

CertainTeed

MASTER CRAFTSMAN

Education & Development Program



CertaWrap™
Weather Resistant Barrier

CertainTeed
SAINT-GOBAIN



Become a CertainTeed **MASTER CRAFTSMAN**

This Master Craftsman Education and Development Workbook is brought to you by CertainTeed. Use it to master the information critical to a thorough understanding of CertaWrap™ Weather Resistant Barrier and Accessories. Also, mastering this workbook is one of the components needed to benefit from the wealth of opportunities offered by the CertainTeed Building Solutions® program.

After you have reviewed this workbook, you will be prepared to take the Master Craftsman test, which will earn you valuable rewards. These rewards—and more importantly, the advantages you'll have over the competition—are not available to everyone, just to those who have successfully passed the test.

When you pass the test, you will:

- Receive a personalized Certificate of Completion that you can use to promote your professional services.
- Be listed as a Master Craftsman on our website, where potential customers can find you. The listing will include your name, company name, phone number, e-mail address, and a link to your website if you have one.

If you complete two or more Building Solutions education programs, you will receive:

- A Building Solutions certificate designating you as a Building Solutions Specialist. Your certificate will highlight the CertainTeed education programs you have successfully completed.
- Preferential listing on our contractor locator site when a customer searches for contractors who install multiple products.

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1. Company History

For more than 100 years, homeowners and building professionals have trusted CertainTeed to provide the highest quality building products and continue to set the standard for exciting innovations in style and performance. Our long-standing commitment to innovations, quality, and service is firmly rooted in our corporate philosophy. And since 1904, when the General Roofing manufacturing company began producing asphalt roofing materials, quality products and satisfied customers have been the hallmark of CertainTeed Corporation.

1.1 One Man's Dream

First established in 1904 by George M. Brown, the General Roofing Manufacturing Company was created to produce a fire resistant and less expensive alternative to wood shingles. In 1917, the company changed its name to CertainTeed to reflect its expanding product line and Brown's business philosophy, "quality made certain, satisfaction guaranteed." In 1923, the company began manufacturing gypsum wallboard for new home construction.

During World War II, CertainTeed lent its extensive management and production expertise to the war effort, but in 1946 began investigating the potential of a new product—fiber glass insulation. Within 10 years, CertainTeed was supplying roofing materials, gypsum, and fiber glass insulation to the booming construction industry and had established itself as a leader in the country's effort to supply affordable housing to former GIs and their families.

In 1965, CertainTeed took its first step into PVC. Its later acquisition of Plains Plastics made CertainTeed a major manufacturer of plastic pipe. In 1969, the company began offering solid vinyl (PVC) siding to builders and contractors. A natural addition, vinyl siding incorporated the company's extensive research and development efforts in PVC pipe, while expanding its building materials product line.

CertaWrap Weather Resistant Barrier is another addition to our line of exterior cladding materials. With our gypsum, vapor retarder, insulation, weather resistant barrier, and siding, CertainTeed now offers a complete Weather Deterrence System that delivers protection from the elements, energy efficiency, long-term performance, and outstanding aesthetics.

1.2 CertainTeed Today

CertainTeed is part of the worldwide Saint-Gobain organization. Saint-Gobain is a global manufacturer and distributor of flat glass, building products, glass containers, and high-performance materials. With over 1,000 subsidiaries in more than 50 countries, it is the world's largest building materials company and a leading distributor of building products. Founded in 1665 and headquartered in Paris, France, Saint-Gobain employs approximately 192,000 people worldwide. www.saint-gobain.com

Today, CertainTeed is North America's leading brand of exterior and interior building products, including roofing, siding, fence, decking, railing, trim, insulation, gypsum and ceilings.

Headquartered in Valley Forge, Pa., CertainTeed and its affiliates have approximately 6,000 employees at 65 facilities in the United States and Canada. www.certainteed.com

2. Introduction to Weather Resistant Barriers

Liquid water is the primary cause of building deterioration. Keeping liquid water out of buildings is necessary for the building to work as intended, to reduce the potential for the growth of mold and mildew, and to reduce premature degradation of the building enclosure.

Recent studies have shown that the quality of installation of construction products have a direct impact on the performance and durability of buildings. Today's consumer wants a home or building that will perform as intended. The builder or general contractor wants to use products that do not result in callbacks. Trade contractors want a level playing field where the quality of work is taken into consideration. And manufacturers want their products used properly and installed in accordance with their instructions.

A weather resistant barrier installed by a professional will help to produce a home or building that works as intended. In addition, the building will reflect the owner's expectations. Better performing buildings benefit everybody.

2.1 Weather Resistant Barriers

Exterior cladding helps protect a building from heat, cold, and water. Cladding can be brick, stucco, stone, wood, or siding. A weather resistant barrier is installed between the substrate and the cladding system. This weather resistant barrier is designed to direct water from the building enclosure to the exterior.

In homes and buildings, weather resistant barriers are installed in the building envelope to help shed water and prevent incidental water from entering the building enclosure. While a weather resistant barrier must resist the intrusion of liquid water, it should also allow water vapor to permeate through the material. On average, a single family home produces 3 to 6 gallons of moisture vapor every day. Most standards or specifications require that the water vapor permeance of the material be equal to or greater than 5 perms (300 ng s m²).

2.2 Uses for Weather Resistant Barriers

Weather resistant barriers are used in the building enclosure so as to not increase moisture accumulation. In cold climates, the weather resistant barrier is installed on the exterior of the building without any insulation. This is called the "cold side" of the building. In warm/hot climates, the weather resistant barrier can be installed on the exterior because it is designed to shed water. However, care must be taken to ensure that water vapor does not enter the enclosure and condense to liquid water.

2.3 Air Barriers and Vapor Barriers

Air Barriers

An air barrier is designed to block air permeance, while a weather resistant barrier is designed to hold out liquid water. However, there are materials that can provide both functions. Some weather resistant barriers, such as CertaWrap, can function as both a water and air barrier.

Vapor Barriers

A vapor barrier is the complete opposite of a water resistant barrier. Vapor barriers stop water vapor transmission and water resistant barriers allow a large amount of water vapor to be transmitted.

The main difference is the water vapor permeance of the materials. Weather resistant barriers must allow water vapor to pass through the material (min 300 ng.s.m² or 5 perms). Vapor barriers must stop or at least reduce the amount of water passing through the material. Vapor barriers typically have a MAXIMUM water vapor permeance of 60 ng. s.m² or 1 perm.

The materials cannot be used interchangeably. A water resistant barrier is normally installed on the "cold" side of a building enclosure. A vapor barrier is normally installed on the "warm" side.

