



PEPA
Polymeric Exterior Products Association

POLYMERIC CLADDING **BUILDING CODE REFERENCE GUIDE**

**An at-a-glance breakdown of the International, Florida and Canadian
building codes, performance information, and installation
requirements for polymeric cladding**



INTRODUCTION

The Polymeric Exterior Products Association (PEPA) is the trade association representing the breadth of polymeric exterior building and home improvement products used on and around homes across North America.

The following resources provide a deeper understanding of polymeric exteriors.

You'll find information for coastal regions, exteriors and their safety plus performance benefits, installation requirements and other technical specifications in this guide. It was researched and written by PEPA.

PEPA furthers the development and growth of the vinyl siding and other polymeric cladding industries by:

- Addressing regulatory issues, including material restrictions, monitoring of building codes, and the education of building code developers and regulators.
- Helping develop material, product and performance standards by working through standards-making organizations and code bodies.
- Owning and managing certification programs that improve the quality of polymeric cladding and its installation.
- Engaging in product stewardship and outreach activities to enhance the image of the industry and its products.



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POLYMERIC EXTERIORS

North America's Choice

Properly installed certified polymeric cladding, as required by code, can withstand high winds and resist heat, cold, rain and moisture.

Polymeric exteriors meet the stringent requirements of building codes across the United States and Canada. These codes require vinyl siding, insulated vinyl siding and polypropylene siding to be manufactured and certified to their respective ASTM standards. When manufactured to the appropriate material standard and installed correctly, they meet the demands of these regulations, such as providing protection from the elements.

For example, properly installed certified polymeric cladding, as required by the code, can withstand high winds 110 miles per hour (mph) or more and resist heat, cold, rain and moisture while meeting stringent fire performance requirements when used in high-density settings and wildfire risk zones.

Although the codes don't address warranties, the durability of polymeric cladding has enabled polymeric cladding manufacturers to offer warranties that are among the longest and strongest in the polymeric cladding industry. The leading material Life Cycle Assessment (LCA) tool has estimated the lifespan of vinyl siding to be at least 60 years.¹



CERTIFICATION PROGRAM



CERTIFIED

PEPA owns the VSI Product Certification Program, which is backed by over two decades of experience, with products tested and validated by an independent ISO/IEC 17065 accredited third-party certification body. Over 600 individual code-recognized siding profiles are certified to meet or exceed industry standards. Our Program can help save time during building specification and permitting, as well as help streamline final inspection by offering comprehensive Product Certification Listings (PCLs) and Product Evaluation Reports (PERs). The VSI Product Certification Mark makes the PCL and PER reference numbers easy to see, so you'll know the siding you're looking at is manufactured and tested to meet code with a quick look.



ENERGY EFFICIENT

Insulated vinyl siding is vinyl siding with rigid foam insulation permanently attached to the panel. It helps increase the exterior wall's R-Value and contributes to a home's energy efficiency as a form of continuous insulation, making it a great option for energy efficiency compliance.

¹ National Institute of Standards and Technology, Building for Environmental and Economic Sustainability (BEES) Online Technical Manual, September 2019



Defining Polymeric Exteriors

LEVEL UP CURB APPEAL

Polymeric exteriors offer versatile beauty and unbeatable strength. The architectural polymers create vinyl siding, backed vinyl siding, insulated vinyl siding, polypropylene siding, polymeric roofing and other polymeric exteriors like cellular PVC.

THE POLYMERIC EXTERIORS INDUSTRY INCLUDES THESE TYPES OF CLADDING

VINYL SIDING

Cladding made primarily of polyvinyl chloride (PVC)

INSULATED VINYL SIDING

Insulated vinyl siding is vinyl siding with rigid foam insulation permanently attached to the panel. It helps increase the exterior wall's R-Value and contributes to a home's energy efficiency as a form of continuous insulation, making it a great option for energy efficiency compliance.

BACKED VINYL SIDING

Similar to insulated vinyl siding, as it is vinyl siding combined with foam plastic insulation (no R-value)

POLYPROPYLENE SIDING

Cladding made of polypropylene siding through an injection molding process that can closely replicate wood shake and shingles, as well as stone and brick

WHAT ARE I-CODES, NATIONAL BUILDING CODE OF CANADA (NBC 2020) AND FLORIDA BUILDING CODE (FBC)?

The International Codes, or I-Codes, published by the International Code Council (ICC), provide a regulatory framework for the construction of homes and buildings and are adopted by every state in the United States.

The ICC develops innovative and coordinated construction and public safety codes through a governmental consensus process. This system of code development has provided the highest level of safety in the world for more than 100 years.

I-CODES INCLUDE CONSIDERATIONS FOR RESILIENT CONSTRUCTION AND SAFE USE OF CLADDING AND ITS ROLE IN PROTECTING AGAINST:



WATER

Both rain and vapor.



WIND

Products are tested and verified to meet the wind requirement for the majority of the country, and certain polymeric exteriors have been designed for use in coastal high wind areas.



FIRE

Codes are determined by risk, building size and occupancy type. In some cases, cladding may be required to be a part of an assembly that provides necessary fire protection and performance (i.e., flame spread, hourly rated assemblies and radiant heat performance).



ENERGY EFFICIENT

Builders, remodelers and home energy raters can use insulated vinyl siding to meet the International Energy Conservation Code's (IECC) continuous insulation requirements. In many northern climates, the energy code now mandates continuous insulation for homes. Insulated siding is one of the few cladding options that satisfies both building and energy codes.

NBC 2020

The National Building Code of Canada is published by the National Research Council of Canada and adopted by provinces and territories in Canada.

FBC

The Florida Building Codes are updated and maintained by the Florida Building Commission and published by the International Code Council.

EXCEPTIONAL MOISTURE MANAGEMENT

Polymeric siding products, including vinyl and polypropylene siding, provide exceptional rain screening performance—helping moisture drain out of the exterior wall assembly and dramatically reducing water accumulation. The Expanded Polystyrene (EPS) material used in insulated vinyl siding also allows the wall system to breathe and drain efficiently and will not absorb moisture. That's important because climate change is producing heavier, more frequent rainfall in many regions.



WHAT ARE I-CODES, NATIONAL BUILDING CODE OF CANADA (NBC 2020) AND FLORIDA BUILDING CODE (FBC)?

WHAT ARE THE I-CODES?

