VINYL SIDING INSTITUTE™

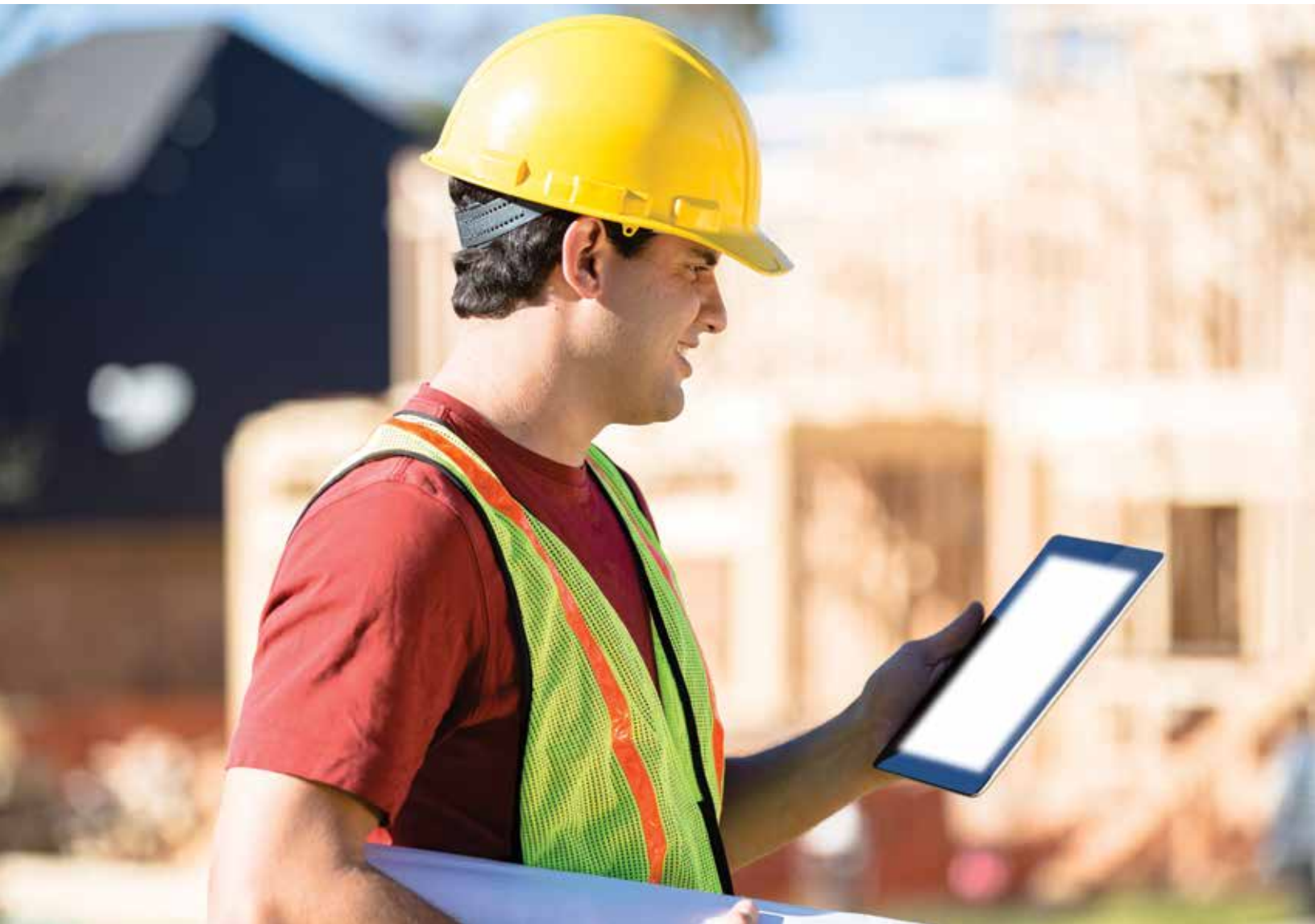
ICC MEMBER

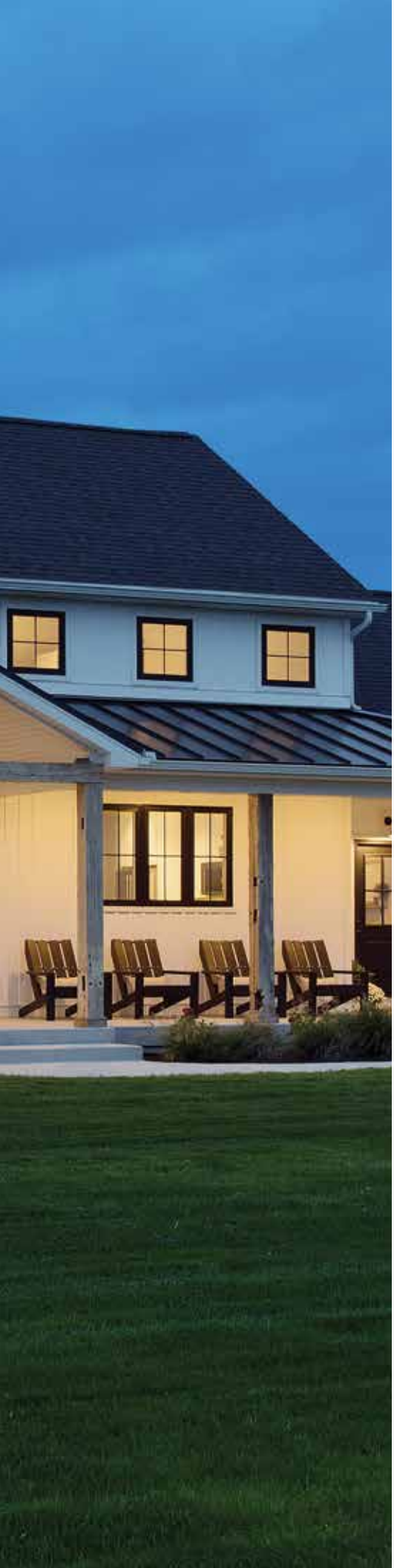
POLYMERIC SIDING

Vinyl, Polypropylene, and Insulated

THE 2018 I-CODES

UNDERSTANDING THE I-CODE REGULATIONS





The 2018 I-Codes

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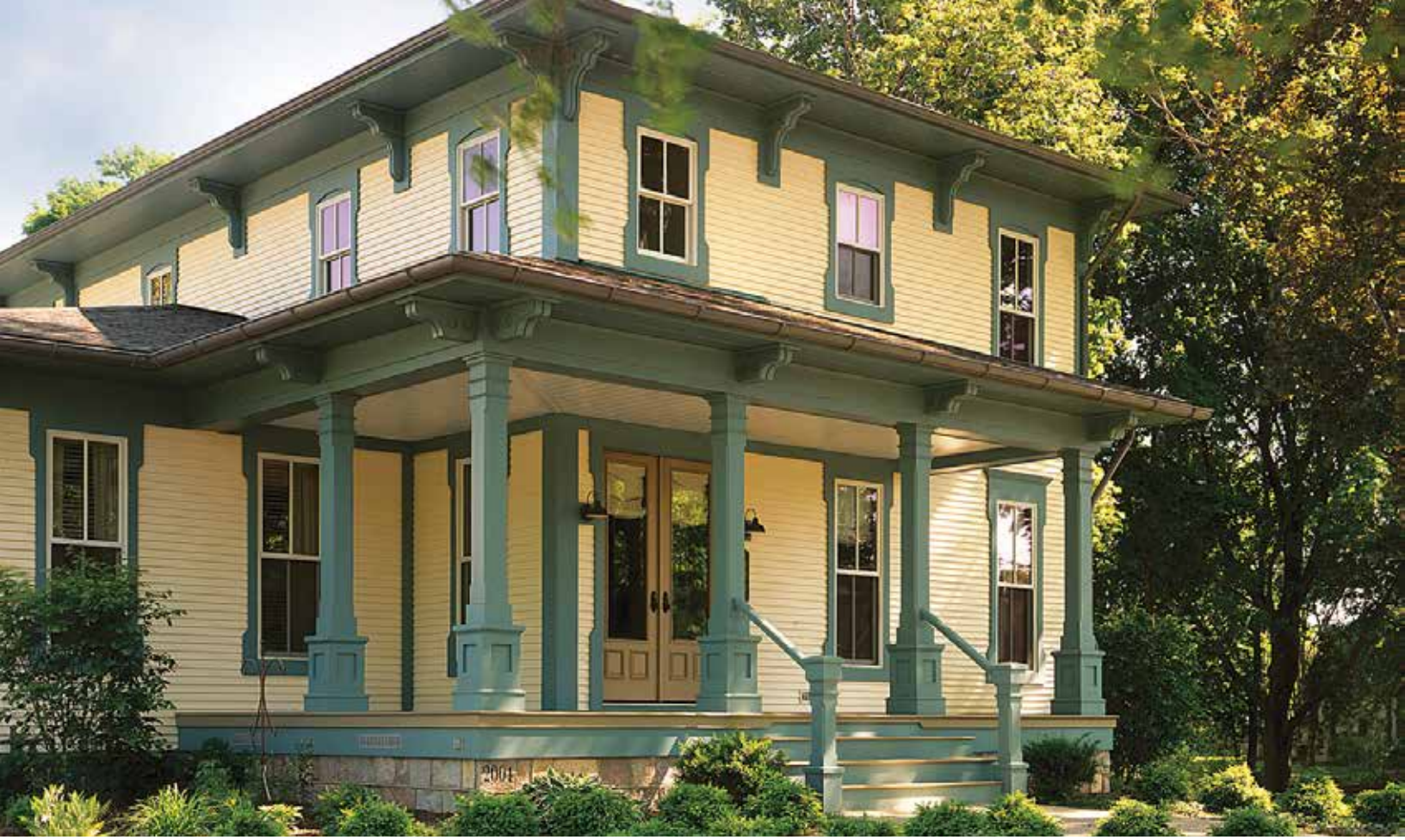


VINYL SIDING INSTITUTE™

INTRODUCTION

This document is designed to help you understand how polymeric siding is regulated by the I-Codes. It was researched and written by the Vinyl Siding Institute (VSI), the trade association for cladding manufacturers.

The purpose of VSI is to further the development and growth of the vinyl siding and other polymeric siding industry by:

- Maintaining and expanding markets for vinyl and other polymeric siding
- 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
- Sponsoring certification programs that improve the quality of siding and its installation
- Providing a forum for issues of interest to the vinyl siding industry