2.4 CertaWrap™ Weather Resistant Barrier

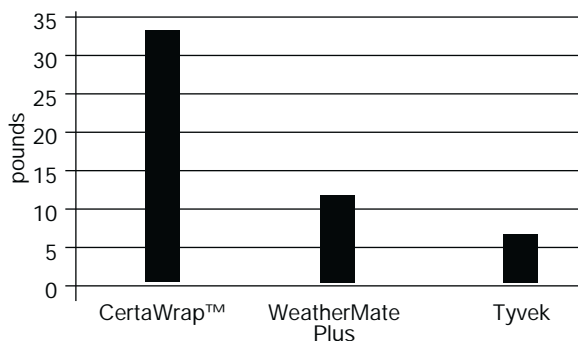
Water Holdout

The water holdout of CertaWrap Weather Resistant Barrier is impressive. When CertaWrap has been tested for hydrostatic pressure resistance in accordance with AATCC 127-1995, it showed water resistance to 865 cm (340 in), equivalent to being 26 feet under water. And even though exterior cladding is primarily designed to shed water from the building, CertaWrap backs up the cladding and helps prevent water intrusion.

Tear Strength

Tear strength is important at both the installation stage and during the life of the building. The performance of a weather resistant barrier depends on the material not deteriorating due to the air and wind pressures on the material over the life of the building.

When tested to ASTM 828-93, the dry tensile strength of CertaWrap is between 26 and 29 pounds (machine direction and cross direction). The trapezoidal tear strength, when tested in accordance with ASTM 5733-99, is 68 pounds (in both the machine direction and cross direction). Tests indicate that CertaWrap housewrap is 2-1/2 times more tear resistant than Dow’s WEATHERMATE™ PLUS housewrap and five times more tear resistant than DuPont™ Tyvek®.



Dry Tensile Strength

Moisture Vapor Transmission

All weather resistant barriers are designed to allow water vapor to move through the material. When the weather resistant barrier is installed on the exterior of the building in cold climates, it will allow any water vapor that creeps into the building enclosure to escape through the weather resistant barrier. This keeps moisture from building up within the building enclosure.

The water vapor transmission rate of CertaWrap, when tested in accordance with ASTM E 96-95 Procedure A, is 11.7 Perms (822 ng.s.m²).

Ultraviolet Performance

CertaWrap resists deterioration from ultraviolet (UV) exposure, and it retains its properties for up to 180 days of direct exposure to the elements.

Air Barrier Qualities

Every home or building benefits from a properly installed air barrier. Studies by the National Institute for Science and Technology (NIST) demonstrate that an air barrier can save 30 – 40% in energy used for heating and 10 – 15 % in energy used for cooling. Air barriers reduce the amount of noise, dust, suspended particulates, insects, and other pollutants from entering the building and causing discomfort to the occupants.

To be classified as an air barrier material, the air permeance of the material must be 0.02 L/(s•m²) when the pressure differential is 75 Pa. The air permeance of CertaWrap, when tested in accordance with ASTM 2178, is 0.0023 L/(s•m²) or ten times better than the minimum requirements.

Air Barrier Assembly

An air barrier assembly is the combination of materials and components designed to reduce air permeance. An air barrier system is the combination of assemblies to complete the whole building.

Air Barrier Continuity

To maintain air barrier continuity, the system must be continuous, without gaps or holes. All penetrations, including windows and doors, must be sealed.

Air Barrier Compatibility

The air barrier compatibility is the ability of one material to remain in contact with another without deteriorating or delaminating over a period of time. If the materials that are assembled are not compatible, the usual reaction is one of the materials deteriorates, rendering that material ineffective.

- CertaWrap Weather Resistant Barrier is based on a polypropylene polymer that is relatively inert and compatible with most other products.
- The surfactant resistance of CertaWrap results in no degradation due to cedar oil, turpentine, or soaps.

CertaWrap vs. Building Paper

Building paper is commonly used as a weather resistant barrier. However, building paper will not ensure that the exterior of the home will perform as required. The following table lists the declared physical properties and any performance requirements of the two materials

Property	CertaWrap™	Building Paper
Food source for mold	No	Yes
Trapezoidal tear	30 - 33 psi	2 - 3 psi
Dry tensile strength	80 lb	6.8 lb
Hydrostatic pressure (AATCC 127-1995)	865 cm (340 in)	Fail
Air leakage (CCMC Tech guide MF-07273)	.0032 L/S/M2	Not published
Moisture Vapor Transmission (ASTM E96)	11.7 perms	5 perms

Installation Conditions

A key problem in construction is moisture in the various building materials: either moisture in the materials as they are delivered to the construction site or moisture that is introduced to the materials while they are at the building site, either during the storage period or after they are installed.

Most environmental conditions will not restrict the installation of CertaWrap Weather Resistant Barrier.

- CertaWrap has UV inhibitors in the coating as well as in its fibers to provide UV protection during storage and installation and up to 180 days after installation until the material has been covered with the cladding system.
- The tear resistance of CertaWrap allows installation in reasonably high winds. The time between unrolling the material up to the completion of the fastening is when the material is most vulnerable to tearing.
- CertaWrap is designed to shed water and will not absorb water. However, CertainTeed does not recommend installing it during or shortly after a period of rain because it may cover a wet substrate, which could have an effect on the substrate.
- Installing tapes and sealants to a damp or dirty surface will prevent the tapes and sealants from adhering to the substrate or to itself.

Surface Preparation

Installing CertaWrap Weather Resistant Barrier requires minimal preparation.

- The substrate must be structurally sound.
- The substrate must be clean and dry.
- The substrate must be free of any sharp projections. Nails, staples, chunks of mortar, pieces of metal or other materials can puncture weather resistant barrier, either during installation or over time.

Material Storage and Handling

CertaWrap Weather Resistant Barrier has been designed to withstand the rigors of the construction site. But as with any construction material, reasonable care needs to be taken when storing, handling, and installing the material. CertaWrap comes with minimal packaging and has been engineered to withstand ultraviolet degradation during installation and for up to 180 days of direct exposure to the sun.

3. Protecting the Environment

CertainTeed is committed to creating products that help make homes more beautiful, comfortable and energy efficient. We're also committed to manufacturing processes that contribute to environmental sustainability. CertaWrap™ Weather Resistant Barrier fulfills our promise in both areas.

When properly installed, CertaWrap reduces exposure to moisture and helps to protect against mold growth on the sheathing. CertaWrap contributes to energy efficiency, air quality, and overall comfort of healthy living environments.

