft	750 sq ft
DuPont™ Tyvek® CommercialWrap®	5 ft x 200 ft	1,000 sq ft
	10 ft x 125 ft	1,250 sq ft
DuPont™ Tyvek® CommercialWrap® D	5 ft x 200 ft	1,000 sq ft
	10 ft x 125 ft	1,250 sq ft

Installation Accessories

Product	Type	Quantity
DuPont™ Tyvek® Tape	2 in Bulk Pack	6 rolls/ bulk pack
	3 in Bulk Pack	
DuPont™ Tyvek® Metallized Tape	2 in x 100 ft Rolls	12 rolls/case
DuPont™ Tyvek® Wrap Cap Staples or other cap staples for Stinger® Cap Stapler	Available in 7/8 in, 1-1/4 in, and 1-1/2 in lengths	2,000/box
	3/8 in length	2,016/box
DuPont™ Tyvek® Wrap Cap Nails	1 in electro-galvanized ring shank nail	2,000/box
DuPont™ Tyvek® Wrap Cap Screws	2 in Wrap Cap Screws	1,000/box
DuPont™ Tyvek® DrainVent™ Rainscreen	4 ft x 50 ft roll	
DuPont™ RainVent™ Battens	5/8 in x 3/8 in x 8 ft	40/pack
Great Stuff Pro™ Window & Door Polyurethane Foam Sealant	Can (reusable dispensing gun sold separately)	20 oz
Great Stuff Pro™ Gaps & Cracks Polyurethane Foam Sealant	Can (reusable dispensing gun sold separately)	20 oz
Tower® Residential Sealant (formerly DuPont™ Residential Sealant)	–	–
TRUFAST® Walls Grip-Deck® screws with Thermal-Grip FastCap™ washers (TRUFAST® Walls formerly Rodenhouse)		

DuPont Self-Adhered Flashing Products

Product	Width
DuPont™ FlexWrap™	6 in
	9 in
DuPont™ FlexWrap™ EZ	2.75 in
DuPont™ StraightFlash™	4 in
	9 in
DuPont™ VersaFlange™	6 in
	4 in
DuPont™ Flashing Tape	6 in
	9 in
	12 in

DuPont™ Tyvek® Fluid Applied Products

Product	Quantity	Coverage
DuPont™ Tyvek® Fluid Applied WB+™	5 gal, 50 gal	50 – 65 sf/gal*
DuPont™ Tyvek® Fluid Applied Flashing and Joint Compound+	3.5 gal	50 – 60 sf/gal*
DuPont™ Tyvek® Fluid Applied Flashing and Joint Compound+ (for gypsum sheathing seam treatment)	28 oz	2.5–3.5 lf/oz
DuPont™ Sealant for Tyvek® Fluid Applied System	28 oz	N/A

*Estimated surface coverage at 25 mils thick

General DuPont™ Tyvek® WRB and Flashing Products Installation Principles

The primary elements of proper weather barrier system installation for building envelopes are continuity, overlap, and fasteners.

- **Continuity** refers to establishing a continuous barrier to help prevent bulk moisture from penetrating the wall system, to help direct bulk moisture out of the wall system, and to help prevent air leakage from entering the building and affecting the building's energy efficiency. Continuity encompasses taping seams, proper terminations at the roof-wall interface and the wall-to-foundation interface, and appropriate details at all penetrations, windows, doors, pipes, ducts, etc.
- **Overlap** refers to the proper shingling of the building envelope components on the wall. Much in the same way shingles are installed on a roof, it is important that the weather barrier membrane and flashing be properly overlapped so bulk water is directed down and away from the wall.
- **Fasteners** with caps are important for both overall durability of the air/water-resistive barrier system, and also for reducing the potential for water penetration or air leakage at fastening points.

If these basic principles are compromised, bulk water may enter the wall system and cause damage over time. The areas around windows or other wall penetrations are extremely vulnerable; and therefore, proper window and door flashing and integration with the WRB is critical to water management. The plane where the WRB is placed is considered the drainage plane, and windows and doors should be flashed in a method that enables water to shed to the exterior of the drainage plane.

DuPont™ FlexWrap™ offers protection at the sill (and head, where applicable) when installed per the guidance in the applicable Installation Guidelines. This product is installed at the sill/head to protect the vulnerable corners where water damage is most likely to occur. Installing head and jamb flashing with DuPont™ Flashing Tape or DuPont™ StraightFlash™ after integral flanged windows are installed helps provide proper continuity between the window flange and the Tyvek® WRB or sheathing. In this method, the window flange at the sill is not sealed to the WRB/sill flashing to provide a mechanism for water to drain to the exterior should it penetrate the drainage plane and accumulate at the sill.

The same approach is used for non-flanged windows, such as brick mold installations, where DuPont™ FlexWrap™ is first installed at the sill prior to installing the window. In this case, DuPont™ VersaFlange™ is installed directly to the brick mold at the window jambs and head prior to window installation in order to create a flange on the window that can be subsequently integrated to the sheathing and DuPont™ Tyvek® WRB to establish continuity of the drainage plane. Alternatively, there is the option to address storefront/non-flanged window and door conditions using the "wrap the cavity" method in which the entire rough opening is sealed with flashing prior to the window or door installation.

The ability to design a continuous and durable air barrier plane despite transitions such as roof assemblies intersecting exterior walls, windows, and other service penetrations ultimately contributes to the air leakage of the whole building. DuPont offers the components necessary to construct an exterior air barrier assembly which includes a collection of compatible products that can be tied together to provide air tightness for the whole building enclosure.

An airtight building helps prevent cold air infiltration in the winter months, and moist warm air infiltration in the summer months. Tyvek® WRBs create an exterior air barrier that contributes to overall air tightness and energy efficiency and helps the conditioned air to stay inside of the building, minimizing energy loss. Each of the Tyvek® WRB Installation Guidelines provide requirements for air barrier installations.

DuPont Building Envelope Solutions Installation Guidelines and Warranty Considerations

Product installation considerations for both the Tyvek® WRB and the DuPont Self-Adhered Flashing Products for wood-framed multi-family and light commercial structures are covered in the *DuPont™ Tyvek® Water-Resistive and Air Barriers (WRB) and DuPont Self-Adhered Flashing Products Installation Guidelines For Type III and Type V Wood-Framed Structures Including Multi-Family and Light Commercial Buildings* documents. There are two versions of the document to cover when the Tyvek® WRB is installed in relation to the DuPont Self-Adhered Flashing Products at windows and doors:

- [*Windows and Doors Installed AFTER the Tyvek® WRB*](#)
- [*Windows and Doors Installed BEFORE the Tyvek® WRB*](#)

Overview of DuPont Installation Guidelines and Performance Requirements

The following paragraphs reference specific performance test standards. For more information regarding these standards, see the *Building Envelope Performance Requirements* section within this document. DuPont™ Tyvek® categorizes structures into three primary groups:

"Single-Family Residential Buildings" are defined as fully-detached one- or two-family structures, as well as townhouse structures not more than three stories above grade plane as defined in the 2018 International Residential Code (IRC) Section R101.2, both to the extent they are exclusively Residential Use building structures.

"Wood-Framed Multi-Family and Light Commercial Buildings" are defined by DuPont as the following (must meet ALL criteria):

- a. Constructed of wood-based structural exterior framing of Type III or Type V Construction* (IBC Chapter 6); and
- b. Does not exceed 2018 IBC max height (Table 504.3) for Type V construction (70 ft.) or Type III construction (85 ft.), including allowances for Automatic Sprinkler height increase (IBC 504.1 and Table 504.4) and 'podium' structures outlined in the Special Provisions* (IBC Section 510); and
- c. Design requirements for the building envelope do not exceed air barrier performance of ASTM E1677 (10.8 psf structural load, 65 mph equivalent wind load), and water infiltration resistance criteria of 6.24 psf (50 mph equivalent wind-driven rain) when tested in accordance with ASTM E331, ASTM E1105, or equivalent.

*Special Provisions (IBC Section 510) allows for a "horizontal building separation", or 'podium', to be built under the wood-framed Type III or Type V building. The podium is typically constructed of steel framing or concrete. Podium-style buildings are included under "Wood-Framed Multi-Family and Light Commercial Buildings", as long as all other definition criteria (a. through c. above) are met.

"Commercial and High-Performance Buildings of Any Height" are defined by DuPont as any of the following:

- a. Structures constructed of steel-based structural exterior framing and any exterior sheathing, or
- b. Structures with exterior above grade walls constructed of concrete or concrete masonry units (CMU), or
- c. Structures of any height and construction type (including any framing type) that are designated as high-performance. "High-performance" is defined as air barrier performance exceeding ASTM E1677 and/or water infiltration resistance criteria exceeding 6.24 psf when tested in accordance with ASTM E331, ASTM E1105, or equivalent.