THE FOUR I-CODES THAT AFFECT POLYMERIC CLADDING, SPECIFICALLY, VINYL SIDING, POLYPROPYLENE SIDING, AND INSULATED VINYL SIDING AND THE BUILDINGS THEY PROVIDE REGULATIONS FOR ARE:

INTERNATIONAL RESIDENTIAL CODE (IRC)

One and two family dwellings, including townhouses

INTERNATIONAL BUILDING CODE (IBC)

Other than one- and two-family dwellings, including apartments, motels, hotels and many other commercial type of buildings

INTERNATIONAL ENERGY CONSERVATION CODE (IECC)

Energy efficiency construction performance requirements

INTERNATIONAL WILDLAND-URBAN INTERFACE CODE (IWUIC)

Communities that are built in designated areas prone to wildfires/forest fires



CERTIFICATION PROGRAM

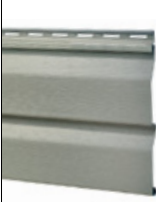
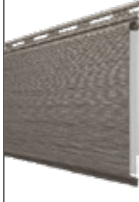


2024 INTERNATIONAL RESIDENTIAL CODE (IRC)

IRC Chapter 7 provides general product and installation requirements for cladding.

PRODUCT REQUIREMENTS (IRC R703)

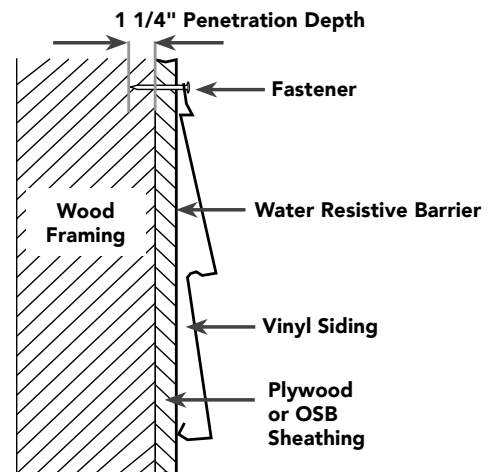
PRODUCTS MUST BE CERTIFIED AND LABELED TO SHOW THEY CONFORM TO THEIR ESTABLISHED ASTM STANDARD:

			
VINYL SIDING ASTM D3679 — R703.11	INSULATED VINYL SIDING ASTM D7793 — R703.13	POLYPROPYLENE SIDING ASTM D7254 — R703.14	BACKED VINYL SIDING ASTM D7445 — CODE COMPLIANCE REPORTS

INSTALLATION REQUIREMENTS

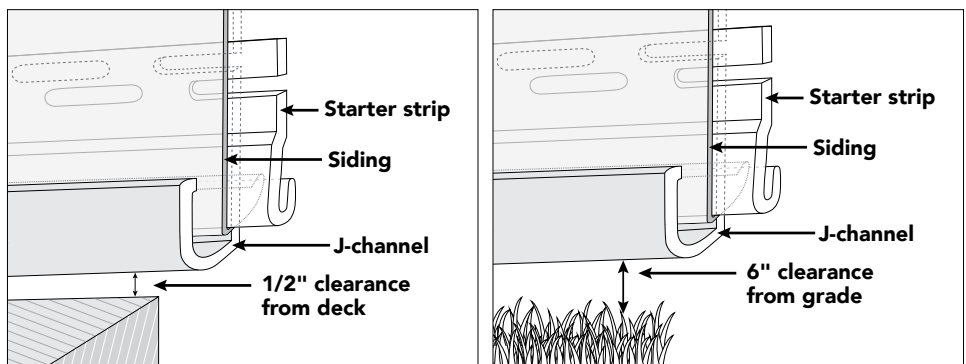
CLADDING — IRC R703 PROVIDES PRESCRIPTIVE AND PERFORMANCE INSTALLATION REQUIREMENTS:

- In general, horizontal vinyl, backed vinyl siding and insulated vinyl siding are installed 16" on center using roofing (siding nails) nails. Variations are allowable including other approved fasteners like staples and screws and 24" on center when approved by the manufacturer's instructions. Vertical siding is installed 12" on center or as approved by the manufacturer instructions.
- Polypropylene siding panels range in size and are unique. Manufacturer's instructions should be reviewed and in many cases fastener spacing may be less than 10" on center. It must be installed over some type of wood sheathing.



R703.3.1 SIDING CLEARANCE AT WALL AND ADJACENT SURFACES

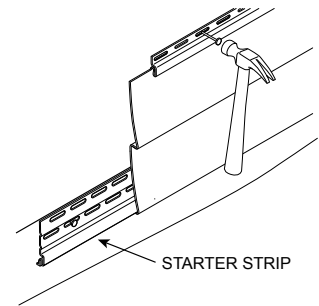
Unless otherwise specified by the cladding manufacturer or this code, polypropylene, insulated vinyl and vinyl claddings shall have clearance of not less than 6" from the ground and not less than 1/2" from other adjacent surfaces (decks, roofs, slabs).



2024 INTERNATIONAL RESIDENTIAL CODE (IRC)

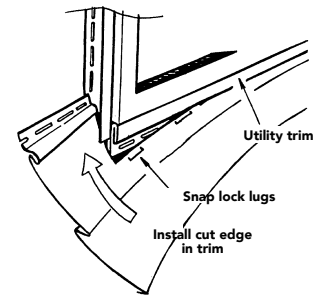
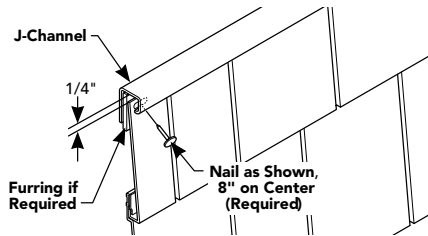
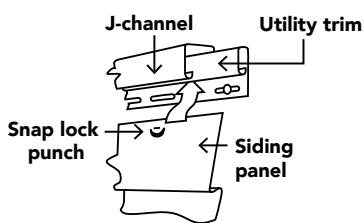
STARTER STRIP

According to R703.11.1.1 and R703.14.1.1.1, the first course of siding (vinyl siding, insulated vinyl siding and backed vinyl siding and polypropylene siding) must be secured to the wall using a starter strip. If the first courses' bottom edge is trims, it shall be secured using a utility trim and snap locks.