- **ENERGY-STAR Qualified** — CertaWrap enhances a home's energy efficiency. It is a key component in meeting the air sealing and insulating requirements for the ENERGY STAR Qualified New Home program. Meeting the requirements of this program reduces a home's heating and cooling costs as much as 20 percent.
- **Reduced Mold** — Because it reduces the risk of moisture-related mold growth, CertaWrap helps improve indoor air quality and pressure by minimizing dust, pollen, pests, and pollutants from entering the home.
- **Interior Comfort** — Homes wrapped in CertaWrap are more comfortable because it helps minimize noise, moisture, and unconditioned air that can pass through walls to the home interior.
- **Building Credits** — CertaWrap contributes to energy efficiency and helps professionals earn credits for LEED and NGBS National Green Building Standards. For more information, visit www.certainteed.com.
- **"Eligible Building Envelope Components"**: CertainTeed CertaWrap™, CertaFlash™ BA, CertaFlash™ Flex, and CertaTape™ are considered key components when installed as part of an insulation system.

CertainTeed Cares

CertainTeed cares about the environment and believes in sustainable manufacturing processes. Wherever possible we produce products using recycled content, work to decrease raw materials consumption, and strive to reduce waste. Our products help building professionals meet green building standards and enable homeowners to achieve greater energy efficiency.

4. Jobsite Safety

The care and skill you and your crew use on the jobsite can positively affect the outcome of the job as well as the reputation and profitability of your company. The National Green Building Standard (NGBS) has assembled a set of suggestions for jobsite safety and care. This chapter highlights some of those recommendations.

4.1 Tools

One of the most important things you can do to make the job go smoothly is to make sure that all tools are in good shape and everyone understands how to use them properly.

- Maintain all hand tools and equipment in a safe condition and check regularly for defects. Do not use broken or damaged tools.
- Use double insulated tools or ensure that all tools are grounded. Protect all temporary power with ground fault circuit interrupters (GFCI). Plug into GFCI protected generators or use GFCI extension cords.
- Equip all power saws with blade guards and turn off the saws when they are not being used.
- Before you or your crew uses pneumatic or power-actuated tools, make sure everyone has been trained and checked out on their proper use.
- Wear proper eye protection at all times, especially when using power tools.
- Never leave cartridges for pneumatic or power-actuated tools unattended. Keep all equipment in a safe place, and store it according to the manufacturer's instructions.

4.2 Scaffolding

Properly using scaffolding is particularly important when installing weather resistant barrier on the second story.

- Ensure that all scaffolding is erected on stable footings or mud sills.

- Don't take shortcuts—install all guardrails and cross bracing, and complete the planking across the entire scaffold.
- On fabricated frame scaffolding, make sure workers have ladder access.
- Erect pump jack scaffolding with guardrails and roof connectors.
- Allow no more than two workers (500 pounds) to work on pump jack scaffolding at a time.
- Use safety harnesses to prevent serious falls.

4.3 Ladders

Ladders should be well maintained and used only as they were intended.

- Regularly inspect all job-made and manufactured ladders to verify that they are in good condition and free of defects.
- Before you climb a ladder, make sure it is stable and level.
- Secure ladders at the top to keep them from slipping and causing falls.
- Extend ladders 3 feet above the landing to provide a handhold for balance when getting on or off the ladder from other surfaces.
- Locate and identify overhead electric lines. Make sure ladders and scaffolds never come within 10 feet of electric power lines.
- Use ladders only for what they were made—not as platforms, runways, or scaffold planks.
- Please refer to www.osha.gov for more information on the proper use and maintenance of ladders.

4.4 Personal Protective Equipment

The Occupational Safety and Health Administration (OSHA) requires that workers wear applicable personal protective equipment.

- Falling debris can be a hazard on any jobsite. All workers and visitors should wear hard hats while they are on the jobsite.
- Wear sturdy shoes or boots. They keep toes from being crushed and help prevent protruding nails from penetrating shoes.
- Wear approved eye protection, especially when cutting building materials.

- Watch your language—the fact that you don't see anyone but your co-workers is no guarantee that others can't hear you.
- Keep the homeowner informed of your progress. Show up on time. If you run into unexpected delays or are unavoidably called from the jobsite, let the homeowner know when you will return to complete the job.
- Follow-up. A simple phone call or visit with the homeowner when the job is complete is an opportunity to answer minor questions and avoid unnecessary call backs.

4.5 Housekeeping

If you are working around families and neighborhoods, it is particularly important to keep the area clean at all times.

- Keep all walkways and stairways clear of trash and debris.
- Pick up cigarette butts, drink containers, and other trash that accumulates during the day.
- Use and store tools and supplies away from walkways and doors.
- Scrap, boxes, and other discarded material are tripping hazards. Throw them into a dumpster or other trash receptacle or recycling container.
- During remodeling applications, exercise care around shrubs and flower beds. Some minor damage to the landscaping may be unavoidable, but be prepared to replace shrubs that are accidentally crushed or broken.

4.6 Professionalism

If the jobsite is in the heart of a busy neighborhood where your customers, their families, and their neighbors can watch you work, it is particularly important that you and your crew look and act professionally.

- Wear appropriate clothing. Avoid work clothes that are excessively worn and tee-shirts with inappropriate graphics.

5. Installing CertaWrap™ Weather Resistant Barrier

These instructions describe and illustrate the steps involved in installing CertainTeed CertaWrap™ Weather Resistant Barrier and accessories. Their purpose is to provide information and how-to tips that will simplify the installation process. Always consult www.certainteed.com for the most up-to-date installation guidelines. CertainTeed shall not accept any liability or responsibility under its written warranty for failure caused by application that does not meet the requirements for proper installation.

5.1 Safety

CertainTeed recommends that builders, contractors, and suppliers of weather resistant barrier products store, handle, and install weather resistant barrier materials in a manner that avoids damage to the product and/or the structure.

5.2 Fire Safety

Owners and installers should take a few simple steps to protect weather resistant barrier materials from fire.

Home and Building Owners

CertaWrap Weather Resistant Barrier is made from synthetic materials and may melt or burn when exposed to a significant source of flame or heat. Building owners, occupants, and outside maintenance personnel should always take normal precautions to keep sources of fire (such as barbecues) and combustible materials (such as dry leaves, mulch, and trash) away from Weather Resistant Barrier.

Building Trades, Specifiers, Professionals, and Do-It Yourself Installers

If CertaWrap Weather Resistant Barrier is exposed to significant heat or flame, it will soften, sag, melt or burn, and may thereby expose the material underneath. Exercise care when selecting underlayment materials as many are made from synthetic materials that may be combustible. Before installing a weather resistant barrier, make sure you understand the fire properties of the

underlayment materials. Install all building materials in accordance with local, state, and federal building codes and fire regulations.