NOTE: "Podium" style structures with wood-framed floors built above steel-framed or concrete/CMU floors are covered under "Wood-Framed Multi-Family and Light Commercial Buildings" unless they are "high-performance". Refer to the Building Envelope Performance Requirements section in this document for more information.

Overview of Warranty Requirements

In addition to the criteria based on building type and performance, there are requirements for Warranty eligibility that also must be met in the [*DuPont Building Envelope Solutions Products 10-Year Limited Warranty for Single-Family, Wood-Framed Multi-Family, and Light Commercial Buildings*](#).

This Warranty follows the definitions outlined for building type and performance in the section above.

Both the Product Warranty and the Product and Labor Warranty offered by DuPont are Limited Warranties effective for a period of 10 years. The Product Warranty covers repair or replacement of defective DuPont Building Envelope Solutions Products only and does not cover repair and replacement of other damaged materials. In addition to replacement of defective weather barrier materials, the Product and Labor Warranty covers reasonable construction repair costs to correct any problem that arises solely out of the failure of the applicable DuPont Building Envelope Solutions Product.

The DuPont 10-Year Limited Warranties are directly tied to the DuPont Installation Guidelines. The applicable Installation Guidelines must be followed in order to be eligible for the Product and Labor component of the [DuPont Building Envelope Solutions Products 10-Year Limited Warranty for Single-Family, Wood-Framed Multi-Family, and Light Commercial Buildings](#).

This section provides guidance on choosing the applicable Installation Guideline and installation details for eligibility for both the Product and Labor Components of the 10-Year Limited Warranties.

In order to be eligible for the Product and Labor components of the Warranty, **DuPont Building Envelope Solutions Products must be used in “all applicable areas” of the structure, as indicated in the Installation Guidelines.** For example, if a combination of DuPont™ Tyvek® WRBs and other manufacturer’s building wraps were used on the same building, the building would not be eligible for the Product and Labor components of the Warranty. One exception that highlights the definition of “all applicable areas” is a building with a combination of Exterior Insulation Finish Systems (EIFS) cladding and at least one other type of cladding. EIFS manufacturers often require the use of a specific WRB as a part of the EIFS system; therefore, DuPont™ Tyvek® WRBs would not be applicable behind these EIFS products. In the other areas of the building that do not have EIFS cladding, a Tyvek® WRB would be required on the remainder of the building for eligibility for the Product and Labor component of the Warranty.

If a building is constructed with a flashing detail not covered in the Installation Guidelines, general drainage principles should be used. The DuPont™ Tyvek® Specialist Network (described on page 10) is available to help evaluate whether a detail meets the criteria for the applicable DuPont Installation Guidelines. If there is any question regarding a detail and its compliance with the DuPont Installation Guidelines for Product and Labor Warranty eligibility, the Tyvek® Specialist should be contacted prior to installation of the DuPont Products.

The Warranty may cover only the Tyvek® WRB, or both the DuPont™ Tyvek® WRB Products and DuPont Self-Adhered Flashing Products. If applicable, the Warranty may also cover DuPont™ Tyvek® DrainVent™ Rainscreen or DuPont™ Tyvek® Fluid Applied Products installed as part of a hybrid detail.

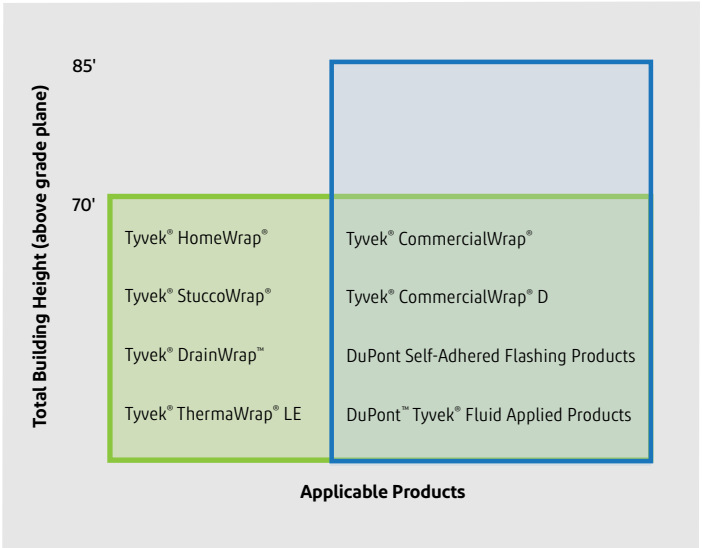
- In order to be eligible for the Product and Labor component of the Warranty for the Tyvek® WRB, the Tyvek® WRB must be installed in accordance with the applicable Installation Guidelines, including the proper overlap, shingling, taped seams, fasteners, fastener schedule, terminations, etc. and all other terms of the DuPont Building Envelope Solutions 10-Year Limited Warranty process must be followed.

- For eligibility for the Product and Labor Warranty for the Tyvek® WRB specifically, DuPont Self-Adhered Flashing Products do not have to be used for flashing doors, windows, and/or other components that penetrate the DuPont™ Tyvek® Building Wrap as long as the alternate or competitive products meet the specifications set out in the DuPont Installation Guidelines.
- DuPont™ Tyvek® WRBs are not applicable under EIFS cladding.
- In order to be eligible for the Product and Labor component of the Warranty for the DuPont Self-Adhered Flashing Products, DuPont™ Tyvek® Building Wrap Products must be used and installed in accordance with the applicable Installation Guidelines. The DuPont Self-Adhered Flashing Products must be installed in accordance with the applicable Installation Guidelines and all other terms of the DuPont Building Envelope Solutions 10-Year Limited Warranty process must be followed.

DuPont™ Tyvek® WRB Selection

When considering the Product and Labor component of the Warranty, DuPont™ Tyvek® HomeWrap®, DuPont™ Tyvek® StuccoWrap®, DuPont™ Tyvek® DrainWrap™ should only be used when the building's total height above grade plane is 70 feet and under. DuPont™ Tyvek® CommercialWrap® and DuPont™ Tyvek® CommercialWrap® D **must** be used on **ALL** above-grade exterior walls, and in all applicable areas when the total building height above grade plane is between 70 and 85 feet, as well as on buildings which require compliance with NFPA 285. Refer to [NFPA 285 Documentation](#) for further resources and information on meeting NFPA 285 requirements.

The figure below shows the allowable DuPont Building Envelope Solutions Products based on the building height. For more information on further installation considerations, including recommendations on fasteners and spacing as well as window/door head flap treatment options, please see the *Applicable Structures and Performance Criteria* section of the Installation Guidelines.



The Products listed in the left column in the figure above are limited to buildings **not** exceeding 70 feet in height. The Products in the right column can be used on all multi-family/light commercial buildings, including those up to 85 feet in height.

Building Envelope Performance Requirements

The building envelope performance specification will affect the level of detail required for installation of the WRB. For example, commercial structures typically have a much higher performance specification than single family residential homes, and therefore require a more robust set of installation details. The following section will further explain how building envelope design considerations impact installation of DuPont Building Envelope Solutions Products.

Identifying Performance Requirements

Building envelope performance can be determined directly in the project specifications, indirectly in the engineering wind design loads, or in specifications of other building envelope components such as windows or cladding.

Performance considerations of the WRB may include:

1. Reducing air infiltration to help meet energy code requirements,
2. Withstanding structural air and gust loads,
3. Resisting water infiltration into the wall assembly in order to contribute to wall assembly durability, and
4. Maintaining these properties while being subjected to thermal cycling in order to simulate real-world conditions.

The project specification manual within the project documents typically provides the air and water barrier performance specification for the building envelope.

Relevant Assembly Test Standards:

When identifying and characterizing the performance of a building's air and water barrier, it is important to be aware of several wall assembly test standards. The list of standards below are just a few of the common standards a professional working on a multi-family or light commercial project may see:

- **ASTM E283** *Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen*
- **ASTM E1677** *Standard Specification for an Air Retarder (AR) Material or System for Low-Rise Framed Building Walls*
- **ASTM E2357** *Standard Test Method for Determining Air Leakage of Air Barrier Assemblies*
- **ASTM E331** *Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Pressure*
- **ASTM E1105** *Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Door, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference*
- **AAMA 502**, *Voluntary Specification for Field Testing of Newly Installed Fenestration Products*
- **ASTM E2273** *Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies*
- **AAMA 501.5** *Test Method for Thermal Cycling of Exterior Walls*

- **NFPA 285** *Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components*

DuPont™ Tyvek® WRBs have been tested to and have passed these and other standards. For more information on which DuPont Products have been tested to each of the specific test standards, see the applicable Installation Guidelines or Product Information Sheets.