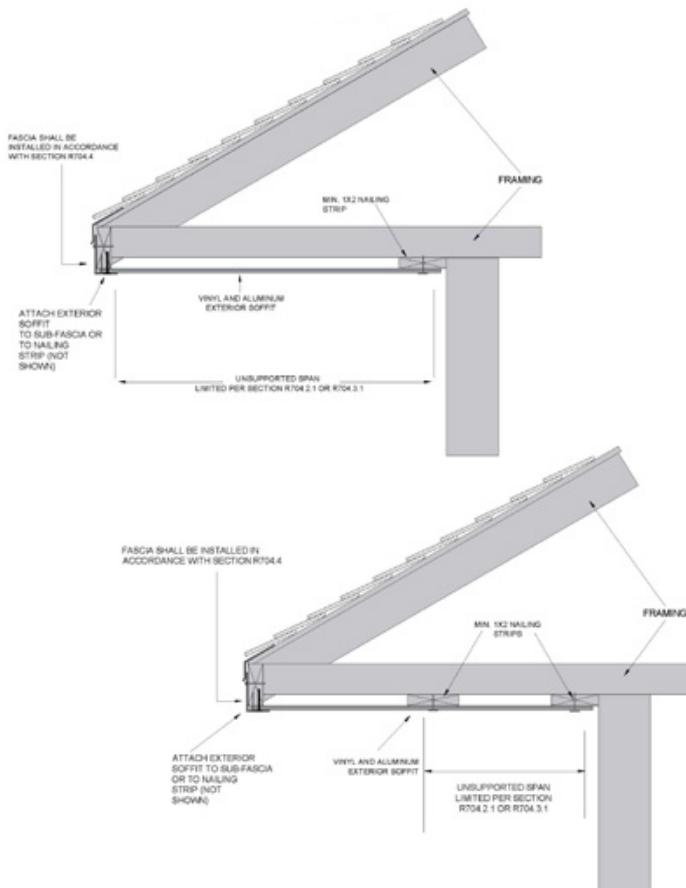
UTILITY TRIM AND SNAP LOCKS (OR NAIL SLOT PUNCHES)

According to section R703.11.1.2 and R703.14.1.1.2, utility trim shall be used where the top edge of the panel is removed like below windows or at the top of walls (with vinyl siding, insulated vinyl siding and backed siding). In the case of polypropylene siding, when the top edge of the panel is removed, a nail slot or hole should be used with a fastener.



SOFFIT – IRC SECTION R704 PROVIDES SPECIFIC REQUIREMENTS FOR THE INSTALLATION OF VINYL SOFFIT PANELS:

- According to **R704.1**, in high wind areas, the soffit panels must be designed to meet the appropriate design pressure.
- **R704.2.1** requires that each soffit panel be fastened at both the fascia and wall and that there be no unsupported spans greater than 16" without the use of an intermediate nailing strip.
- **R704.3** Where soffit is being used in high-wind areas, it must comply with this section.

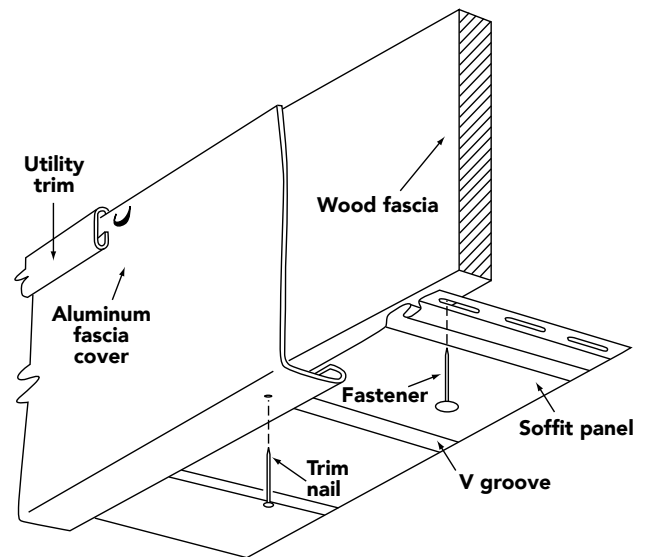


2024 INTERNATIONAL RESIDENTIAL CODE (IRC)

FASCIA

Fascia is required to be installed with one finish nail through the return leg and into framing every 24" on center, and the fascia material should be covered by the roof drip edge at least 1" or face nailed no more than 1" below the drip edge 24" on center. Note: In high wind areas, the fastener spacing is 16" on center, and the face nail is required, or a utility trim and snap locks spaced 6" must be used or pre-drilled face nailing can be used at 16" on center.

- **R704.4** provides installation requirements for aluminum fascia in high wind areas and standard wind areas. This drawing is an example of an attachment using snap locks. The requirement from the code includes in standard wind zones a fastener through the fascia leg at 24" on center the fascia being covered by the drip edge at least 1". In coastal or high wind areas it is necessary to either face nail the soffit no more than 1" below drip edge spaced no more than 16" on center or using snap locks and utility trim with the snap locks spaced 6" on center.



CONSIDERATIONS AND CONDITIONS FOR USE IN HIGH-DENSITY DEVELOPMENTS

- In general, vinyl siding, polypropylene siding and insulated vinyl siding are not limited in their application with homes built under the IRC.
- In two instances, performance measures related to high-density construction and fire will apply:
 - **IRC R302** General
 - **IRC Table R302.1 (1)** place requirements of a 1-hour tested assembly, according to ASTM E119 on exterior walls that are 5' or closer to the property line
 - Polymeric cladding is a part of many ASTM E119-rated assemblies

POLYPROPYLENE SIDING

IRC R703.14.2 limits the use of polypropylene siding on walls that are closer than 5' to the property line (separation distance) and on walls 10' or closer to walls of other buildings on another lot unless a test report showing compliance to ASTM E84 certification of flame spread index is provided in accordance with **R703.14.3**. Note, this provision does not apply to walls that are perpendicular to the line used to determine the separation distance (example: front and rear elevations of townhouse construction).



2024 INTERNATIONAL BUILDING CODE (IBC)

IBC Chapter 14 provides general product and installation requirements for cladding.

PRODUCT REQUIREMENTS (1403)

PRODUCTS MUST BE CERTIFIED AND LABELED TO SHOW THEY CONFORM TO THEIR ESTABLISHED ASTM STANDARD:



CERTIFICATION PROGRAM



VINYL SIDING

ASTM D3679 — 1403.8



INSULATED VINYL SIDING

ASTM D7793 1403.14



POLYPROPYLENE SIDING

ASTM D7254 — 1403.11



BACKED VINYL SIDING

ASTM D7445 — CODE
COMPLIANCE REPORTS

- Backed vinyl siding is not addressed in the IRC or IBC. Building officials should rely on code compliance reports for backed vinyl siding in accordance with ASTM D7445 to assure code compliance.
- In northern climate zones, according to **Table 1404.3(3)** counts vinyl siding and polypropylene siding as vented cladding. Vented claddings provide excellent moisture management characteristics which also allow the elimination of vapor retarders.