5.3 Slippage

While CertaWrap provides a highly slip resistant surface, it may become slippery in some conditions. Do not walk on CertaWrap. For work above the first floor, we recommend using kick jacks or scaffolding. If you must use a ladder, do not allow CertaWrap to fall on or around ladder steps. For more information about ladder safety, consult ANSI standard 14.1, 14.2, and 14.5 for ladders made of wood, aluminum, and fiberglass respectively.

5.4 Transporting and Storing

Store CertaWrap indoors and away from direct sources of heat and sunlight. Storing products outside may result in damage. If you are transporting CertaWrap to a jobsite, keep the rolls flat and supported along their entire length.

At the job site, take the following precautions when storing CertaWrap.

- Store on a flat surface and support the weather resistant barrier the entire length of the roll.
- Store the material away from areas where falling objects or other construction activity may cause damage.
- Do not store a weather resistant barrier on black top pavement during unusually hot weather, under dark tarps or plastic wraps without air circulation, in unventilated storage trailers, or in any location where the temperature may exceed 130° F.

► **Note: Take care when cutting the shrink wrap protecting CertaWrap Weather Resistant Barrier, so as not to damage the roll inside.**

Once you have installed CertaWrap Weather Resistant Barrier, apply cladding within 180 days.

5.5 Fastening CertaWrap

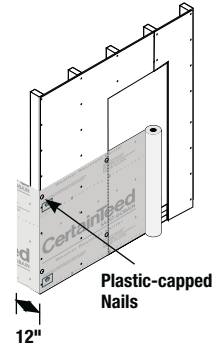
To secure the weather resistant barrier, use the appropriate recommended fasteners and fastening schedule for your application.

Wood-based Sheathing: When attaching CertaWrap Weather Resistant Barrier on wood-base sheathing, such as 7/16" OSB or 15/32" plywood, apply plastic-capped staples or plastic-capped nails every 32" both vertically and horizontally.

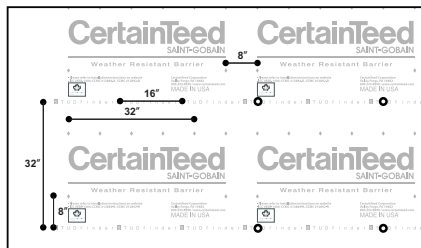
Open Stud Construction or Non-structural Sheathing: When attaching CertaWrap Weather Resistant Barrier on an open stud or non-structural sheathing, apply plastic capped staples or plastic capped nails long enough to penetrate the stud a minimum of 5/8" every 32" both vertically and horizontally.

Steel Framing: When installing CertaWrap over steel framing, use screws with minimum 1" diameter washers every 32" both vertically and horizontally.

2. Locate the first stud and verify that it is plumb. Align the first stud with the nearest vertical STUDfinder line, allowing for a minimum 12" flap (305 mm) to wrap the corner for attachment to the adjoining wall.
3. Extend the bottom edge of the CertaWrap 2 - 4" (51-102 mm) over the sill plate. Apply plastic-capped staples or plastic-capped nails every 32" vertically along the first stud to secure the CertaWrap into position.
4. Unroll the housewrap along the exterior wall. Wrap CertaWrap completely around the building, covering window and door openings, plates, sills, and corners.
5. To secure the Housewrap, use the fasteners and fastening schedule that is appropriate for your application.

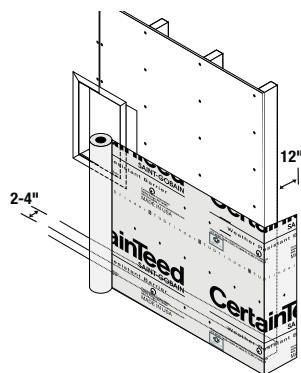


5.6 STUDfinder™ Vertical Wall Installation



The STUDfinder Installation System combines precisely engineered fastening locations with graphics that help ensure quick, accurate, and secure installation. STUDfinder graphics are spaced at 1.6" intervals to guide accurate fastening both vertically and horizontally.

1. Install CertaWrap Weather Resistant Barrier horizontally to exterior walls before applying exterior cladding. Vertically position the CertaWrap roll at the corner of the structure with the printed side out.



The STUDfinder marks will quickly guide you to your desired fastening location without the need for chalk lines. Each letter is spaced 1.6" apart, and each series spans 16". To achieve 32" spacing between fasteners, locate the letter that the first row of fasteners covers. The second repeat of that letter is at 32".

Wood-based Sheathing	Open Stud Construction Non-structural Sheathing	Steel Framing
plastic-capped staples plastic-capped nails	plastic-capped staples plastic-capped nails	screws with min. 1" diameter washers
every 32" vertically and horizontally	every 32" vertically and horizontally nails/staples must penetrate 5/8"	every 32" vertically and horizontally

6. Pull the CertaWrap snug and fasten it to the studs or sheathing and to the top and bottom plates.
7. When you start a new roll in the middle of a wall, overlap the vertical and horizontal laps in the field a minimum of 6" (152 mm). When starting a new roll at an inside or outside corner, overlap the vertical and horizontal seams a minimum of 12". Install all vertical and horizontal seams in a weatherboard fashion.

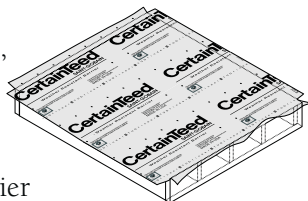
Make certain to lap CertaWrap over all existing flashings (e.g. z-flashing, roof-to-wall flashing, drip cap).

- Flash or tape all vertical and horizontal seams and penetrations.

5.7 STUDfinder™ Tilt Wall Installation

When you install CertaWrap Weather Resistant Barrier on tilt walls, follow these steps.

- With the wall on the ground, cover the entire wall section with CertaWrap, aligning the guide marks on the weather resistant barrier with the studs. Allow a minimum of 6" (152 mm) of additional CertaWrap around the bottom and sides of the perimeter of each wall section for overlapping. Allow a minimum of 12" (304 mm) of additional weather resistant barrier at all interior and exterior corners of the structure.



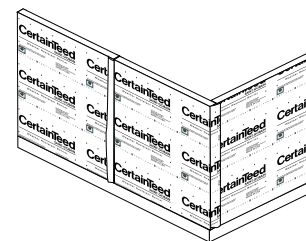
- To secure CertaWrap, use the fasteners and fastening schedule that is appropriate for your application.