Performance Testing

Wall assemblies can be tested using various standards and test methods. The standards that DuPont uses for testing assemblies for Wood-Framed Multi-Family and Light Commercial buildings are ASTM E1677 and ASTM E331. The air and structural wind loads are tested per ASTM E1677 to a performance level equivalent to 65 mph structural load (10.8 psf). The water infiltration resistance of the assembly is tested per ASTM E331 to a load equivalent to a 50 mph wind-driven rain (6.24 psf).

When building performance requirements exceed ASTM E1677 wind load and/or have a water infiltration resistance greater than 6.24 psf, the DuPont Commercial and High-Performance Installation Guidelines are followed. The testing protocol for these Installation Guidelines is much more rigorous than those for low-rise buildings and is outlined in the DuPont Technical Bulletin titled, [DuPont™ Tyvek® Commercial Air Barrier Assemblies Exceed Air Barrier Association of America, ASHRAE 90.1 and IECC Air Leakage Requirements When Tested in Accordance with ASTM E2357.](#)

DuPont Commercial Building Envelope Solutions Products, including DuPont™ Tyvek CommercialWrap®, Tyvek® CommercialWrap® D, Tyvek® Fluid Applied Products, DuPont™ StraightFlash™, and DuPont™ FlexWrap™, are required when following the DuPont Commercial and High-Performance Installation Guidelines. Refer to the guidelines for these and other requirements. When considering Warranty coverage for high-performance installations and for commercial buildings, refer to the [DuPont Building Envelope Solutions Products 10-Year Limited Warranty for Commercial and High-Performance Buildings of Any Height.](#)

In addition to the building envelope performance specification, the pressures used during air and water infiltration field testing of windows or other fenestrations should be considered when choosing the applicable DuPont Installation Guidelines and details. Building Envelope Consultants typically test a set percentage of the windows in a building. The testing pressures often vary by region or by test administrator. Test pressures are determined based on window design ratings, building exposure, or other design data. Common field testing methods used are ASTM E1105, *Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference*, or AAMA 502, *Voluntary Specification for Field Testing of Newly Installed Fenestration Products*. For example, a field water infiltration resistance test of a window per ASTM E1105 should not exceed 6.24 psf, if the window has been flashed in accordance with the Wood-Framed Multi-Family and Light Commercial Installation Guidelines.

DuPont Building Envelope Solutions Products Installation Considerations for Wood-Framed Multi-Family and Light Commercial Buildings

The following table provides a summary of typical installation information.

Installation Considerations	Total Building Height Above Grade Plane	
	Up to 70 Feet	70 – 85 Feet
Performance Criteria	Building air barrier performance not exceeding ASTM E1677, AND water infiltration resistance criteria not exceeding 6.24 psf when tested in accordance with ASTM E331, ASTM E1105, or equivalent	
Tyvek® WRB ¹	DuPont™ Tyvek® HomeWrap®, Tyvek® DrainWrap™, Tyvek® StuccoWrap®, Tyvek® CommercialWrap®, Tyvek® CommercialWrap® D	Tyvek® CommercialWrap®, Tyvek® CommercialWrap® D (required on all above grade wood-framed exterior walls)
DuPont™ Tyvek® Fluid Applied Products	Can be used on any above grade exterior wall where specified in hybrid details in this guide. Recommended for use on above grade exterior CMU and/or concrete walls. Refer to the Installation Guidelines for DuPont™ Tyvek® Fluid Applied Flashing and/or Tyvek® Fluid Applied WB+™ for additional information	
DuPont™ Tyvek® Tape	2" (3" required when using Tyvek® DrainWrap™, Tyvek® StuccoWrap® or Tyvek® CommercialWrap® D)	3"
Typical Recommended Fasteners and Spacing ²	1" DuPont™ Tyvek® Wrap Cap Staples or Nails (or equivalent) fastened along stud lines spaced at 6–18" vertically	2" DuPont™ Tyvek® Wrap Cap Screws or approved TRUFAST® Walls Fasteners (formerly Rodenhouse) 1" plastic cap fasteners are considered temporary fasteners
Air Barrier Details	Recommended	Required
Tyvek® WRB Terminations to Sheathing	DuPont Self-Adhered Flashing Products	
Recommended Tyvek® WRB Termination Around Windows/Doors	Tyvek® Tape or DuPont Self-Adhered Flashing Products	DuPont Self-Adhered Flashing Products Install mechanical fasteners through flashing as needed for increased holding power
Self-Adhered Flashing Patches behind Cladding Fasteners	Required when water infiltration resistance criteria for the building envelope exceeds 0.56 psf Tyvek® CommercialWrap® or Tyvek® CommercialWrap® D (15 mph equivalent wind-driven rain), nominal test pressure per ASTM E1677. See Alternate Fastening section of the Installation Guidelines for more information.	

¹Buildings requiring NFPA 285 compliance must use Tyvek® CommercialWrap® D in accordance with DuPont NFPA 285 documentation.

² For increased holding power and for higher air and water holdout performance, DuPont recommends fasteners of sufficient length to penetrate securely into the stud. Temporary fastening methods can be used. See **Temporary Fastening** section of Installation Guidelines for more information.

Installation Considerations Based on Performance

When building envelope design criteria exceed ASTM E1677 (10.8 psf, 65 mph equivalent structural load and 15 mph equivalent wind-driven rain water infiltration resistance), the *Installation Guidelines for Commercial and High-Performance Buildings of any Height* for DuPont™ Tyvek® WRBs and DuPont Self-Adhered Flashing Products must be used.

When considering the Product and Labor Component of the 10-Year Limited Warranties, the installation details listed below, among others, must be considered:

- Tyvek® WRB and DuPont Self-Adhered Flashing Product selection must be consistent with building type and performance design. Refer to the applicable Installation Guidelines for more details.
- Air barrier installation may be part of the criteria for Product and Labor Warranty eligibility (sealing both vertical and horizontal seams and all terminations). For buildings up to 70 feet in height above grade plane, it is recommended, but not required, that the WRB be installed as an air barrier. On the other hand, buildings between 70 and 85 feet require a full air barrier installation.

This involves properly sealing all seams and terminations.

- Air barrier installations include the following:
 - The WRB is terminated at the top of the wall with DuPont™ Flashing Tape or DuPont™ StraightFlash™ and properly integrated with the roofing membrane, if present.
 - The termination at the bottom of the wall is consistent with the air barrier options in the installation guidelines. Sealant alone cannot be used to terminate the WRB.
 - The WRB is recommended to be installed before the windows for maximum continuity of the building envelope.
 - Flashing patches are installed behind cladding fasteners such as brick ties, metal plates, and metal channels, to provide additional water and air sealing performance.
 - For a more robust termination, additional mechanical fasteners are installed into the flashing at the head flap and perimeter of the window at recommended spacing in order to provide additional performance.

Fastening

Fastening requirements differ based on the type of building in the applicable DuPont Installation Guidelines, both in type of fastener and in fastener spacing. Refer to the individual installation guidelines for the complete details.

The Installation Guidelines for Type III and Type V Wood-Framed Structures Including Multi-Family and Light Commercial Buildings were designed for nailable substrates, i.e. wood. The typical fastener for these guidelines is a 1" DuPont™ Tyvek® Wrap Cap Staple, Cap Nail or other manufacturer's equivalent cap fastener for buildings up to 70 feet in height. For buildings between 70 and 85 in total height, a 2" DuPont™ Tyvek® Wrap Cap Screw or a TRUFAST® Walls Grip-Deck® screw with Thermal-Grip FastCap™ washers is recommended. 2" Tyvek® Wrap Cap Screws were designed to be used in combination with fiber-faced exterior gypsum sheathing and metal studs; however, they can also be used for wood framed/sheathed assemblies.

Alternative fasteners, such as cladding fasteners, brick ties or others, may also be used as a means of attachment. Flashing patches can be installed behind these fasteners for extra performance for air and water holdout, as described in the section above. In addition, temporary means of attachment are included in the *Temporary Fastening* section of each Installation Guideline. Temporary fasteners are sometimes installed due to the fact that the permanent fasteners – the cladding fasteners – will be installed very soon after. If temporary means of WRB attachment are used, it is important to note there is an increased risk of WRB blow off or damage of the WRB. Therefore, DuPont recommends installing the permanent fasteners as soon as practically possible. Temporary fastening methods can include adhesive/primer installed in vertical strips along stud lines, recommended fasteners installed at a reduced schedule, or other methods.

Finally, DuPont™ Tyvek® Wrap Cap Fasteners, or recommended fasteners, should **not** be installed where DuPont Self-Adhered Flashing Products or DuPont™ Tyvek® Tape will be applied to avoid interference with the adhesion of these products. Tyvek® Wrap Cap Fasteners, or recommended fasteners, can be installed over DuPont Self-Adhered Flashing Products.

Refer to the applicable Installation Guidelines for more information.