INSTALLATION REQUIREMENTS

- **IBC 1404.15** In general, vinyl siding and insulated vinyl siding are installed 16" on center using roofing nails (siding nails), although variations can be done including other approved fasteners like staples and screws. Prescriptive requirements for vinyl siding installation include that non-corrosive roofing nails that can penetrate the nailable substrate at least between 1 - 1/4" and must be spaced no more than 16" on center for horizontal siding and 12" on center for vertical siding and according to the manufactured installation instructions.
- **IBC 1404.18** Polypropylene siding panels range in size and are unique. Manufacturer's instructions should be reviewed because in many cases fastener spacing may be less than 10" on center. It must be installed over some type of wood sheathing.



2024 INTERNATIONAL BUILDING CODE (IBC)

CONSIDERATIONS AND CONDITIONS FOR USE IN HIGH-DENSITY DEVELOPMENTS AND WITH NONCOMBUSTIBLE CONSTRUCTION

- **IBC 1405** In general, polymeric exteriors are allowed in all types of construction, including noncombustible construction, although test results must be demonstrated in compliance to 1405 IBC.
- **Table 601** and **705.5** place certain fire resistance ratings on walls depending on the occupancy, type, density (distance to lot line) and size of the building based on ASTM E119 tests.
- Polymeric exteriors are a part of many ASTM E119-rated assemblies.
- Vinyl siding, insulated vinyl siding and polypropylene siding are allowed to be part of **722's** calculated fire resistance approach through **Table 722.6.2(3)**.
- **1405** provides the use of polymeric exteriors (and other combustible cladding) with noncombustible construction (Types I, II, III, IV).
- **IBC 1405.1.1.1** If polymeric exteriors are used with noncombustible construction (Types I, II, III, IV), they must be tested according to NFPA 268 and perform to certain levels depending on the building's fire separation distance. This test method demonstrates the ability of other combustible materials to not ignite under certain radiant heat conditions.
- **1403.11.2 and IBC 140.3.11.2** When installing polypropylene siding in high-density settings (less than 5' to property line), the product must have a certified ASTM E84 test report, based on the code requirement. Note: This requirement does not apply to certain walls that are perpendicular to the fire separation distance measurement, like townhouse front and rear elevations.



2024 INTERNATIONAL ENERGY CONSERVATION CODE (IECC)

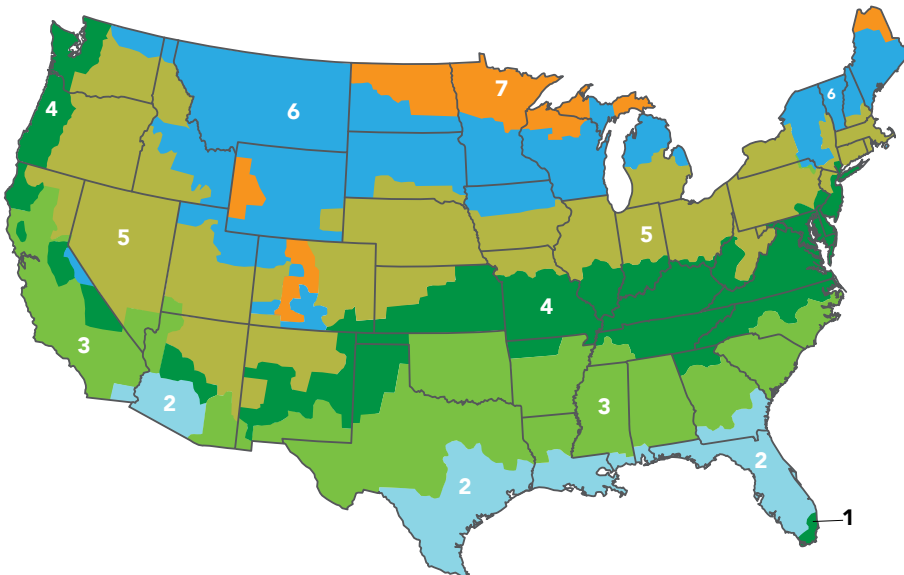
The IECC prescribes insulated siding as a building material that can be used as a form of continuous insulation outside of the building framing to provide the required total wall R-Value.

Insulated siding can be used to meet the R-Value/U-factor requirements of the IECC. The tested R-Value for insulated siding is required by the code **N1101.10.1 (R303.1.1)** to be labeled on the package of the insulated cladding.

IRC N1102.1.3 (R402.1.3) of the IECC allows the R-Value of insulated siding to be used as part of the prescriptive R-Value computation approach and may be used to satisfy the R-Value insulation requirements of **Table R402.1.2** or **R402.1.3**.

When **Table R402.1.3** is used for compliance, the R-value of the insulated vinyl siding must be reduced by .6 because there is already an R-value considered for the siding in this prescriptive approach. No reduction shall apply with other compliance methods when using insulated vinyl siding, such as the performance approach in **(R402.1.4)**.

CLIMATE ZONES



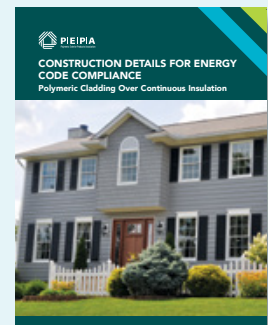
Insulated siding can be used to meet the R-Value/U-factor requirements of the IECC.

R-Value 2.0
or greater



FOAM SHEATHING

Polymeric cladding can be used to help achieve energy code requirements. For more detailed information, please [click here](#) to download the book.



2024 INTERNATIONAL WILDLAND-URBAN INTERFACE CODE (IWUIC)

Chapter 5 of the IWUIC breaks down various risk types for developments relative to wildfire risk and then places certain materials requirements. Three different types of risk categories impact the type of Ignition Resistant (IR) wall construction requirement.

In the most stringent IR wall construction Class 1 ignition-resistance construction, Class 2 ignition-resistant construction, and Class 3 ignition-resistant construction, polymeric exteriors may be used so long as they are a part of a 1-hour ASTM E119-rated assembly and exhibit a flame spread index no greater than 25. When a Class 3 condition applies, there are no requirements or limitations on a specific wall construction or cladding type.

In Class 1, noncombustible flashing must be installed at the ground, decking and roof intersections.

Polymeric exteriors are allowed for use under this code in all conditions with certain performance requirements.



2020 NATIONAL BUILDING CODE OF CANADA (NBC)

The NBC establishes technical provisions for the design and construction of new buildings. It also applies to the alteration, change of use and demolition of existing buildings.

Here are the codes that impact polymeric exteriors' product performance and installation requirements when working in Canada.

NBC provides general product and installation requirements for polymeric exteriors.