The STUDfinder marks will quickly guide you to your desired fastening location without the need for chalk lines. Each letter is spaced 1.6" apart, and each series spans 16". To achieve 32" spacing between fasteners, locate the letter that the first row of fasteners covers. The second repeat of that letter is at 32".

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every 32" vertically and horizontally	every 32" vertically and horizontally nails/staples must penetrate 5/8"	every 32" vertically and horizontally

- Raise and secure the wall sections, allowing the excess material on each section to overlap the bottom plates and corners.

- Secure the overlap at the sides and bottom and tape all vertical and horizontal seams.



- When you start a new roll in the middle of a wall, overlap vertical and horizontal laps in the field a minimum of 6" (152 mm). When starting a new roll at an inside or outside corner, overlap vertical and horizontal seams a minimum of 12".
- Install all vertical and horizontal seams in a weatherboard fashion. Make certain to lap CertaWrap over all existing flashings (e.g. z-flashing, roof-to-wall flashing, drip cap, et al.).
- Flash or tape all vertical and horizontal seams and penetrations.

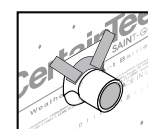
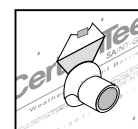
5.8 Flashing Penetrations

Seal the CertaWrap Weather Resistant Barrier around all electrical, HVAC, and plumbing penetrations with CertaFlash™ Flex, CertaFlash™ BA, and/or CertaTape™.

Flashing Exterior Penetrations without Flanges

If you are installing CertaWrap after all utility rough-ins have been completed, cut around the edge of the penetration to allow the weather resistant barrier to lay flat against the wall.

- Make a 2", 45° cut at both the left and right sides of the penetration, creating a flap. Fold back and secure the flap temporarily above the penetration.
- Using CertaFlash Flex, flash the base of the penetration where it meets the wall of the structure. Apply all flashing in a weatherboard fashion, beginning at the bottom of the penetration and working your way up.
- Unsecure the flap, fold it down into place, and tape both edges of the flap with CertaTape to secure.



Flashing Exterior Penetrations with Flanges

1. Cut a piece of CertaWrap 12" high and at least 18" wider than the flange-to-flange horizontal measurement of the widest point of the penetration. Insert this piece behind the bottom edge of the penetration.
2. Apply CertaFlash BA in a weatherboards fashion to the bottom, sides, and top of the penetration covering the nailing flange completely as specified below:
 - a. Cut one piece of CertaFlash BA that is 12" wider than the widest point of the flange-to-flange horizontal measurement of the bottom of the penetration. Apply the flashing at the bottom of the penetration, overlapping the flange.
 - b. Cut two pieces of CertaFlash BA 12" longer than the tallest point of the flange-to-flange vertical measurement of the sides of the penetration. Apply it at each side of the penetration, overlapping the flange.
 - c. Cut one piece of CertaFlash BA that is 12" wider than the widest point of the flange-to-flange horizontal measurement of the top of the penetration. Apply it at the top of the penetration, overlapping the flange.



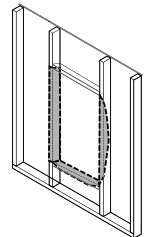
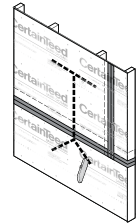
3. Overlap the CertaWrap Weather Resistant Barrier onto the flashed penetration, cutting a hole to accommodate the penetration.
4. Beneath the center of the penetration, make a 6" vertical cut. At the bottom edge of the vertical cut, make a horizontal cut wide enough to accommodate the flap you created in step 1.
5. Insert the bottom edge of the weather resistant barrier piece you cut in step 1 through the opening you created in step 4.
6. Tape the penetration, first horizontally then vertically, in a weatherboard fashion.



5.9 Installing CertaWrap around Windows and Doors

New Construction/New Windows

1. Cut a horizontal line in the weather resistant barrier across the top of the window opening.
2. Start at the top center and make a vertical cut running two-thirds of the way down the opening.
3. From that stopping point, cut diagonally from the lower right and left corners, creating an inverted "Y". This "Y" cut will make three CertaWrap flaps.
4. Pull each of the flaps tightly inside the rough opening and attach them to the frame with nails, staples, or tape.
5. Install the window and door according to the manufacturer's instructions.
6. Flash all seams and flanges securely.



► **Note: Flashing should be installed in accordance with the window manufacturer's instructions and in compliance with ASTM 2112.**

Existing Windows

If windows and doors are already installed, flash according to the CertaFlash installation guidelines (Sections 5.10 – 5.12 below). Then trim CertaWrap close to the flange area and seal with CertaTape.

5.10 Installing CertaFlash™ Flashing

CertaFlash™ BA and CertaFlash™ Flex Flexible Flashing provide excellent performance and protection for exterior flashing installations. CertaFlash BA is an outstanding peel-and-stick window flashing that ensures the integrity of the seal around openings. It conforms well, and the peel-and-stick design makes it easy to install. CertaFlash Flex is also a peel-and-stick flashing with the flexibility required to conform well to geometric openings.

Tools

- Caulk Gun
- Utility Knife or Scissors
- Gloves
- J-Rollers

Surface Preparation

- The substrate must be smooth, clean, dry and free of defects; otherwise it will adversely affect the installation and adhesion of CertaFlash Flex.
- Clean loose dust or dirt from the surface wherever CertaFlash Flex is to be applied by wiping with a clean, dry cloth or brush. The surface must be smooth and free from nails or staple heads, uncured solvents, and silicone caulk.
- For best adhesion, prime OSB, plywood, and cement surfaces with primers such as 3M™ Super 77™.

General Instructions

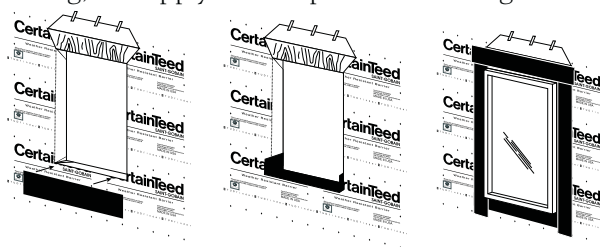
- Apply CertaFlash Flex at temperatures above 40° F during clear weather conditions. In low temperature conditions, use a heat gun or primer to improve adhesion.
- Do not expose flexible flashing to direct sunlight for more than 120 days.
- Do not apply CertaFlash Flex to flexible vinyl surfaces. Rigid PVC is acceptable.
- For good bonding, apply pressure on the flashing with a J-roller.
- When applying flashing, remove all wrinkles and bubbles.