UV Exposure

For Warranty eligibility, DuPont requires that DuPont™ Tyvek® CommercialWrap®, Tyvek® CommercialWrap® D, and Tyvek® Fluid Applied Products be covered within nine months (270 days) of installation and that all other DuPont™ Tyvek® Building Wraps be covered within four months (120 days) of installation. DuPont Self-Adhered Flashing Products also have a UV exposure limit. DuPont™ FlexWrap™ and DuPont™ StraightFlash™ should be covered within nine months (270 days) and DuPont™ Flashing Tape should be covered within four months (120 days).

Primer

Adverse weather conditions or cold temperatures (below 25°F, -4°C) may require use of a primer to promote adhesion of DuPont Self-Adhered Flashing Products to most common building materials. Concrete, masonry, and fiber faced exterior gypsum board require the use of a recommended adhesive/primer. Primer is not required when DuPont Self-Adhered Flashing Products are being applied to wood, except when there are cold temperatures as described above.

Refer to the Technical Bulletin [Chemical Compatibility or Representative Building Sealants, DuPont™ Tyvek® Commercial Building Envelope Solutions](#) for a list of approved primers.

Sealants

For information on sealants, refer to the Technical Bulletin [Chemical Compatibility of Representative Building Sealants, DuPont™ Tyvek® Commercial Building Envelope Solutions Products](#). In addition, the Technical Bulletin [Adhesion Performance Reference Sheet DuPont™ Tyvek® Fluid Applied Commercial Building Envelope Solutions Products](#) contains information relating to both Tyvek® Fluid Applied Products and DuPont Self-Adhered Flashing Products.

Fluid Applied Products

DuPont offers a complete portfolio of fluid applied products: DuPont™ Tyvek® Fluid Applied WB+™ for a continuous weather barrier on a variety of wall systems, DuPont™ Tyvek® Fluid Applied Flashing & Joint Compound+ for complex detailing around fenestrations and penetrations, and DuPont™ Sealant for Tyvek® Fluid Applied System for interior perimeter seals around windows and other uses. These products can be applied to many substrates, including wood. Refer to the applicable Installation Guidelines for more details on DuPont™ Tyvek® Fluid Applied Products.

Installation Guidelines Applicability

There are a variety of DuPont™ Tyvek® WRB and Flashing Systems Installation Guidelines available for various conditions. Each of the guidelines, and a description of applicability, is below. Only the most relevant Installation Guidelines have been listed. Visit building.dupont.com for complete Installation Information offered by DuPont.

DuPont™ Tyvek® WRB and DuPont Self-Adhered Flashing Product Installation Guidelines

- [DuPont™ Tyvek® Water-Resistive and Air Barriers \(WRB\) and DuPont Self-Adhered Flashing Products Installation Guidelines for Type III and Type V Wood-Framed Structures Including Multi-Family and Light Commercial Buildings, Windows and Doors Installed AFTER the Tyvek® WRB](#) – Complete Installation Information for both the Tyvek® WRB and the DuPont Self-Adhered Flashing Products when windows and doors are installed AFTER the WRB.
- [DuPont™ Tyvek® Water-Resistive and Air Barriers \(WRB\) and DuPont Self-Adhered Flashing Products Installation Guidelines for Type III and Type V Wood-Framed Structures Including Multi-Family and Light Commercial Buildings, Windows and Doors Installed BEFORE the Tyvek® WRB](#) – Complete Installation Information for both the Tyvek® WRB and the DuPont Self-Adhered Flashing Products when windows and doors are installed BEFORE the WRB.
- [Installation of Integral Flanged Windows with Wood Bump-Out Frame AFTER Water-Resistive Barrier \(WRB\) Is Installed](#) – Describes methods for flashing windows that are installed onto a wood-bump out frame around the perimeter of the rough opening.
- [Installation of Integral Flanged Windows in Recessed Openings AFTER Water-Resistive Barrier \(WRB\) Is Installed](#) – Describes methods for installing windows into [shallow](#) and [deep recessed](#) window conditions AFTER the WRB has been installed. This condition is more common in the US Southwest.
- [Installation of Integral Flanged Windows in Recessed Openings BEFORE Water-Resistive Barrier \(WRB\) Is Installed](#) – Describes methods for installing windows into [shallow](#) and [deep recessed](#) window conditions BEFORE the WRB has been installed. This condition is more common in the US Southwest.
- [DuPont™ FlexWrap™ EZ Installation Information](#) – Describes methods for sealing non-flanged wall penetrations such as small and large pipes, HVAC vents, electrical wires, etc.
- [DuPont™ Flashing Tape for Inside and Outside Wall Corners](#) – Describes methods for providing enhanced protection of both inside and outside corners created by intersecting walls using 12" wide DuPont™ Flashing Tape.

Assemblies with DuPont™ Tyvek® WRB and DuPont Exterior Continuous Insulation

- [Integrating DuPont Building Envelope Solutions Products with DuPont Exterior Continuous Insulation](#)

DuPont™ Tyvek® DrainVent™ RainScreen

- [DuPont™ Tyvek® DrainVent™ Rainscreen Installation Guidelines](#)

Educational Materials

Building Science Bulletins and Articles

- [Understanding Vapor Permeability](#)
- [DuPont™ Tyvek® HomeWrap®](#)
- [DuPont™ Tyvek® StuccoWrap®: Better Drainage Means Stronger Stucco](#)
- [Chemical Compatibility of Representative Building Sealants, DuPont™ Tyvek® Commercial Weatherization Systems Products](#)
- [Adhesion Performance Reference Sheet DuPont™ Tyvek® Fluid Applied Commercial Weatherization Systems Products](#)
- [NFPA 285 Compliant Wall Assemblies With DuPont™ Tyvek® Commercial Air and Water Barrier System](#)
- [DuPont™ Tyvek® Commercial Air Barrier Assemblies Exceed Air Barrier Association of America, ASHRAE 90.1 and IECC Air Leakage Requirements When Tested in Accordance with ASTM E2357](#)

White Paper

- [Navigating Wall Assembly Fire Testing – NFPA 285](#)

Additional Resources

DuPont™ Tyvek® Specialist Network

The DuPont™ Tyvek® Specialist Network is an elite team of more than 160 highly-trained field representatives dedicated to keeping up with trends and supporting installations before, during and after construction. From the latest updates on building codes to keeping up with current challenges, local DuPont™ Tyvek® Specialists can provide on-site consulting and training to help make sure the job gets done right.

DuPont™ Tyvek® Certified Installers

DuPont offers a program to train installers on the basics of building science, product knowledge, and proper installation of DuPont Building Envelope Solutions Products. These installers receive classroom and on-site training on proper installation techniques and safety practices from a DuPont™ Tyvek® Specialist and must pass written and hands-on installation tests to become part of the Certified Installer network.

- Residential Certified Installer training
- Commercial Certified Installer training
- DuPont™ Tyvek® Fluid Applied Products Certified Installer training

Building Envelope CEU: AIA/CES Learning Units

DuPont is a participant in the American Institute of Architects' Continuing Education Systems (AIA/CES) Registered Provider program and offers a range of AIA/CES Learning Units designed to help building professionals stay up-to-date on best building practices and specifications. These units cover a wide range of weatherization-related topics, ranging from *Better Design of Buildings to Moisture Management Systems Review* to *Commonly Made Energy Mistakes*. Within the AIA/CES system, a Learning Unit (LU) is earned for each 60-minute increment of instruction or study. A Continuing Education Unit (CEU) is earned for each 10 hours of instruction or study. Each of these CEUs can be presented by your local Tyvek® Specialists.

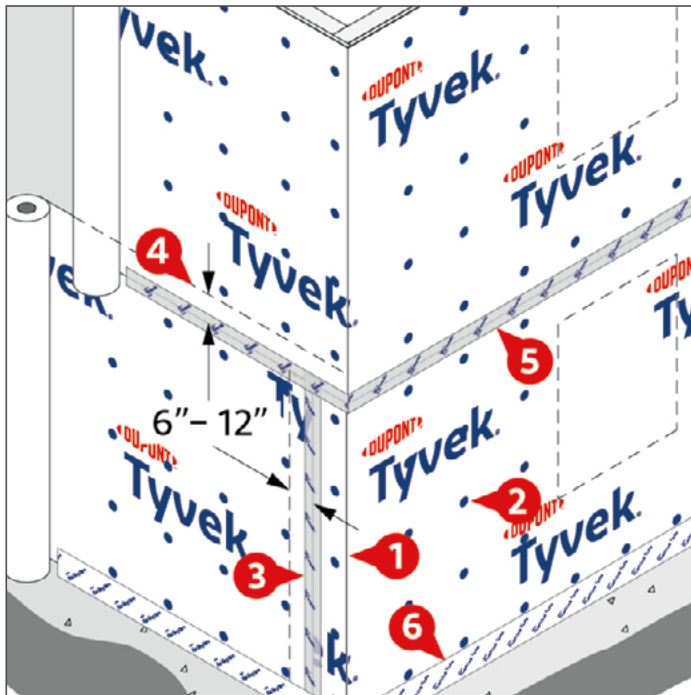
Multi-Family Field Installation Examples:

DuPont™ Tyvek® WRB Installation and Continuity



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Tyvek® WRB Installation for New Construction

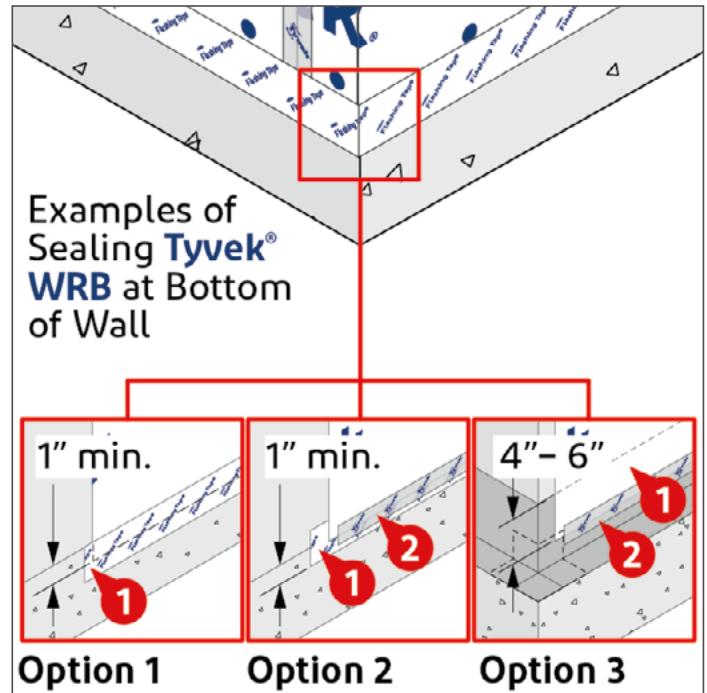


1. **Tyvek® WRB** roll aligned at bottom corner of structure and unrolled starting at corner and directly over window/door rough openings. All vertical seams overlapped by 6"– 12".
2. **Tyvek® WRB** secured to stud or nail-base material with recommended fasteners spaced 6"– 18" on vertical stud lines. No fasteners within 6" of sills and jams and 9" of the head of window/door rough openings.
3. Vertical seams of **Tyvek® WRB** taped with **DuPont™ Tyvek® Tape**.
4. Upper layer of **Tyvek® WRB** installed overlapping bottom layer by min. 6".
5. **Air Barrier Installations:** All horizontal seams taped. (3" **Tyvek® Tape** required on horizontal and vertical seams when using **DuPont™ Tyvek® StuccoWrap®**, **Tyvek® DrainWrap™** or **Tyvek® CommercialWrap® D**).
6. **Air Barrier Installations:** All terminations of the **Tyvek® WRB** (including, but not limited to, top-of-wall/bottom-of-wall interfaces) taped or sealed with **Tyvek® Tape** or **DuPont Self-Adhered Flashing Products**.

Recommended Fasteners (non-exhaustive list):

- **DuPont™ Tyvek® Wrap Cap** Nails, Screws, or Staples
- Other cap staples for Stinger® Cap Stapler
- TRUFast® Walls Grip-Deck® screws with Thermal-Grip FastCap™ washers (TRUFast® Walls formerly Rodenhouse).

Base of Wall



Option 1

1. **Tyvek® WRB** overlap foundation min. 1" and sealed with **DuPont Self-Adhered Flashing Product**^[1].

Option 2

1. Interface of sheathing and foundation sealed using **DuPont Self-Adhered Flashing Product**.
2. **Tyvek® WRB** overlapped onto **DuPont Self-Adhered Flashing Product** min. 1" and terminated using **Tyvek® Tape**^[1].

Option 3

1. **Tyvek® WRB** overlapped onto through wall flashing by min. 4"– 6".
2. **Tyvek® WRB** sealed using **Tyvek® Tape** or **DuPont Self-Adhered Flashing Product**.

^[1] **DuPont Self-Adhered Flashing Products** with recommended adhesive/primer, as applicable when **Tyvek® WRB** sealed directly to gypsum sheathing, concrete, wood or other rough surfaces.

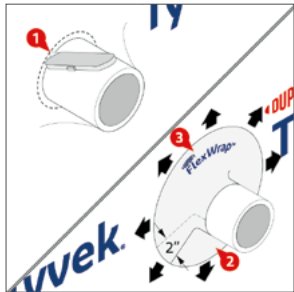
Multi-Family Field Installation Examples:

DuPont™ Tyvek® WRB Installation and Continuity



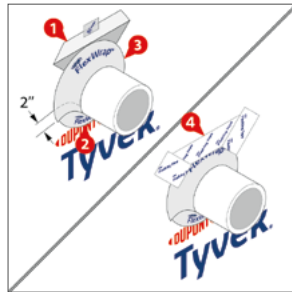
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Sealing Non-Flanged Penetrations with DuPont™ FlexWrap™



Method 1

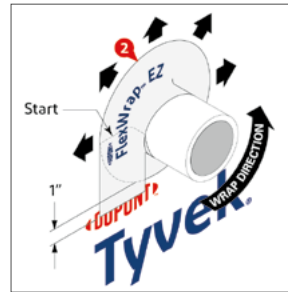
1. **Tyvek® WRB** cut around penetration.
2. **FlexWrap™** installed around bottom of penetration.
3. **FlexWrap™** installed around top of penetration, overlapping bottom layer of **FlexWrap™** by 2" on either side.
4. **OPTIONAL:** Piece of **Tyvek® WRB** taped over top of **FlexWrap™** (not shown).



Method 2

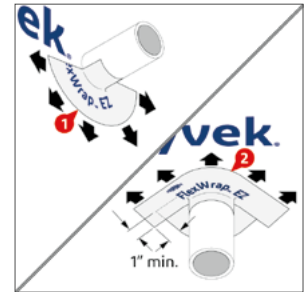
1. **Tyvek® WRB** cut around penetration with head flap cut above.
2. **FlexWrap™** installed around bottom of penetration.
3. **FlexWrap™** installed around top of penetration, overlapping bottom layer of **FlexWrap™** by 2" on either side.
4. Head flap sealed using **Tyvek® Tape** or **DuPont Self-Adhered Flashing Products**.

Sealing Penetrations with DuPont™ FlexWrap™ EZ



Outer Diameter GREATER than 2"

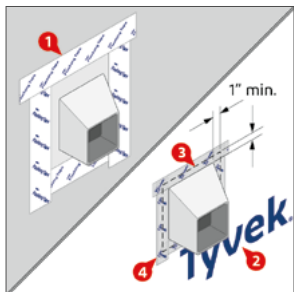
1. **FlexWrap™ EZ** piece cut **LONGER** than the circumference of non-flanged product (ensure 1" overlap onto the **Tyvek® WRB**).
2. **FlexWrap™ EZ** adhered around penetration, starting at the horizontal position on either side.



Outer Diameter LESS than 2"

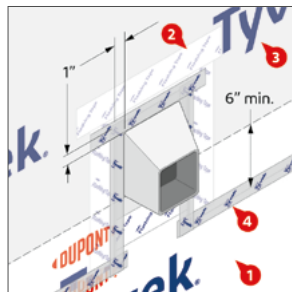
1. **FlexWrap™ EZ** piece cut 1/2 the length of the circumference of the non-flanged product, adhered onto bottom section, and fanned out onto **Tyvek® WRB**.
2. Second piece of **FlexWrap™ EZ** piece cut the length of the pipe circumference, adhered onto top section and fanned out onto face of wall with a min 1" overlap of the edges of the **FlexWrap™ EZ** below.

Flanged Penetration BEFORE Tyvek® WRB



Method 1

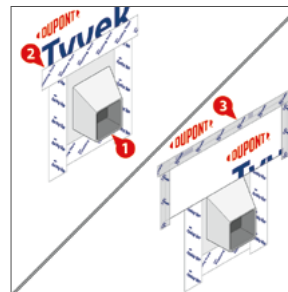
1. **DuPont™ Flashing Tape** installed onto flanges extending onto sheathing by min. 2".
2. **Tyvek® WRB** installed on wall.
3. **Tyvek® WRB** cut around penetration, ensuring min. 1" gap for adhesion.
4. Edges of **Tyvek® WRB** sealed with **DuPont™ Tyvek® Tape**.



Method 2

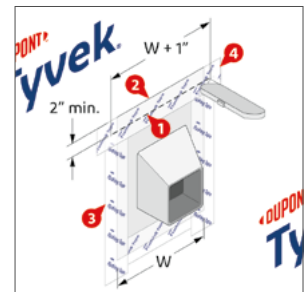
1. **Tyvek® WRB** installed under bottom flange.
2. **DuPont™ Flashing Tape** adhered onto sides and top flange.
3. Next course of **Tyvek® WRB** installed with min. 6" overlap.
4. **Tyvek® WRB** seams sealed with **Tyvek® Tape**.