PRODUCT REQUIREMENTS (NBC 2020 9.27)

- **9.27.12.1[1]** states that vinyl siding shall be manufactured in accordance with ASTM D3679.
- **9.27.12.1[2]** states that insulated vinyl siding shall be manufactured in accordance with ASTM D7793.
- **9.27.12.1[3]** states that vinyl soffit shall be manufactured in accordance with ASTM D4477.
- **9.27.13.1[1]** states that polypropylene siding shall be manufactured in accordance with ASTM D7254.
- **9.27.12.1[4]** requires vinyl siding, (backed vinyl siding), insulated vinyl siding and vinyl soffit to have a flame spread rating when required by the code.
- **9.27.13.1[2]** requires polypropylene siding to have a flame spread rating when required by the code.



VINYL SIDING

ASTM D3679 — 9.27.12.1[1]



INSULATED VINYL SIDING

ASTM D7793 — 9.27.12.1[2]



POLYPROPYLENE SIDING

ASTM D7254 — 9.27.13.1[1]



BACKED VINYL SIDING

ASTM D7445 — CODE
COMPLIANCE REPORTS

INSTALLATION REQUIREMENTS

- **9.27.5** states prescriptive requirements for the installation of vinyl siding, insulated vinyl siding and polypropylene siding. Nails shall be a minimum of 38 mm long and spaced no greater than 400 mm, and all fasteners shall be installed in the center of the nail slot.
- **9.27.5.7 [2]** specifies that all fasteners must be installed into a nail-holding base, with a minimum depth of 32 mm or into framing.



CERTIFICATION PROGRAM

2023 FLORIDA RESIDENTIAL CODE

Chapter 7 provides general product and installation requirements for cladding.

PRODUCT REQUIREMENTS

PRODUCTS MUST BE CERTIFIED AND LABELED TO SHOW THEY CONFORM TO THEIR ESTABLISHED ASTM STANDARD:



VINYL SIDING

ASTM D3679 — R703.11



INSULATED VINYL SIDING

ASTM D7793 — R703.13



POLYPROPYLENE SIDING

ASTM D7254 — R703.14



BACKED VINYL SIDING

ASTM D7445 — CODE
COMPLIANCE REPORTS

- **R301.9 (R703.11.1 and R703.13.1)** requires cladding and soffit to meet the wind loads in the code.
- **R703.14.1.1.1, R703.11.1.4 and R703.14** Starter strip is required at the initial course of vinyl, insulated vinyl and polypropylene siding. See page 8 for detail.
- **R703.11.1.5 and R703.14.1.1.2** requires utility trim below windows and at the top of walls where the top of siding is trimmed. See page 8 for detail.
- **R704** prescribes requirements for soffit and fascia. **R704.2.1**, for vinyl and aluminum soffit, panels shall be installed with fasteners at both the wall and subfascia; if the soffit span is greater than 12", additional intermediate nailer strips shall be used. See drawing on page 8.
- **R704.3** prescribes the installation method for aluminum fascia, depending on whether the design wind pressure is 30 psf, 30-60 psf, or greater than 60 psf. This section includes fastener placement and spacing requirements, as well as areas with greater than 60 psf, which require fascia to be wrapped around the corners of the soffit, depending on whether it is a gable or hip roof.
- **R703.14** Requires polypropylene siding panels range in size and are unique. Manufacturer's instructions should be reviewed because, in many cases, fastener spacing may be less than 10" on center. It must be installed over some type of wood sheathing (nailable substrate) with a minimum thickness of 7/16".



CERTIFICATION PROGRAM

2023 FLORIDA RESIDENTIAL CODE

INSTALLATION REQUIREMENTS

THE FOLLOWING ARE PRESCRIPTIVE AND PERFORMANCE INSTALLATION REQUIREMENTS FOR FLORIDA:

- **R703.11.1** In general, vinyl and insulated vinyl siding meet the wind loads in accordance with **Table R301.2(2)** and **Table R301.2(3)** when installed 16" on center using roofing nails, although variations are allowable, including other approved fasteners like staples and screws, when following manufacturer's instructions. Prescriptive requirements for vinyl siding installation include that non-corrosive roofing nails that can penetrate the nailable substrate at least 1 1/4" must be spaced no more than 16" on center for horizontal siding and 12" on center for vertical siding and according to the manufactured installation instructions.
- **R703.14.1** Polypropylene siding must be installed over wood sheathing. It cannot be installed over foam sheathing only. Non-corrosive roofing nails or other approved fasteners must penetrate the nailable substrate at least 1 1/4". Check manufacturer's instructions for proper spacing.

CONSIDERATIONS FOR HIGH-DENSITY SETTINGS

- **R703.14.3** When installing polypropylene siding in high-density settings (less than 5' to property line), the product must have a certified ASTM E84 test report, based on the code requirement. Note: Does not apply to certain walls that are perpendicular to the fire serration distance measurement, like townhouse front and rear elevations.

FLORIDA ENERGY CODE

In addition to the code defined on page 9, insulated vinyl siding, with a minimum R-2, can be used for energy code compliance as a form of continuous insulation in Florida.



CERTIFICATION PROGRAM

2023 FLORIDA BUILDING CODE

Chapter 14 provides general product and installation requirements for cladding

PRODUCT REQUIREMENTS

Products must be certified and labeled to show they conform to their established ASTM standard:



VINYL SIDING
ASTM D3679 — 1404.9



INSULATED VINYL SIDING
ASTM D7793 — CODE
COMPLIANCE REPORT



POLYPROPYLENE SIDING
ASTM D7254 — 1404.12



BACKED VINYL SIDING
ASTM D7445 — CODE
COMPLIANCE REPORTS

2023 FLORIDA BUILDING CODE

- **1404.9** requires vinyl siding to be certified to ASTM D3679.
- **1404.12** requires polypropylene siding to be certified to ASTM D7254.
- **Table 1405.3(3)** counts vinyl siding and polypropylene siding as vented claddings and allows the elimination of vapor retarders because of their strong moisture management characteristics.
- Insulated vinyl siding and backed vinyl siding are not addressed in the Florida Building Code (FBC). Building officials may rely on code compliance reports for verification based on the established standards for the product categories, ASTM D7793 and D7445.