- Using VSI resources to share information with the industry and its customers on the benefits of vinyl and other polymeric siding
- Engaging in product stewardship and outreach activities to enhance the image of the industry and its products

Polymeric Siding

AMERICA'S #1 CHOICE

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

Polymeric siding meets the stringent requirement of building codes across the United States and Canada. These codes require that vinyl siding, insulated vinyl siding, and polypropylene siding be certified to their respective ASTM standards. This ensures that when manufactured to the appropriate material standard and installed properly, they meet the demands of these regulations, such as providing protection from the elements.

For example, properly installed certified polymeric siding, as required by the code, can withstand high winds – 110 miles per hour or more – and resists heat, cold, and moisture. And although the codes don't address warranties, the durability of vinyl siding has enabled vinyl siding manufacturers to offer warranties that are among the longest and strongest in the cladding industry.

ENERGY EFFICIENT Insulated siding, an innovation that has been added into the codes recently, 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.

CERTIFIED These code-recognized products and colors (although color certification is not a code requirement) are also certified to meet or exceed industry standards through a program administered by an independent, accredited quality control agency.

DEFINING POLYMERIC SIDING

VINYL SIDING	Cladding made principally of polyvinyl chloride (PVC)
INSULATED SIDING	General category for cladding that provides continuous insulation with an R-Value of 2.0 or greater
INSULATED VINYL SIDING	Insulated siding using vinyl siding combined with foam plastic insulation, to produce an R-Value of 2.0 or greater
POLYPROPYLENE SIDING	Cladding made principally from polypropylene polymer

WHAT ARE I-CODES?

I-Codes provide the regulatory framework for the construction of homes and buildings.