Flanged Penetration AFTER Tyvek® WRB



Method 1

1. Integral flanged product installed.
2. **DuPont Self-Adhered Flashing Product** or **Tyvek® Tape** installed onto bottom, sides, and top flanges, extending onto **Tyvek® WRB** min. 2".
3. **OPTIONAL:** **Tyvek® WRB** piece installed to overlap the top edge of the **DuPont Self-Adhered Flashing Product**. Sides and top sealed with **Tyvek® Tape**.



Method 2

1. Horizontal cut min. 1" wider than the flange.
2. Top flange slid into slit with min. 2" overlap of **Tyvek® WRB**.
3. **DuPont Self-Adhered Flashing Product** (recommended best practice) or **Tyvek® Tape** adhered on bottom and side flanges, extending onto **Tyvek® WRB** by 2".
4. **DuPont Self-Adhered Flashing Product** (recommended best practice) or **Tyvek® Tape** installed to top flange, extending **BEYOND DuPont Self-Adhered Flashing Product**, or **Tyvek® Tape**, on side flanges.

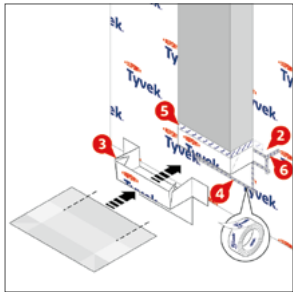
Multi-Family Field Installation Examples:

DuPont™ Tyvek® WRB Installation and Continuity



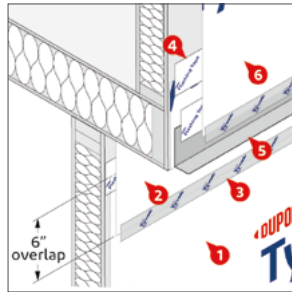
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Wall Protrusion with Horizontal Plane



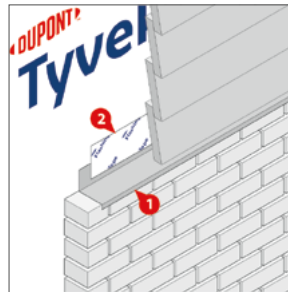
1. Tyvek® WRB terminated below horizontal plane onto sheathing using **DuPont Self-Adhered Flashing Product** (not shown). Termination optional for horizontal planes 12" or less.
2. At outside edge of cantilever, flap cut min. 6" above bottom edge of horizontal plane.
3. Tyvek® WRB wrapped under horizontal plane and folded up the sides of wall protrusion min. 6".
4. All Tyvek® WRB seams sealed with **DuPont™ Tyvek® Tape**.
5. Top edge of Tyvek® WRB sealed to the sheathing using **DuPont™ Flashing Tape**.
6. Flap at outside edges of horizontal plane folded down and sealed with Tyvek® Tape.
7. Upper course of Tyvek® WRB installed overlapping bottom layer min 6" (not shown).

Horizontal Plane Transition



1. Tyvek® WRB installed on wall below horizontal plane and terminated with **DuPont™ Flashing Tape**. Termination optional for horizontal planes 12" or less.
2. Tyvek® WRB installed on horizontal plane, overlapping the Tyvek® WRB below by 6", and extending min. 6" onto the vertical wall above.
3. Tyvek® Tape applied to seal horizontal seam below.
4. **DuPont™ Flashing Tape** applied to terminate Tyvek® WRB onto sheathing above horizontal plane.
5. **OPTIONAL:** Install a kick-out flashing and terminate vertical leg with **DuPont™ Flashing Tape**.
6. Tyvek® WRB installed on wall above horizontal plane and terminated onto kick-out flashing with Tyvek® Tape or **DuPont Self-Adhered Flashing Product**.

Façade Transition



Option 1

Metal Flashing Sealed to Tyvek® WRB

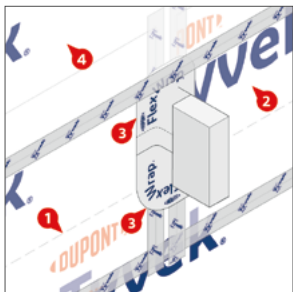
1. No Tyvek® WRB fasteners where metal flashing or **DuPont Self-Adhered Flashing** will be installed. "Z" or "L" metal flashing installed over lower façade and fastened onto Tyvek® WRB with mechanical fasteners.
2. Vertical leg of metal flashing terminated to Tyvek® WRB with **DuPont™ Flashing Tape** with min. 2" adhesion to the WRB.

Option 2

Metal Flashing Sealed to Sheathing

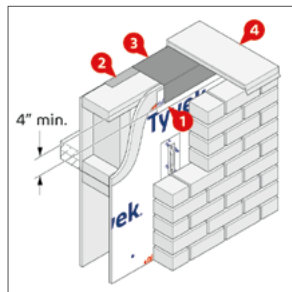
1. First course of Tyvek® WRB installed with min. 2" extending **BEYOND** where top edge of the lower façade will be located.
2. "Z" or "L" metal flashing applied over lower façade, even with top edge of Tyvek® WRB, and fastened with mechanical fasteners.
3. Vertical leg of metal flashing terminated to sheathing with **DuPont™ Flashing Tape** with min. 2" adhesion onto sheathing.
4. Next course of Tyvek® WRB installed with min. 2" overlap onto **DuPont Self-Adhered Flashing Product**. WRB terminated to self-adhered flashing using **DuPont™ Tyvek® Tape**.

Beam Penetration



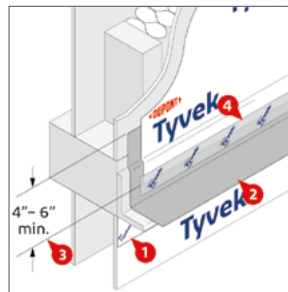
1. Tyvek® WRB installed across wall with top edge of WRB at bottom of beam.
2. Two pieces of Tyvek® WRB installed on either side of beam and sealed with Tyvek® Tape. The two pieces extend min. 7" above top of beam and overlap lower WRB course min. 6".
3. First piece of **DuPont™ FlexWrap™** installed around bottom of penetration before second piece installed around top of penetration, overlapping bottom layer by 2".
4. Tyvek® WRB installed above beam, overlapping lower courses with 1" gap above beam. All horizontal and vertical seams taped with Tyvek® Tape.

Parapet and Top of Wall



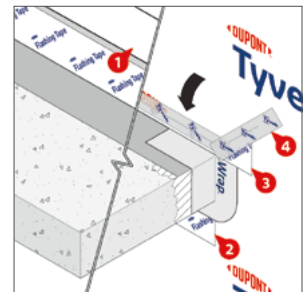
1. Tyvek® WRB terminated with min. 4" **DuPont™ Flashing Tape** or **DuPont™ StraightFlash™**⁽¹⁾.
 2. Roofing membrane installed.
 3. Through wall flashing installed over parapet wall, overlapping Tyvek® WRB and roofing membrane min. 4".
 4. Coping cap installed.
- ⁽¹⁾ For non-air barrier installations with TPO or EPDM roofing membrane overlapping Tyvek® WRB on vertical wall, min. 4"-6" overlap required if no **DuPont Self-Adhered Flashing Product** used.

Shelf Angle



1. Tyvek® WRB sealed to the bottom of the shelf angle using **DuPont™ Flashing Tape**.
2. Through wall flashing installed to top of shelf angle.
3. Tyvek® WRB installed and overlapping through wall flashing min. 4"-6".
4. Tyvek® WRB sealed to through wall flashing using Tyvek® Tape or a **DuPont Self-Adhered Flashing Product**.

Concrete Cantilever or Balconies



1. Tyvek® WRB flap cut and flipped up, and then waterproofing membrane/metal installed.
2. Tyvek® WRB terminated below cantilever/balcony with **DuPont™ Flashing Tape**, then **DuPont™ FlexWrap™** wrapped around cantilever/balcony edge.
3. If metal through wall flashing used, **DuPont™ Flashing Tape** installed over top edge and over **FlexWrap™**.
4. Flip down and seal Tyvek® WRB flap with Tyvek® Tape or **DuPont Self-Adhered Flashing Product**.

NOTE: Apply recommended adhesive/primer or recommended primer to concrete surfaces and/or exterior gypsum sheathing.