5.11 Installing CertaFlash BA around Rectangular Windows

1. Make diagonal cuts in the weather resistant barrier at the upper corners of the top (head) of the rough opening. Gently lift and tape the flap temporarily in place.
2. Cut a piece of CertaFlash Flex flashing for the bottom (sill) that is 12" longer than the width of the rough opening. Remove the backer from the flashing and

begin applying one end to the jamb of the rough opening 6" above the sill. (NOTE: The tape will extend over the exterior edge of the jamb.)

3. Applying even pressure to the tape with your hands, work your way down the jamb, across the sill, and up the opposite jamb. The tape should finish 6" above the sill. Flex the overhanging tape down onto the wall, covering the weather resistant barrier in weatherboard fashion, again applying even pressure to ensure adhesion.
4. Before installing the window, apply a continuous bead of sealant to the interior of the window's mounting flange. Install the window according to the manufacturer's instructions.
5. Cut two strips of CertaFlash BA for the sides (jamb) of the window. The tape should extend a minimum of 3" above the top of the jambs of the window unit and a minimum of 1" beyond the bottom flashing tape installed in step #2. Cover the width of the previously installed flashing at the base.
6. Slowly peel off the release paper as you press the flashing in place. Ensure that the flashing covers all nails and mounting slots on the window's mounting flange.
7. Cut BA flashing for the top (head) of the opening so it will extend beyond both ends of the jamb flashing. Make sure that the flashing covers all nails and mounting slots on the window's mounting flange.
8. Finally, lay weather resistant barrier over the head flashing, and apply CertaTape over both diagonal cuts.

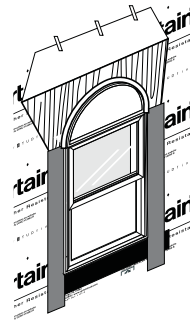
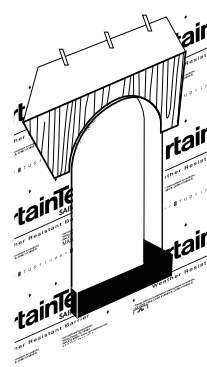


5.12 Installing CertaFlash Flex around a Geometric Window

1. Cut horizontal slits where the curve starts on the window, out to a distance equal to the width of the flashing that will be used. From there, continue cutting at a 45° angle upwards until you are above the

top center of the window by at least the width of the flashing. Temporarily tape this flap up out of the way.

2. Cut a piece of CertaFlash Flex for the bottom (sill). It should be 12" longer than the width of the rough opening.
3. Remove the backer from the flashing and begin applying it to one end of the jamb in the rough opening 6" above the sill. (NOTE: The tape will extend over the exterior edge of the jamb.)
4. Applying even pressure to the tape with your hands, work your way down the jamb, across the sill, and up the opposite jamb, finishing 6" above the sill. Flex the overhanging tape down onto the wall, covering the CertaWrap in weatherboards fashion, again applying even pressure to ensure adhesion.
5. Apply a continuous bead of sealant to CertaWrap where the interior of the window's mounting flange will be applied. Install the window per manufacturer's instructions.
4. Cut two strips of CertaFlash BA for the sides (jamb) of the window. The jamb flashing tape should extend a minimum of 3" above the horizontal mullion of the upper and lower window units, and a minimum of 1" beyond the bottom flashing tape installed in step #2. It should cover the width of the previously installed flashing at the base.
6. Slowly peel off the release paper as you press the flashing in place. Ensure that the flashing covers all nails and mounting slots on the window's mounting flange.
7. Cut a piece of CertaFlash Flex for the head of the window. The tape should be cut to the length of the curve, plus twice the width of the flashing.
8. Slowly peel the release paper and press the edge next to the window frame. Cover all nails and mounting slots.
9. Fold down the flap (from step #1) over the head flashing, and tape the horizontal and diagonal slits in weatherboard fashion with CertaTape.



6. CertaWrap™ Product Line

Protection from the elements, energy efficiency, and long-term performance are key components of a building's exterior cladding system. The CertaWall™ Weather Deterrence System delivers those advantages. As a key component in the system, CertaWrap™ Weather Resistant Barrier helps ensure long-term satisfaction as well as optimal water vapor permeance, excellent UV performance, and superior air and water holdout.

6.1 The CertaWall Weather Deterrence System

When properly installed, these components help reduce heating and cooling costs, improve performance and home owners' comfort, and are durable.

Gypsum

Start with a layer of CertainTeed gypsum wallboard, available with a variety of moisture and fire-resistant coverings to meet specific application requirements.

Vapor Retarder

Increase the drying potential of the building envelope and reduce the risk of moisture problems with CertainTeed's vapor retarder.

Insulation

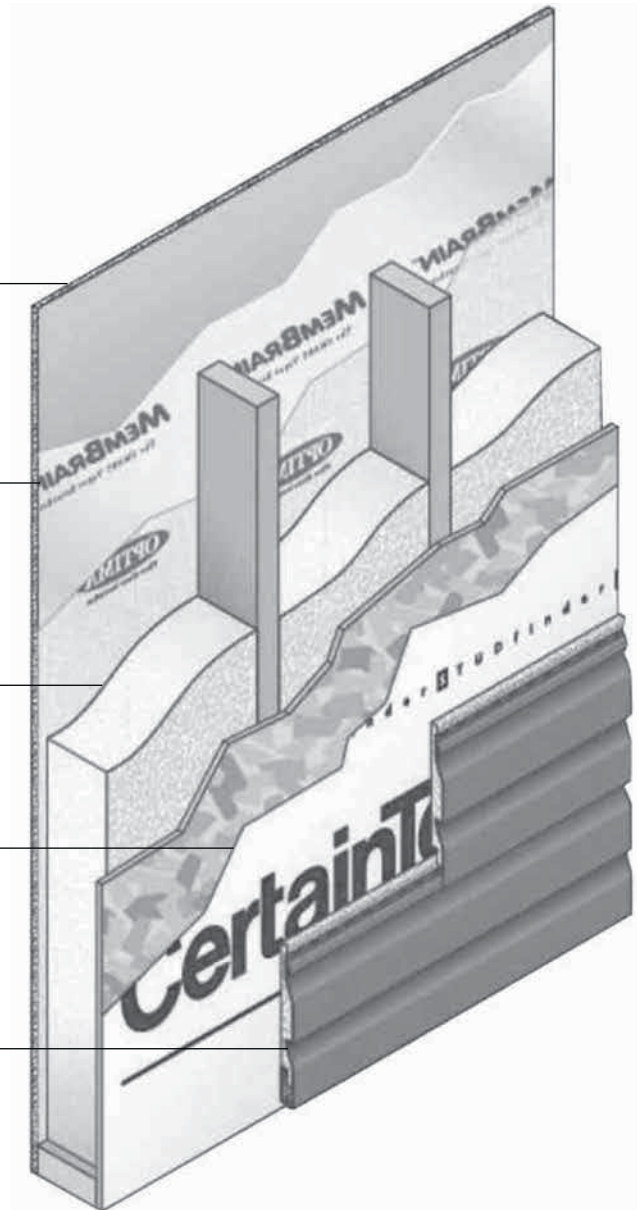
Add in thermal and acoustic benefits with high-quality CertainTeed insulation.