INSTALLATION REQUIREMENTS

- **1405.14.1** In general, vinyl siding is installed 16" on center using roofing nails, although variations can be done, including other approved fasteners like staples and screws. Prescriptive requirements for vinyl siding installation include that non-corrosive roofing nails that can penetrate the nailable substrate at least 1 - 1/4" (although the code currently states 3/4") must be spaced no more than 16" on center for horizontal siding and 12" on center for vertical siding and according to the manufactured installation instructions.
- **R1404.12** Polypropylene siding panels range in size and are unique. Manufacturer's instructions should be reviewed because, in many cases, it may be less than 10" on center. It must be installed over some type of wood sheathing.
- **1405.14.2.1** Requires vinyl siding to be installed with starter strips at initial courses. See illustration on page 8.
- **1405.14.2.2** Require utility trim and snap locks under windows and at the top of walls. See illustrations on page 8.
- **1405.18.1.1.1** Requires polypropylene siding to be installed with starters strips at initial courses. See illustration on page 8.
- **1405.18.1.1.2** Requires polypropylene siding to be installed with nail slot punch or predrilled holes where the nail hem is removed. See illustrations on page 8.



CERTIFICATION PROGRAM



UNDERSTANDING POLYMERIC EXTERIORS' PERFORMANCE IN HIGH WIND REGIONS



Today's product packaging makes it easy to identify the right products for high wind areas.

DEFINING THE DESIGN PRESSURE RATING

The Standard Wind Load Design Pressure Rating measures the wind load resistance of cladding, windows, doors and other wind load-bearing products. The rating indicates each product's ability to withstand pounds per square feet (psf) of pressure from wind load in its designed use.

For example, in Florida, design pressure requirements can vary from 30 psf in the state's center up to 60+psf on the coast, depending on the building's height and other factors.

DEFY THE STORM

Polymeric exteriors are manufactured to perform under pressure from the elements. Certified products can withstand winds of at least 110 mph.



CERTIFICATION PROGRAM

UNDERSTANDING POLYMERIC EXTERIORS' PERFORMANCE IN HIGH WIND REGIONS

Wind speed is a standard measurement, but in reality, it's an approximation of product performance based on an average home in an average location under average installation methods.

The specified design pressure rating for cladding is calculated based on many factors beyond wind speed, including building height, building orientation, local geography and more.

When choosing the right polymeric exteriors, refer to the Standard Wind Load Design Pressure Rating, a more accurate predictor of a product's performance in varied conditions.

To ensure full-strength performance in extreme conditions, proper installation is vitally important. Find installation tips for coastal regions and more on page 21.

TRANSLATING DESIGN PRESSURE TO WIND SPEED¹

Standard Wind Load Design Pressure Rating (psf)	Approximate Wind Speed (mph)
30.0 psf	120 mph ²
29.7-46.5 psf	120-150 mph
46.5+ psf	150+ mph

¹ Ultimate design wind speed values above are sourced from standards outlined in the International Residential Code (IRC 2015)

² Values are nominal design 3-second gust wind speeds in miles per hour (m/s) at 33 ft (10m) above ground for Exposure C category and it is for wall corner zone (Zone 5) and 10 square feet effective wind area.

Design pressure ratings are based on tests using ASTM D5206 with a standard installation of 16" on center.



LOCATE THE DESIGN PRESSURE RATING

Verify the design pressure rating or other detailed information about polymeric exterior products listed on the product label.



CRITICAL INSTALLATION POINTS FOR POLYMERIC CLADDING SYSTEMS

Current codes regulate and place stringent performance requirements on cladding installed in these areas. Polymeric exteriors are a great choice. Polymeric exteriors offer beauty and stand up to more extreme conditions.

Use these quick tips for installing polymeric exteriors and soffit in these regions.

UNDERSTANDING THE USE OF POLYMERIC EXTERIORS AND SOFFIT IN HIGH-WIND REGIONS

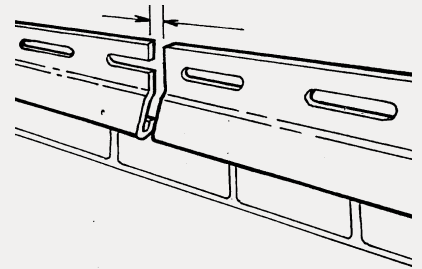
THESE UPDATES WILL HELP YOU STAY COMPLIANT AND ACHIEVE THE HIGHEST PERFORMANCE IN COASTAL REGIONS:

- The design pressure rating reflects the highest wind application for which the cladding is suitable and allows building code officials in high-wind regions to determine the appropriate cladding and soffit to install.
- Vinyl siding, insulated vinyl siding, polypropylene siding and backed vinyl siding products have a standard design pressure rating published as part of the VSI Product Certification Program.
- Vinyl soffit in high wind regions needs to exhibit a proper design pressure rating.
- Vinyl siding, insulated vinyl siding and backed vinyl siding products designed for use in high-wind regions typically have reinforced nail hems (i.e., double or rolled-over nail hems versus single-nail hems).
- Polypropylene siding in high-wind regions typically needs to be installed 8" to 10" on center based on manufacturer's instructions.

VINYL SIDING INSTALLATION TIPS

INSTALLING THE STARTER STRIP

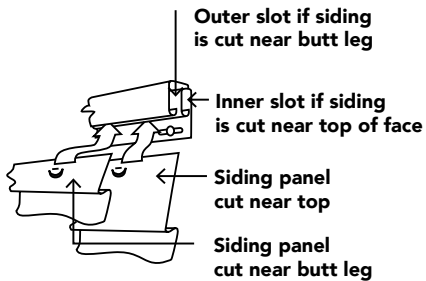
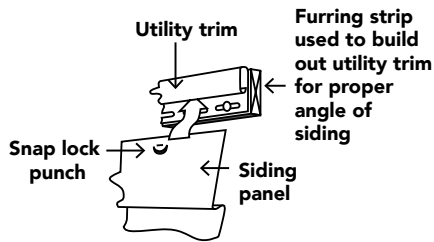
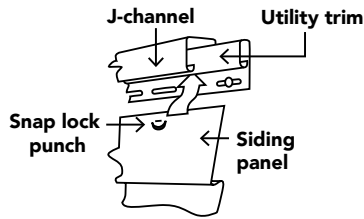
- In normal wall applications, starter strips are required.
- Vinyl siding, insulated vinyl siding, polypropylene siding and backed vinyl siding starter strips are unique and may not be used interchangeably, so follow manufacturer specifications for each product category.
- A starter strip not matched to the lock design of the cladding could cause the bottom course to blow off, which can lead to product failure.
- Do not use J-channel or other types of trim in place of a starter strip except when installing vertical siding.



The polymeric exteriors industry makes it easy to specify the right products for high wind regions.