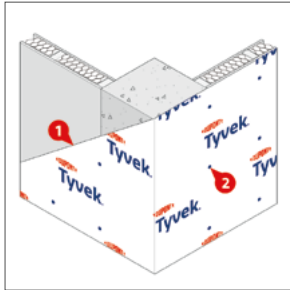
Multi-Family Field Installation Examples:

DuPont™ Tyvek® WRB Installation and Continuity



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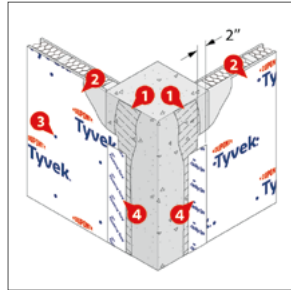
Concrete Column



Method 1

1. **Tyvek® WRB** wrapped around concrete column.
2. **Tyvek® WRB** mechanically fastened^[2] at recommended spacing.

^[2] Mechanically fasten **Tyvek® WRB** to concrete column with appropriate fasteners if necessary to maintain recommended fastener spacing.



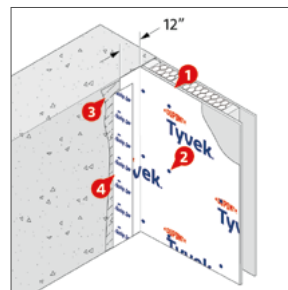
Method 2

1. Concrete column primed with recommended adhesive/primer.
2. **Tyvek® WRB** cut at concrete column, leaving approx. 2" overlapping column.
3. **Tyvek® WRB** mechanically fastened into studs.
4. **Tyvek® WRB** sealed to concrete using **DuPont™ Flashing Tape^[3]** or **DuPont™ StraightFlash™^[4]**. Ensure air barrier continuity at concrete interfaces.

^[3] **StraightFlash™** required if **Tyvek® WRB** transitions to a fluid applied membrane.

^[4] Additional fasteners may be necessary to secure **DuPont Self-Adhered Flashing Product** for increased holding power.

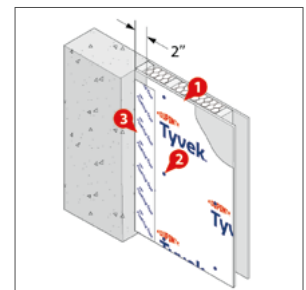
Inside Corner Termination at Concrete Transition



Method 1

1. **Tyvek® WRB** cut, leaving approx. 12" overlapping concrete.
2. **Tyvek® WRB** mechanically fastened to studs.
3. Concrete primed with recommended adhesive/primer.
4. **Tyvek® WRB** sealed to concrete using **DuPont™ Flashing Tape^[1]** or **DuPont™ StraightFlash™**. Ensure air barrier continuity at concrete interfaces.

^[1] **StraightFlash™** required if **Tyvek® WRB** transitions to a fluid applied membrane.

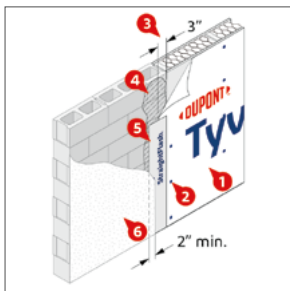


Method 2

1. **DuPont™ Tyvek® WRB** cut to expose approx. 2" of the wall. For gypsum sheathing, use of recommended adhesive/primer is required.
2. **Tyvek® WRB** mechanically fastened to studs.
3. **Tyvek® WRB** sealed to the wall using **DuPont™ Flashing Tape^[2]** or **StraightFlash™**. Ensure air barrier continuity at concrete interfaces.

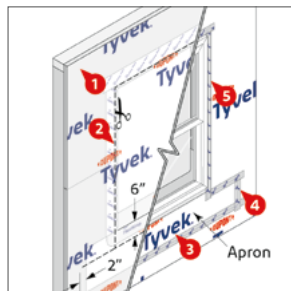
^[2] **StraightFlash™** required if **Tyvek® WRB** transitions to a fluid applied membrane.

Hybrid Transition Detail



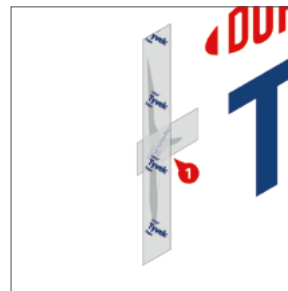
1. **Tyvek® WRB** installed prior to application of **DuPont™ Tyvek® Fluid Applied WB+™**.
2. **Tyvek® WRB** fastened to the stud adjoining the transition substrate using recommended fasteners and spacing.
3. **Tyvek® WRB** cut so that approx. 3" will overlap the adjoining substrate.
4. Adjoining substrate primed with recommended adhesive/primer.
5. **Tyvek® WRB** terminated to the primed substrate using 4" **StraightFlash™**.
6. **Tyvek® Fluid Applied WB+™** applied onto wall surface, overlapping the **StraightFlash™** by min. 2". **NOTE:** Wet **Tyvek® Fluid Applied WB+** should not come into contact with **Tyvek® WRB**.

Integrating Tyvek® WRB for Windows/Doors Installed BEFORE Tyvek® WRB



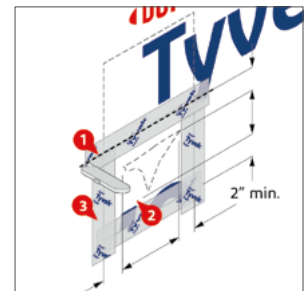
1. **Tyvek® WRB** installed over window/door. No fasteners within 4" of frame of window at jambs/head and within 12" at sill.
2. Perimeter marked 1"–2" from window at jambs/head and 6" below window at sill. Cut along marking to expose window. Slits cut at lower corners 1"–2" **BEYOND Tyvek® WRB** apron underneath.
3. **Tyvek® WRB** apron brought to the front through the cut/slits and lapped over top layer of **Tyvek® WRB**.
4. **Tyvek® WRB** apron sealed around perimeter with **Tyvek® Tape**.
5. **Tyvek® WRB** terminated around window with **Tyvek® Tape** or **DuPont Self-Adhered Flashing**.

Handling Tears



1. Tears covered with **Tyvek® Tape** or **DuPont Self-Adhered Flashing Products**.

Handling Holes



1. Slit in **Tyvek® WRB** cut 2" above hole and extending 2" on each side of hole.
2. Piece of **Tyvek® WRB** tucked into the slit to maintain proper shingling.
3. Seams around **Tyvek® WRB** taped, working from bottom to top.

Multi-Family Field Installation Examples:

DuPont™ Tyvek® WRB Installation and Continuity

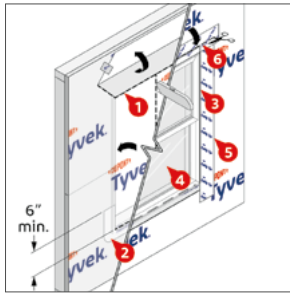
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Tyvek®

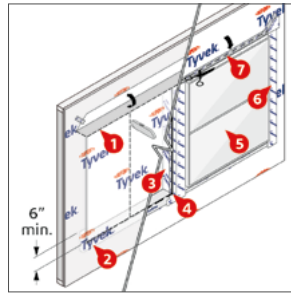


Integral Flanged Window



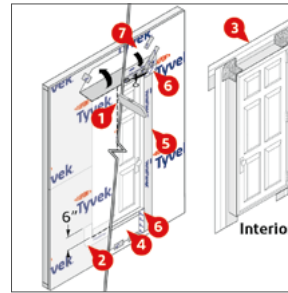
1. "I-Cut" in **Tyvek® WRB** at rough openings. 45° cuts at window head extending min. 8" from outer corners. Flaps at jambs folded into the opening and secured. Head flap flipped up and secured.
2. **DuPont™ FlexWrap™** installed at the sill and min. 6" up jambs.
3. Sealant applied to three sides of the window opening at jambs and head.
OPTIONAL: Skip sealing at the sill for drainage.
4. Window installed per manufacturer's specifications.
5. **DuPont™ Flashing Tape** applied over flanges at jambs and head.
6. Head flap trimmed 1" – 2" and secured overhead flashing with **DuPont™ Tyvek® Tape** or **DuPont Self-Adhered Flashing Product**.
7. Full interior perimeter seal applied (not shown).

Integral Flanged Adjacent Windows



1. "I-Cut" in **Tyvek® WRB** at rough openings. 45° cuts at window head extending min. 8" from outer corners. Flaps at jambs folded into the opening and secured. Head flap flipped up and secured.
2. **FlexWrap™** installed at each sill extending min. 6" up jambs.
3. 9" **DuPont™ Flashing Tape** installed onto shared vertical framing; bottom edge aligned with sill, top edge aligned with head.
NOTE: For option using **Tyvek® WRB** at shared framing – see full Multi-Family Install Guides.
4. Sealant applied to three sides of the window opening at jambs and head.
OPTIONAL: Skip sealing at the sill for drainage.
5. Window installed per manufacturer's specifications.
6. **DuPont™ Flashing Tape** applied over flanges at jambs and head.
7. Head flap trimmed 1" – 2" and secured over head flashing with **Tyvek® Tape** or **DuPont Self-Adhered Flashing Products**.
8. Full interior perimeter seal applied to both windows (not shown).