Weather Resistant Barrier

Provide extra protection against moisture, air infiltration, and leakage with a layer of CertaWrap Weather Resistant Barrier.

Siding

Finish your CertaWall with CertainTeed siding products for long lasting beauty, low maintenance, performance, and durability.



6.2 CertaWrap® Weather Resistant Barrier

Performance Characteristics

Benefits

Low water vapor permeance	<ul style="list-style-type: none"> • Keeps walls dry • Will not absorb or retain water during and after construction
UV inhibitors in coating and fibers	<ul style="list-style-type: none"> • Ultimate in UV protection
UV performance	<ul style="list-style-type: none"> • Can be exposed to elements for up to 180 days
Excellent air holdout	<ul style="list-style-type: none"> • Prevents air infiltration and leakage through gaps, cracks, or holes in cladding
Type 1 air barrier	<ul style="list-style-type: none"> • Enhances energy efficiency • Can be used in residential and commercial applications
Superior water holdout	<ul style="list-style-type: none"> • Helps keep wind-driven rain out of wall cavity and sheathing
STUDfinder Installation System	<ul style="list-style-type: none"> • Improves installation • Installs faster
Tear strength	<ul style="list-style-type: none"> • Won't easily rip or puncture • Performs at twice the industry standard
Superior surfactant resistance	<ul style="list-style-type: none"> • Reduces damaging effects of soaps, power washing, and oils and tannins from OSB products
High slip resistance	<ul style="list-style-type: none"> • Reduces slippage against OSB board and ladders
Supplied in six different sizes	<ul style="list-style-type: none"> • Cost effective solution for any job
Limited lifetime warranty with SureStart™ protection	<ul style="list-style-type: none"> • Protects homeowner's investment

Outstanding Performance

Tests have proven that no weather resistant barrier compares to CertaWrap for outstanding performance.

	CertaWrap™	Tyvek® Homewrap®	HardieWrap™
Water Vapor Permeance	11.7 perms	58 perms	15 perms
Resistance to Water Penetration ¹	865 cm	280 cm	325 cm
Resistance to Air Penetration ²	2500 sec	300 sec	1800 sec
Tear Resistance ³	30/33 lb/ in ²	6/6 lb/ in ²	15/18 lb/ in ²
UV Resistance ⁴	180 days	120 days	180 days

¹ Pressure resistance to water penetration under static load

² Seconds required for 1000 cc of air to pass through 1 in² of material under pressure of 4.9" of water

³ lb md/lb xd

⁴ Total number of allowable days for direct exposure to elements

Six Sizes to Choose From

To reduce your costs, CertaWrap is supplied in six sizes. Whether you are covering an entire building or remodeling part of one, there is a cost-effective roll size for the job.

Length (ft)	Width (ft)	Coverage (ft ²)
100	3	300
100	9	900
150	9	1350
165	3	495
200	4-1/2	900
200	5	1000

Warranty

CertaWrap Weather Resistant Barrier carries a Limited Lifetime Warranty. It offers protection for the lifetime of the homeowner and is transferable to the first subsequent property owner.

The weather resistant barrier also carries SureStart™ protection when installed with CertaFlash and CertaTape. For the first 10 years after installation, CertainTeed will pay reasonable construction costs to replace properly installed CertainTeed products should they prove defective. For complete warranty conditions, see “CertaWrap Warranty” (CW006).

6.3 Accessories

For maximum effectiveness, it is critical to seal every CertaWrap installation tightly. CertaFlash™ BA, CertaFlash™ Flex flexible flashing, and CertaTape™ offer everything you need to get the job done right. Use them to seal window and door openings, cracks, seams, and penetrations before installing exterior cladding.

CertaFlash™ BA

A great alternative to asphalt based flashing, CertaFlash BA is made from a proprietary bloc co-polymer. It is ideal for use in straight jambs and straight heads. It provides a tight bond to wood, vinyl, metal and other common building materials. CertaFlash BA is free of VOCs and features extended workability. Its split-back, quick-peel release paper makes it easy to position.

CertaFlash BA is supplied in three widths: 4" x 75', 6" x 75', and 9" x 75'.

CertaFlash™ Flex

CertaFlash Flex helps improve air and moisture holdout and is ideal for use around arched windows, window flanges, sill plates, corners, and joints.

The CertaFlash Flex formulation is based on a two-ply, high-density polyethylene film mated to a premium butyl rubber adhesive and release sheet. This formulation provides a tight bond to wood, vinyl, metal, and other common building materials. The flashing conforms well, and the peel-and-stick design makes it easy to apply.

CertaFlash Flex is available in two widths: 6" x 75' and 9" x 75'.

CertaTape™

This high-strength coated polypropylene film is used to seal seams and edges on window flanges, corners, joints, rips, punctures, and tears. CertaTape helps improve the integrity of the building's envelope by reducing air and moisture penetration. Unlike competitive tapes, it won't break down over time and provides dependable performance over the long term. CertaTape is available in a 1-7/8" x 165' roll.

7. Sales Support

CertainTeed is committed to helping you specify and sell CertaWrap Weather Resistant Barrier and accessories. To do this, we have created a sales support program that includes product literature and displays, as well as the training program you are now completing.

Following are some of the sales tools available for CertaWrap™, CertaFlash™ BA, CertaFlash™ Flex, and CertaTape™. For more information about the specific sales support items available to you, call 800-233-8990.