The International Codes, or I-Codes, published by the International Code Council, provide the regulatory framework for the construction of homes and buildings and are adopted by every state in the United States. Some states will amend the I-Codes, but generally speaking, the sections on siding (Chapter 7 IRC, Chapter 14 IBC) are not modified.

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

WATER Both bulk and vapor

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

FIRE Codes are determined by risk, building size, and occupancy type, and state that cladding should be a part of an assembly that provides necessary determined fire protection and/or performance (i.e., flame spread when used on the interior of a structure, hourly rated assemblies, and radiant heat release)

The four I-Codes that affect 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 and hotels
- **International Energy Conservation Code (Energy Code)** Energy efficiency
- **International Wildland-Urban Interface Code (IWUIC)** Communities that are built in areas prone to wildfires/forest fires

INTERNATIONAL RESIDENTIAL CODE

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

PRODUCT REQUIREMENTS (IRC R703)

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

INSULATED VINYL SIDING
ASTM D7793
R703.13

POLYPROPYLENE SIDING
ASTM D7254
R703.14

VINYL SIDING
ASTM D3679
R703.11

INSTALLATION REQUIREMENTS

IRC Table R703.3 (1) Provides prescriptive and performance installation requirements:

- In general, vinyl and insulated vinyl siding are installed 16 inch on center using roofing nails, although variations are allowable
- Polypropylene siding is typically installed at 16 inches or less on center intervals and must be installed over some type of wood sheathing, according to the manufacturer's installation instructions

IRC Section R703.3.1 provides specific requirements for the installation of vinyl soffit panels:

- In high wind areas the soffit panels must be designed to meet the appropriate design pressure.
- R703.3.1.2 requires that each soffit panel be fastened at both the fascia and wall, and that there be no unsupported spans greater than 16 inches without the use of an intermediate nailing strip.
- Where soffit is being used in high wind areas, IRC Section R703.3.2 requires soffit to be designed to resist component and cladding loads specified in Table R301.2(2).

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) places requirements of a 1-hour-tested assembly according to ASTM E119 on exterior walls that are 5 feet or closer to the property line.
- Vinyl siding is a part of many E119-rated assemblies.

Polypropylene Siding

IRC R703.14.2 places a limitation on the use of polypropylene siding on walls that are closer than 5 feet to the property line (separation distance) and on walls 10 feet or closer to walls of other buildings on the same lot. 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).

INTERNATIONAL BUILDING CODE

Insulated Vinyl Siding is not addressed in the IBC. Building officials may rely on code compliance reports for verification based on the established standard for the product category, ASTM D7793.

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

PRODUCT REQUIREMENTS (IBC 1403)

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

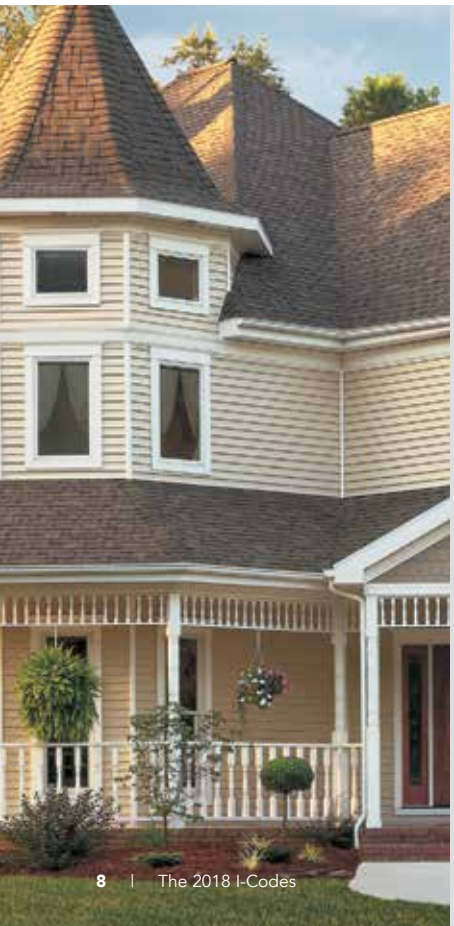
INSULATED VINYL SIDING

POLYPROPYLENE SIDING ASTM D7254
IBC 1403.12

VINYL SIDING ASTM D3679
IBC 1403.9

INSTALLATION REQUIREMENTS

- IBC 1404 provides prescriptive and performance installation instructions
- In general, vinyl siding and insulated vinyl siding is installed 16 inch on center using roofing nails, although variations of this can be done
- Polypropylene siding is typically installed at 16 inch or less on center intervals and must be installed over some type of wood sheathing, according to the manufacturer's installation instructions