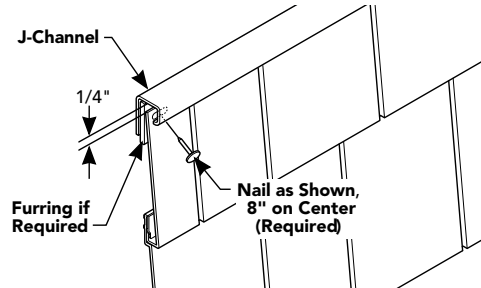
CRITICAL INSTALLATION POINTS FOR POLYMERIC CLADDING SYSTEMS

UTILITY TRIM

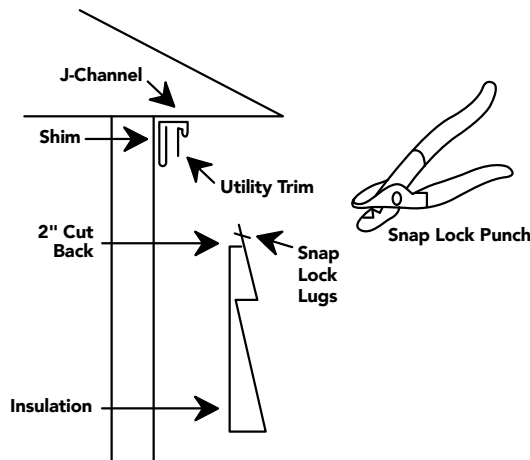


*Snap lock punches should be about 6" on center

POLYPROPYLENE SIDING



INSULATED VINYL SIDING



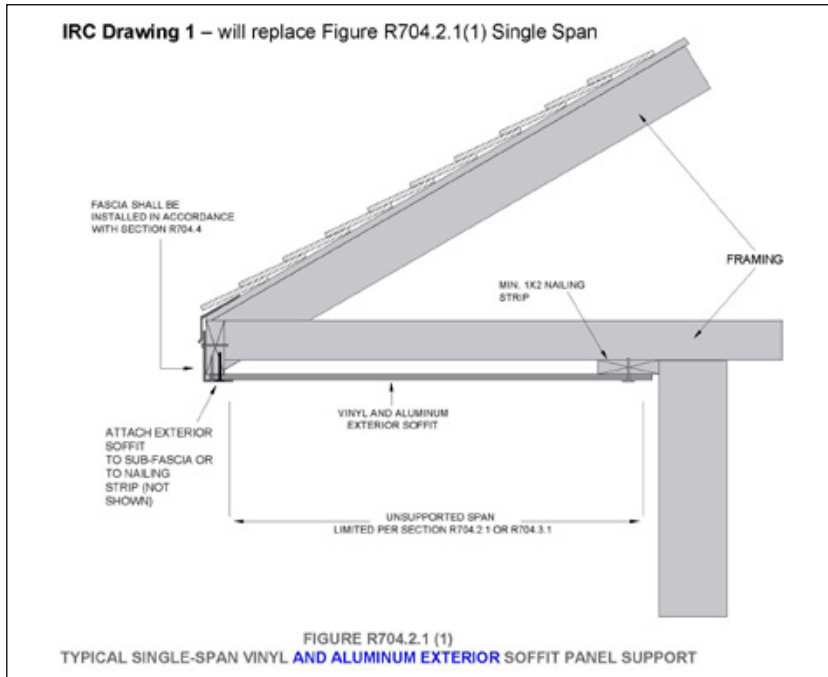
INSTALLATION TIPS

CLADDING UNDER WINDOWS AT THE TOP OF WALL

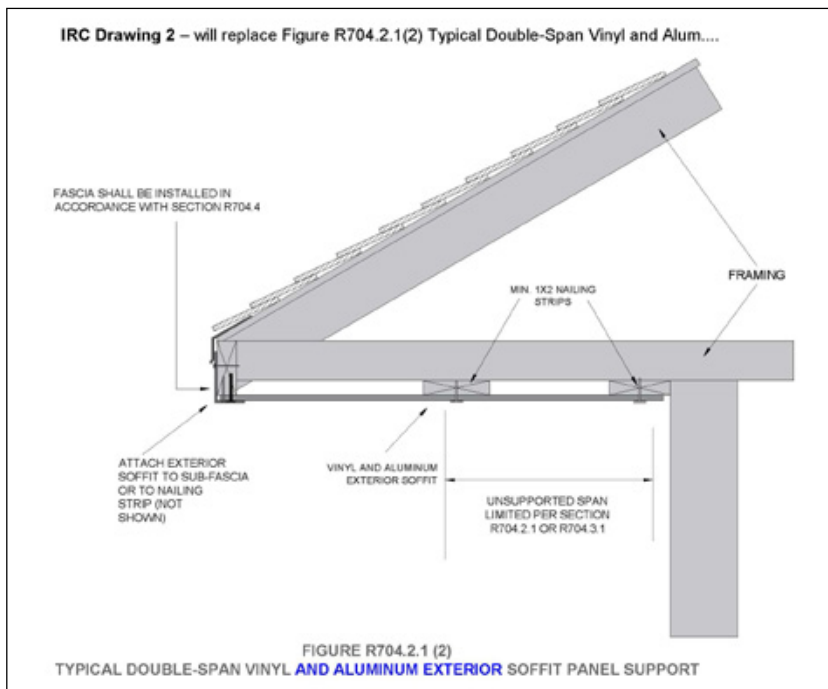
- Failure to use proper connection can create a weak point for the system.
- Use of utility trim and punch-locked vinyl siding, backed vinyl siding or insulated vinyl siding is critical under windows and at the top of the walls.
- Using a snap lock punch (or other nail hole-creating tools), punch every 6" along the cut edge of vinyl siding, backed vinyl siding insulated vinyl siding and backed vinyl siding and every 8" along the cut edge of polypropylene siding.
- Any time the top lock has been removed from cladding, utility trim should be used as a receiver to secure the punched-tab cladding panel.
- Furring may be required.