- **Brochures:** A large, full-color consumer brochure is organized to guide your presentation of the features and benefits of the CertaWall Technology and CertaWrap Weather Resistant Barrier. Full-color photographs and illustrations display installations and list the recommended uses of CertaWrap. Order CW001.
- **An Accessory Brochure (CW012)** is also available. You can download both from www.certainteed.com.
- **Sell Sheet:** “Top 10 Reasons to Choose CertainTeed CertaWrap” (CW004) (available at www.certainteed.com) gives concrete information about the benefits of CertaWrap in a simple, easy-to-follow format.
- **Product Catalog:** The Siding Collection catalog contains dimensions, product codes, and packaging options. Order CTS002 or download it from www.certainteed.com.
- **Warranty:** An absolute must when the job is complete, details of the Lifetime Limited Warranty and 10-Year SureStart™ Labor Protection Warranty give homeowners peace of mind. Order CW006 or download it from www.certainteed.com.
- **Installation Instructions:** This comprehensive brochure contains illustrations and explains how to handle, store, cut, and install CertaWrap™, CertaFlash™ BA, CertaFlash™ Flex, and CertaTape™. Order CW005 or download it from www.certainteed.com.

8. Taking the Master Craftsman Test

The more you know about CertainTeed's CertaWrap™ Weather Resistant Barrier, the better you will be able to recommend building envelope solutions and estimate jobs for your customers. More importantly, the product knowledge and installation techniques you learn in the Master Craftsman Workbook will help you differentiate yourself from your competition as a source of technical and product knowledge about building an effective, long-lasting building envelope.

To successfully complete this course and receive your CertaWrap Master Craftsman credential, you must answer at least 23 of the 25 questions correctly. You can take the test online at www.certainteed.com/mastercraftsman. If you take it online, your test will be graded instantly, and you will have the results within minutes. If you prefer to take the test on paper, be sure to fill out your name and mailing information on the answer sheet at the back of this workbook so that we can mail your results and the rewards package.

Fax your completed answer sheet to 610-254-5436 or mail it to CertaWrap™ Master Craftsman, P.O. Box 860, Valley Forge, PA 19482-9935.

The Master Craftsman Test

- 1. Use CertaFlash Flex flashing**
 - a. When installing rectangular windows
 - b. When installing geometric windows
 - c. At the top and bottom of CertaWrap
 - d. Both A and B
- 2. STUDfinder graphics indicate**
 - a. The correct fastening locations for CertaFlash BA flashing
 - b. The correct fastening locations for CertaFlash Flex flashing
 - c. The correct fastening locations for CertaWrap Weather Resistant Barrier
 - d. How much to overlap CertaWrap Weather Resistant Barrier
- 3. CertaWrap Weather Resistant Barrier is installed**
 - a. Between the substrate and the cladding system
 - b. Only in climates where temperatures can exceed 95°F
 - c. On the warm side of the building
 - d. On the cold side of the building
- 4. The CertaWall Weather Deterrence System includes**
 - a. Air barrier, vapor barrier, weather resistant barrier, and siding
 - b. Insulation, substrate, vapor barrier, and weather resistant barrier
 - c. Gypsum, vapor retarder, insulation, weather resistant barrier, and siding
 - d. None of the above
- 5. CertaWrap is UV resistant for up to**
 - a. 30 days
 - b. 60 days
 - c. 90 days
 - d. 180 days
- 6. Contact with surfactants like cedar oil, turpentine, and soaps degrades all weather resistant barriers.**
 - a. True
 - b. False
- 7. For best results, fasten CertaWrap to wood-based and non-structural sheathing with**
 - a. Hot galvanized 1-3/4" nails
 - b. Screws with 1" diameter washers
 - c. Plastic-capped staples or plastic-capped nails
 - d. Any of the above
- 8. CertaWrap Weather Resistant Barrier**
 - a. Is sufficiently flexible to withstand sharp projections like nails, staples, or chunks of mortar
 - b. Cannot be installed immediately after a rain storm
 - c. Cannot be installed in moderate winds
 - d. Is generally installed over building paper
- 9. A weather resistant barrier should allow water vapor to permeate through it.**
 - a. True
 - b. False
- 10. The primary purpose of CertaWrap Weather Resistant Barrier is to**
 - a. Help increase moisture accumulation
 - b. Help shed water
 - c. Help block air permeance
 - d. Help stop the transmission of water vapor
- 11. CertaWrap Weather Resistant Barrier has**
 - a. Low water vapor permeance
 - b. Excellent air holdout
 - c. High slip resistance
 - d. All of the above
- 12. The CertaWrap Lifetime Limited Warranty is not transferable to a second property owner.**
 - a. True
 - b. False
- 13. CertaWrap is supplied in**
 - a. 9' x 100' rolls only
 - b. Three different sizes
 - c. Six different sizes
 - d. Eight different sizes
- 14. The high slip resistance of CertaWrap Weather Resistant Barrier is**
 - a. Important because it reduces slippage against OSB board and ladders
 - b. Important because it makes 3' x 100' rolls easier to carry
 - c. Important because it helps hold nail and staples
 - d. Not an important feature

15. **To form a completed flashing joint, always overlap two pieces of the CertaFlash flashing by at least**
- 2"
 - 3"
 - 4"
 - The full width of the flashing being used
16. **Always “weatherboard” flashing around windows, doors, and protrusions so that**
- Water is always shed to the interior of the building
 - Water is always shed to the exterior of the building
 - The flashing lays flat
 - None of the above
17. **At inside and outside corners, overlap CertaWrap Weather Resistant Barrier at least**
- 4"
 - 6"
 - 8"
 - 12"
18. **Tear strength**
- Is an important property of a weather resistant barrier because the barrier has to withstand wind pressure without tearing around fasteners before the exterior cladding is installed
 - Is an important property of a weather resistant barrier because the area under eaves will degrade faster if it is torn
 - Is an important property of a weather resistant barrier because low tear strength contributes to the barrier slipping as it is installed
 - Is not an important property of a weather resistant barrier
19. **CertaWrap Weather Resistant Barrier adds to the structural support of the exterior cladding.**
- True
 - False
20. **CertaFlash BA is**
- An asphalt-based flashing
 - A proprietary co-polymer flashing
 - A styrene flashing
 - A urethane flashing
21. **CertaFlash BA is**
- Free of VOCs
 - Used for straight jams and straight heads
 - Is available in three widths
 - All of the above
22. **CertaFlashFlex**
- Contains volatile VOCs
 - Is used around arched windows, window flanges, sill plates, corners, and joints
 - Can be cured with a heat gun
 - All of the above
23. **CertaTape**
- Is a high-strength coated polypropylene film
 - Reduces air and moisture penetration
 - Will not break down over time
 - All of the above
24. **The moisture vapor transmission value of CertaWrap Weather Resistant Barrier is**
- 11.7 perms
 - 12.8 perms
 - 15.3 perms
 - 17.3 perms
25. **The STUDfinder installation system**
- Is typically used only when CertaWrap is installed vertically
 - Is typically used only when studs are 16" on center
 - Is typically used only when studs are 24" on center
 - Helps prevent nailing into electrical and plumbing rough-ins

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