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

- In general, polymeric siding is allowed in all types of construction including noncombustible construction. If polymeric siding is used with noncombustible construction, certain test results are demonstrated according to IBC 1405.
- Polymeric siding is allowed on buildings where the required design pressure does not exceed about 36 psf, or an ASD wind speed of 100 mph in Exposure C, with a mean roof height of 40 feet. If the design conditions at the building exceed this, then the code compliance report or documentation of test results can show the ability of the siding to meet the required design pressure rating.
- Specific information on use of insulated vinyl siding will be listed in the code compliance report.
- IBC Table 602 and IBC 705.5 place certain fire resistance ratings on walls depending on the occupancy, type, density (distance to lot line) and size of building based on ASTM E119 tests.
- Polymeric siding is a part of many E119-rated assemblies. In addition, vinyl siding specifically is allowed to be part of IBC 722's calculated fire resistance approach.
- IBC 1405 allows the use of polymeric siding (and other combustible cladding) with noncombustible construction (Types I, II, III, IV).
- If polymeric siding is used with noncombustible construction (Types I, II, III, IV), it must be tested in accordance with NFPA 268 (IBC 1405.1) and perform to certain levels depending on the fire separation distance of the building. This test method demonstrates the ability of combustible material to not ignite under certain radiant heat conditions.

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

INTERNATIONAL ENERGY CONSERVATION CODE

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.

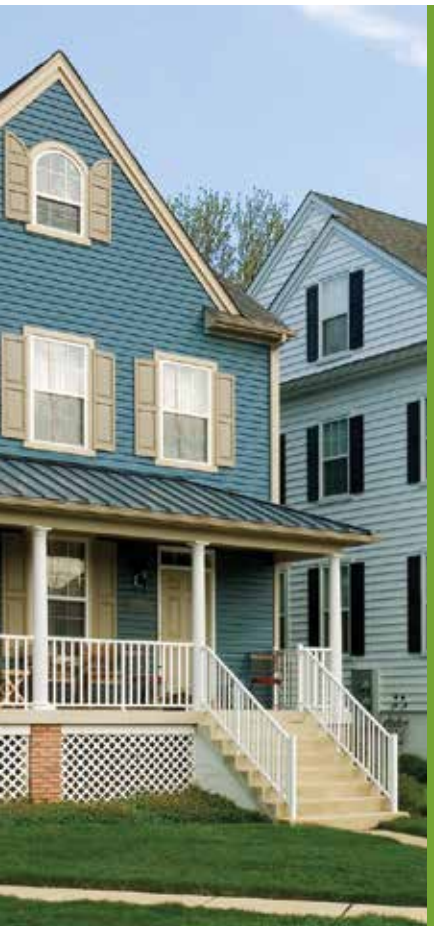
Insulated siding can be used to meet the R-Value/U-factor requirements of the IECC. The tested R-value for insulated siding is required by the code, N1101.10.1 (R303.1.1.) to be labeled on the package of the insulated siding.

IRC N1102.1.3 (R402.1.3) of the 2015 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 IRC N1102.1.3 (R402.1.3) Table 402.1.2.

INTERNATIONAL WILDLAND-URBAN INTERFACE CODE

Vinyl siding is allowed for use under this code in all conditions with certain performance requirements.

Chapter 5 of the IWUIC breaks down various risk types for developments relative to wildfire and then places certain requirements on materials. There are three different types of risk categories that impact the requirement for the type of Ignition Resistant (IR) wall construction. In the most stringent/severe IR wall construction (IR1 and IR2), polymeric siding may be used so long it is a part of a 1-hour E119-rated assembly and exhibits a flame spread index no greater than 25. When an IR3 condition applies, there are no requirements or limitations on specific type of wall construction or cladding.