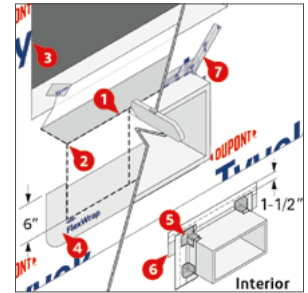
Non-Flanged Door using DuPont™ VersaFlange™



Method also applies to Non-flanged window, non-integral flanged window/door, and brick mold window/door.

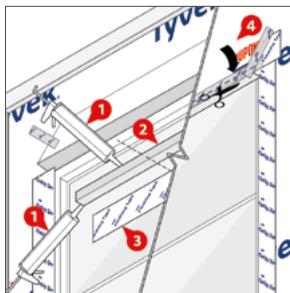
1. "I-Cut" in **Tyvek® WRB** at rough openings. 45° cuts at window head extending min. 8" from outer corners. Flaps at jambs folded into the opening and secured. Head flap flipped up and secured.
2. **FlexWrap™** installed at sill extending min. 6" up jambs. Integrated back dam as applicable.
3. **VersaFlange™** applied to door frame along jambs and head (head piece installed first). **FlexWrap™** pieces applied at corners.
4. **OPTIONAL:** For higher performance, high-pressure skirt installed to door frame prior to door installation.
5. Release paper removed from **VersaFlange™** and door installed per manufacturer's instructions.
6. **OPTIONAL:** Exposed butyl covered with **Tyvek® Tape** or **DuPont Self-Adhered Flashing Products**.
7. Head flap flipped down, trimmed 1" – 2", and sealed with **Tyvek® Tape** or **DuPont Self-Adhered Flashing Products**.
8. Full interior perimeter seal applied (not shown).

Packaged Terminal Air Conditioner (PTAC) Unit



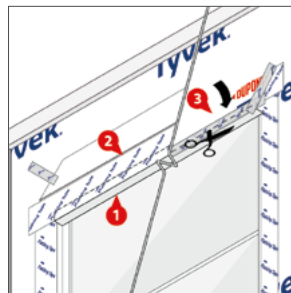
1. "I-Cut" in **Tyvek® WRB** at PTAC rough opening. Flaps at jambs folded into the opening and secured.
2. **Tyvek® WRB** above PTAC opening cut according to distance between window and PTAC:
 - a. **When PTAC opening min. 8" below window:** 45° cuts at window head extending min. 8" from outer corners. Head flap flipped up and secured.
 - b. **When PTAC opening less than 8" below window:** Two vertical cuts in **Tyvek® WRB** above PTAC opening, cuts aligned with jambs, to remove **Tyvek® WRB** piece.
3. For integral flanged window above PTAC, "I-Cut" and head flap cut in **Tyvek® WRB** for window opening.
4. **FlexWrap™** installed at PTAC sill extending min. 6" up jambs.
5. **DuPont™ VersaFlange™** applied to PTAC sleeve along jambs and head (head piece installed first). **FlexWrap™** pieces applied at four corners.
6. Release paper removed from **VersaFlange™** and PTAC sleeve installed.
7. PTAC opening on face of wall finished according to distance between window and PTAC:
 - a. **When PTAC opening min. 8" below window:** Head flap flipped down, trimmed 1" – 2", and sealed with **Tyvek® Tape** or **DuPont Self-Adhered Flashing Products**.
 - b. **When PTAC opening less than 8" below window:** Only if additional exposed sheathing above **VersaFlange™** head flashing - additional piece of **DuPont Self-Adhered Flashing Product** applied flush with window sill.
8. Install window according to manufacturer's instructions and flash per applicable DuPont Installation Guidelines (not shown).
9. Full interior perimeter seal applied to both PTAC and window opening (not shown).

Drip Cap Installation for Windows and Doors



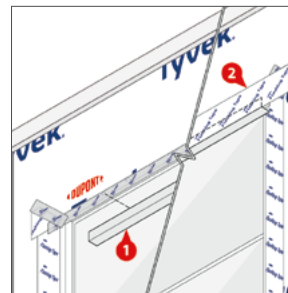
Option 1 Drip Cap Under Head Flap, Single Piece of Flashing — Requires Drip Cap Leg NOT Taller than Window Flange

1. Sealant applied to both sides of drip cap.
2. Drip cap installed tight against window head flange.
3. **DuPont™ Flashing Tape** installed over drip cap and head flange.
4. Head flap flipped down, trimmed 1" – 2", and sealed with **Tyvek® Tape** or **DuPont Self-Adhered Flashing Products**.



Option 2 Drip Cap Under Head Flap, Over Window Head Flashing

1. Drip cap installed tight against window head flange.
2. **DuPont™ Flashing Tape** installed over drip cap top edge.
3. Head flap flipped down, trimmed 1" – 2", and sealed with **Tyvek® Tape** or **DuPont Self-Adhered Flashing Products**.



Option 3 Drip Cap Over Head Flap

1. Drip cap installed tight against window head flange.
2. **DuPont™ Flashing Tape** installed over drip cap top edge.

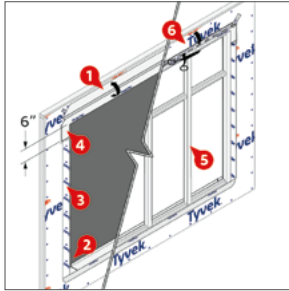
Multi-Family Field Installation Examples:

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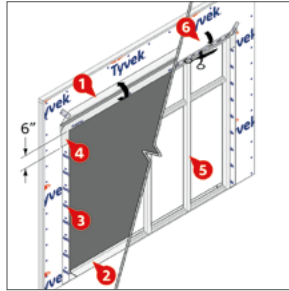
Non-Flanged/Storefront Window on Knee Wall



Using “Wrap the Cavity” Method

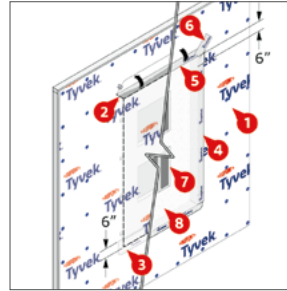
1. **Tyvek® WRB** cut using a square cut around the perimeter of the rough opening (not shown) and 45° at corners to create head flap.
2. **DuPont™ FlexWrap™** installed along the sill and 6" up each jamb.
3. **DuPont™ Flashing Tape** installed along the jambs.
4. **FlexWrap™** installed along the head and 6" onto the **DuPont™ Flashing Tape** along the jambs.
NOTE: If wall substrate is exterior gypsum sheathing, exposed sheathing primed with recommended adhesive/primer.
5. Storefront window installed per manufacturer's specifications.
6. Head flap flipped down, trimmed 1" – 2", and sealed with **DuPont Self-Adhered Flashing Product** or **DuPont™ Tyvek® Tape**.
7. Full interior perimeter seal applied (not shown).

Non-Flanged/Storefront Window or Door on Slab



1. **Tyvek® WRB** cut using a square cut around the perimeter of the rough opening (not shown) and 45° at corners.
2. Sill flashing prepared and installed per manufacturer's specifications. Corner pan flashing seams sealed with sealant.
3. **DuPont™ Flashing Tape** installed along the jambs.
4. **FlexWrap™** installed along the head and 6" onto the **DuPont™ Flashing Tape** along the jambs. **NOTE:** If wall substrate is exterior gypsum sheathing, exposed sheathing primed with recommended adhesive/primer.
5. Storefront window installed per manufacturer's specifications.
6. Head flap flipped down, trimmed 1" – 2", and sealed with **DuPont Self-Adhered Flashing Product** or **Tyvek® Tape**.
7. Full interior perimeter seal applied (not shown).

Hybrid Condition



1. **Tyvek® WRB** terminated with **DuPont™ StraightFlash™** and/or **FlexWrap™** and integrated with **DuPont™ Tyvek® Fluid Applied Products**.
2. **Tyvek® WRB** cut using a square cut around the perimeter of the rough opening and 45 degrees at corners to create head flap.
3. **FlexWrap™** installed along the sill at main wall and 6" up each jamb.
4. **StraightFlash™** installed along the jambs.
5. **FlexWrap™** installed along the head and 6" onto the **StraightFlash™** along the jambs. **NOTE:** If wall substrate is exterior gypsum sheathing, prime exposed sheathing with recommended adhesive/primer.
6. **Tyvek® WRB** head flap terminated with **StraightFlash™**.
7. **DuPont™ Tyvek® Fluid Applied Flashing and Joint Compound+** installed and window unit per [Fluid Applied Flashing Install Guide](#).
8. Install **DuPont™ Tyvek® Fluid Applied WB+™** per [Fluid Applied Wall and Substrate Install Guide](#).

For more information, contact your local DuPont™ Tyvek® Specialist, visit building.dupont.com, or call 1-833-338-7668

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