CRITICAL INSTALLATION POINTS FOR POLYMERIC CLADDING SYSTEMS

SINGLE SPAN SOFFIT INSTALLATION DRAWING FROM 2027 IRC



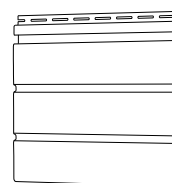
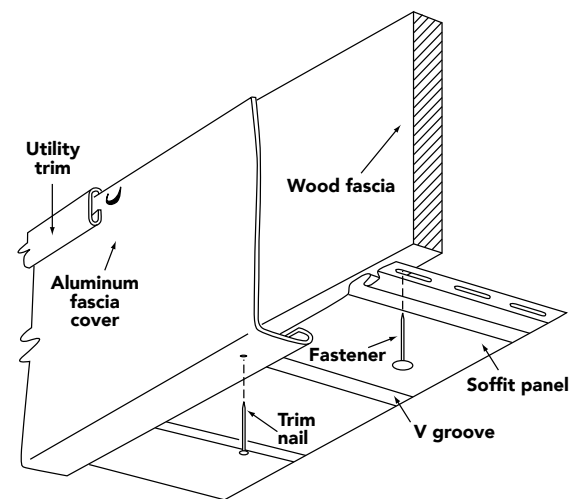
MULTI SPAN SOFFIT INSTALLATION



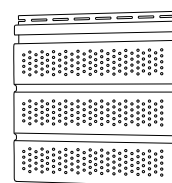
INSTALLATION TIPS

SOFFIT INSTALLATION TIPS

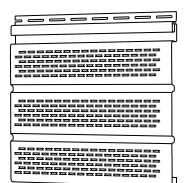
- Vinyl soffit must be fastened at both the fascia and wall.
- In high wind regions, where the unsupported span of soffit panels is greater than 16", intermediate nailing strips shall be provided.
- Once vinyl soffit is installed, fascia covers can be installed into utility trim or behind the existing drip edge.
- Always pre-drill holes into fascia and do not nail tight.
- In non-high wind areas, where the unsupported span of soffit panels is greater than 16", nailing strips shall be provided.



Solid or Hidden Vent



Vented Perforated



Vented Basketweave

UNDERSTANDING THE FIRE PERFORMANCE BENEFITS OF POLYMERIC EXTERIORS

Built-In Protection

MEET OR EXCEED THE INDUSTRY STANDARDS FOR SAFETY

According to the U.S. Census Bureau², vinyl siding is the most popular choice for exterior cladding in residential homes in the Midwest and New England.

For years, polymeric products have been recognized materials that meet or exceed building codes and industry standards for safety.

APPROVED FOR USE IN ALL TYPES OF CONSTRUCTION, INCLUDING:

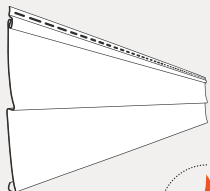
- Noncombustible rated structures up to 40'
- One-hour fire-rated assemblies
- Wildfire zones (up to the most severe settings in most cases, as products do not typically contribute to the growth of the fire)
- Other fire-resistive construction up to highest risk categories in most instances

HARDER TO IGNITE, EASIER TO EXTINGUISH

All organic materials (i.e., anything containing carbon) will ignite. But materials with higher ignition temperatures are naturally safer.



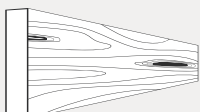
IGNITION POINTS:



POLYVINYL CHLORIDE

PVC WON'T IGNITE
FROM ANOTHER FLAME
UNTIL IT REACHES ABOUT

730°F (387°C)



FRAMING LUMBER

COMMON FRAMING
LUMBER WILL IGNITE
FROM A FLAME AT

500°F (260°C)

² 2024 American Housing Survey

UNDERSTANDING THE FIRE PERFORMANCE BENEFITS OF POLYMERIC EXTERIORS

Less than 4% of all residential fires start outside the structure but still do not necessarily originate with the exterior cladding.

RESIDENTIAL FIRES: WHAT TO KNOW

Exterior cladding is involved in only a small fraction of all residential fires. Most residential fires begin inside the home and are contained within the structure of origin.

According to a report from the National Fire Protection Association (NFPA), fewer than 3% of all fires go beyond the source inside residential structures and fewer than 2% of these occurrences are related to the exterior wall surface. Less than 4% of all residential fires start outside the structure and do not necessarily originate with the exterior cladding.

PVC SLOWS FLAMES FROM SPREADING

PVC, the primary ingredient in vinyl siding, doesn't release a lot of energy when it burns and will not readily spread flames on its own.⁴ Vinyl siding also needs unusually high amounts of oxygen to burn and stay burning, so it extinguishes more easily.

Plus, when any organic material burns, it releases smoke that contains many different combustion products including toxic gases. There is no research to substantiate claims that vinyl materials release unusually toxic combustion products.⁵

THE RISKS OF COMBUSTIBLE MULCH

In many cases today, exterior fires (not in wildfire zones) are started where combustible mulch is present. PEPA encourages better regulation on combustible mulch, and some local jurisdictions are not allowing this product against multi-family structures.

NEARLY

96%

of all home fires start on the inside and have nothing to do with the cladding.³



³ National Fire Protection Association Fire Analysis and Research Division, Home Structures Fires, November 2020

⁴ Results of ASTM E162-06 test, Standard Test Method for Surface Flammability of Materials Using a Radiant Heat Energy Source

⁵ Fire Properties of Polyvinyl Chloride, Vinyl Institute, 2017

ENSURING PROPER CLADDING INSTALLATION



POLYMERIC CLADDING JOBSITE INSPECTION CHECKLIST



CERTIFICATION PROGRAM

Products certified through the VSI Product Certification Program go through tests and checks to ensure compliance.

- ☐ Look for the VSI Product Certification Program mark above to verify that the product is certified to the relevant ASTM standards
- ☐ Vinyl siding panels should move freely
- ☐ Check to ensure starter strips are used at first course
- ☐ Check to ensure utility trim and snap locks are used under windows and at top of wall where nail hem is removed
- ☐ Panels should be fully engaged and locked with each other
- ☐ Confirm that corrosion resistant fasteners were used
- ☐ Fasteners should be in the center of the nail slot and penetrate at least 1 1/4" inch into a nailable substrate
- ☐ Fasteners must have a space of 1/32" (about the thickness of a dime) between the fastener head and cladding panel
- ☐ There is no caulk used in the installation process except in very specific instances when using certain types of flashing applications
- ☐ Confirm that vinyl soffit is fastened at both fascia and wall ends
- ☐ Where the unsupported span of soffit panels is greater than 12" in coastal areas and 16" in non-coastal areas, intermediate nailing strips should be provided

MEETING BUILDING INSPECTOR AND OFFICIAL REQUIREMENTS

Rely on certified cladding products to help inspections move quickly. Products certified through the VSI Product Certification Program go through tests and checks to ensure compliance with the ASTM-appropriate product standards for:

- Weatherability, wind load and impact resistance
- Expansion and contraction
- Surface distortion
- Length, width and thickness
- Fire performance including flame spread

FIND CERTIFIED PRODUCTS NOW



COASTAL AREAS

For coastal high wind areas, building inspectors should request design pressure information or consult the manufacturer's code compliance report to ensure the product is verified for use in high wind areas. Design pressure ratings are on product packaging.



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plan review resources,
visit polymericexteriors.org



PEPA
Polymeric Exterior Products Association