Ensuring Proper Installation

WHAT BUILDING INSPECTORS AND OFFICIALS SHOULD LOOK FOR

Certified products are tested and verified to meet the code wind requirement for the majority of the country. For coastal high wind areas, building inspectors should request design pressure information or consult the code compliance report from the manufacturer to ensure the product has been verified for use in high wind areas. In some cases, this design pressure rating may be on the packaging of the product.

- Vinyl siding panels should move freely from side to side
- Panels should be fully engaged and locked with each other
- Fasteners should be in the center of the nail slot and penetrate at least 1 ¼" into a nailable substrate
- Fasteners must have a space of 1/32" (about the thickness of a dime) between the fastener head and siding panel
- Do not use caulking
- Face nailing is prohibited

Code Specifications Review: **QUICK REFERENCE CHART**

INTERNATIONAL RESIDENTIAL CODE

VINYL SIDING	INSULATED VINYL SIDING	POLYPROPYLENE SIDING
PRODUCT REQUIREMENTS (IRC R703) Products must be certified and labeled to show they conform to their established ASTM standard		
ASTM D3679	ASTM D7793	ASTM D7254
INSTALLATION REQUIREMENTS IRC Table R703.3 (1) Provides prescriptive and performance installation requirements		
In general, vinyl siding is installed 16 inches on center using roofing nails, although variations of this can be done	In general, insulated vinyl siding is installed 16 inches on center using roofing nails, although variations of this can be done	Typically installed at 16 inches or less on center intervals and must be installed over some type of wood sheathing, according to the manufacturer's installation instructions
VINYL SOFFIT USE	R703.3.1 requires vinyl soffit panels must be designed to meet the appropriate design pressure in high wind areas. R703.3.1.2 requires that each soffit panel be fastened at both the fascia and wall, and that there be no unsupported spans greater than 16 inches without the use of an intermediate nailing strips. Where soffit is being used in high wind areas, IRC Section R703.3.2 requires soffit to be designed to resist component and cladding loads specified in Table R301.2(2).	
CONSIDERATIONS AND CONDITIONS FOR USE IN HIGH DENSITY DEVELOPMENTS In general, polymeric siding is not limited in their application with homes built under the IRC.		
		IRC R703.14.2 limits the use of polypropylene siding in certain high density applications.

INTERNATIONAL BUILDING CODE

VINYL SIDING	INSULATED VINYL SIDING	POLYPROPYLENE SIDING
PRODUCT REQUIREMENTS Products must be certified and labeled to show they conform to their established ASTM standard		
ASTM D3679	Not addressed in IBC, building officials should rely on code compliance reports	ASTM D7254
INSTALLATION REQUIREMENTS IBC 1404 provides prescriptive and performance installation instructions		
In general, vinyl siding is installed 16 inches on center using roofing nails, although variations of this can be done	Not addressed in IBC, building officials should rely on code compliance reports	Typically installed at 16 inches or less on center intervals and must be installed over some type of wood sheathing, according to the manufacturer's installation instructions
CONSIDERATIONS AND CONDITIONS FOR USE IN HIGH DENSITY DEVELOPMENTS AND WITH NONCOMBUSTIBLE CONSTRUCTION. In general, the use of polymeric siding is allowed in all types of construction, however when used with noncombustible construction test results are required to be demonstrated according with the IBC section 1406.		
Allowed on buildings where the ASD wind speed does not exceed 100 mph and the building height is 40 feet or less in Exposure C, or about 36 psf design pressure.**	Will be listed in the code compliance report	Allowed on buildings where the ASD wind speed does not exceed 100 mph and the building height is 40 feet or less in Exposure C, or about 36 psf design pressure. **

INTERNATIONAL ENERGY CONSERVATION CODE

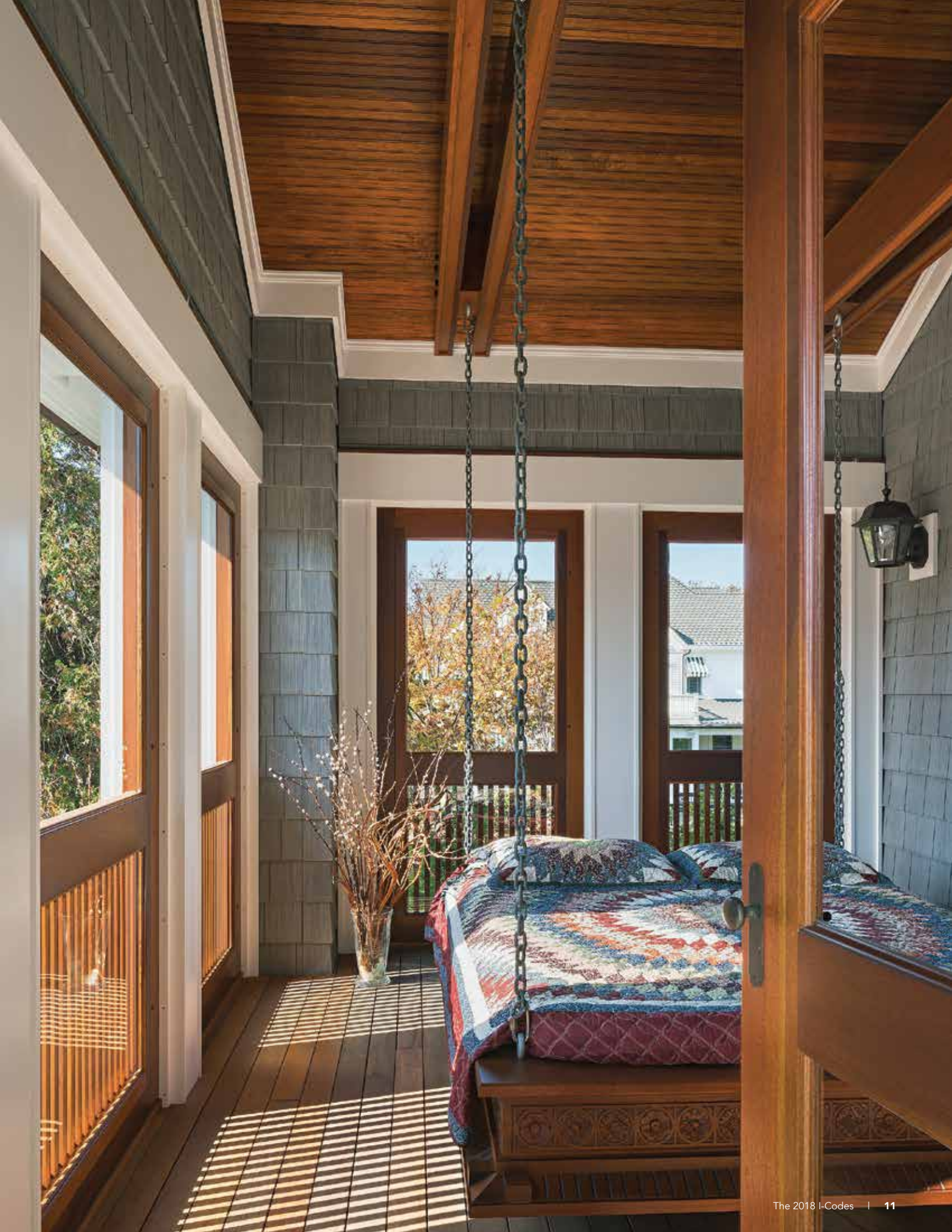
Can be used as continuous insulation outside of the building framing to meet the R-Value/ U-factor requirements*

INTERNATIONAL WILDLAND-URBAN INTERFACE CODE

Polymeric siding is allowed for use under this code in all conditions with certain performance requirements.

* IRC N1102.1.3 (R402.1.3) of the 2015 IECC allows the R-Value of insulated siding to be used to comply with the energy code.

** If the design conditions at the building exceed this, then the code compliance report or documentation of test results can show the ability of the siding to meet the required design pressure rating.



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