

DIVISION: 07 00 00 – THERMAL AND MOISTURE
Section: 07 40 46 – Plastic Siding

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REPORT SUBJECT:
Grayne Engineered Shake and Shingle

1.0 SCOPE OF EVALUATION

This research report addresses compliance with the following Codes:

- 2015 International Building Code (IBC)
- 2015 International Residential Code (IRC)
- 2012 International Building Code (IBC)
- 2012 International Residential Code (IRC)
- 2014 Florida Building Code (FBC)
(Excluding High Velocity Hurricane Zones)

Grayne Engineered Shake and Shingle has been evaluated for the following properties:

- Durability
- Weather Resistance
- Wind Load Resistance

2.0 USES

2.1. Grayne Engineered Shake and Shingle is intended for use as an exterior siding attached to an approved structural sheathing.

3.0 DESCRIPTION

3.1. Grayne Engineered Shake and Shingle is a composite polyvinyl chloride (PVC) siding, manufactured using a sheet extrusion process, simulating a natural cedar siding. The Grayne Engineered Shake and Shingle is available with exposure widths of 5 or 7.5 inches.

4.0 PERFORMANCE CHARACTERISTICS

4.1. Grayne Engineered Shake and Shingle products are not evaluated for resisting positive wind pressure and must be installed over sheathing materials designed and approved for the required positive design wind pressure.

4.2. Grayne Engineered Shake and Shingle installed in accordance with the code specified installation is recognized for use within the corresponding limitations prescribed by the code for wind speed, exposure category and other conditions, See Section 5.1 for applications within the code prescribed conditions.

4.3. Maximum allowable wind pressures are given in Table 1 and 2 for siding installed in accordance with Section 5.2.

5.0 INSTALLATION

Grayne Engineered Shake and Shingle must be installed in accordance with the manufacturer's published installation instructions, the applicable Code and this Research Report. The manufacturer's published installation instructions and this Research Report must be strictly adhered to, and a copy of the instructions must be available on the jobsite during installation.

5.1. Prescriptive Requirements

5.1.1. For IBC and FBC applications: Areas where the nominal design wind speed (V_{asd}) does not exceed 100 miles per hour and the building height is no greater than 40 ft. in Exposure C, installation shall comply with the prescriptive requirements in Section 1405.14 of the IBC and FBC and one of the fastening methods specified in Table 1 and 2.

5.1.2. For IRC applications: Areas where the basic wind speed (V_{asd}) is less than 110 miles per hour in Exposure B, and does not exceed 90 mph in Exposure C or 85 mph in Exposure D, installation shall comply with the prescriptive requirements in Section R703.11.1 and Table R703.4 of the IRC and one of the fastening methods specified in Table 1 and 2.



5.1.3. For FBC-Residential applications: Areas where the negative wind pressures do not exceed 30 psf, as determined in accordance with Table R301.2(2) and adjusted for mean roof height and exposure in accordance with Table R301.2(3), installation shall comply with the prescriptive requirements in Section R703.11.1 and Table R703.4 of the FBC-Residential code and one of the fastening methods specified in Table 1 and 2.

5.2. In Excess of Prescriptive Requirements

5.2.1. Grayne Engineered Shake and Shingle shall be installed over structural wood sheathing complying with DOC PS 1, DOC PS 2 or ANSI/APA PRP 210, per Section 2303.1.4 of the IBC and FBC.

5.2.2. Sheathing must be covered by an approved water-resistive barrier in accordance with IBC Section 1404.2 and provide a means for draining water that enters the assembly to the exterior.

5.2.3. Flashing shall be installed in accordance with Section 1405.4 of the IBC and FBC, and Section R703.8 of the IRC and FBC-Residential.

5.2.4. Protection against condensation shall be provided in accordance with Section 1405.3 of the IBC and FBC.

5.2.5. Fasteners shall be corrosion-resistant nails, staples or screws with dimensions and fastening schedule as described in Table 1 and 2.

6.0 SUPPORTING EVIDENCE

6.1. Manufacturer's drawings and installation instructions.

6.2. The reports of testing and engineering analysis demonstrating compliance with the performance requirements of ICC-ES AC308, Acceptance Criteria for Vinyl Siding, approved February 2014, revised July 2015, and of ASTM D 3679-11, Rigid Poly (Vinyl Chloride) (PVC) Siding.

6.3. Documentation of an Intertek approved quality control system for the manufacturing of products recognized in this report.

7.0 CONDITION OF USE

The *Grayne Engineered Shake and Shingle* described in this Research Report complies with, or is a suitable alternative to, what is specified in those Codes listed in Sections 1.0 and 2.0 of this report, subject to the following conditions:

7.1. Installation must comply with this Research Report, the manufacturer's published installation instructions and the applicable Code. In the event of a conflict between the manufacturer's instructions and this report, this report governs.

7.2. Grayne Engineered Shake and Shingle products listed in this report are limited to exterior use in Type V-B (IBC and FBC) construction and construction permitted by the IRC and FBC-Residential.

7.3. Wind design pressures determined from nominal design wind speeds (V_{asd}) in accordance with Chapter 16 of the IBC and FBC, and Section R301.2.1.1 of the IRC and FBC-Residential, shall not exceed the allowable wind loads in Table 1 and 2.

7.4. Exterior walls must be braced or sheathed to resist racking loads with approved materials in accordance with the applicable code.

7.5. All products are manufactured in Franklin, Ohio by The Tapco Group, in accordance with the manufacturer's approved quality control system with inspections by Intertek.

8.0 IDENTIFICATION

The Grayne Engineered Shake and Shingle described in this Research Report are identified by a marking bearing the report holder's name (The Tapco Group), the following statement: "Conforms to ASTM Specification D3679", and the Code Compliance Research Report mark and number (CCRR-0241).





9.0 CODE COMPLIANCE RESEARCH REPORT USE

9.1. Approval of building products and/or materials can only be granted by a building official having legal authority in the specific jurisdiction where approval is sought.

9.2. Code Compliance Research Reports shall not be used in any manner that implies an endorsement of the product by Intertek.

9.3. Reference to the Intertek website address: whdirectory.intertek.com is recommended to ascertain the current version and status of this report.

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Table 1 - Wind Resistance – Maximum Allowable Negative Design Pressure (psf)

Product Name	Exposure Width	Fasteners	Allowable Design Pressure ⁽¹⁾
Grayne Engineered Shake and Shingle	5 inches	1-1/2" long, 7/16" crown staples spaced 16" on center, penetrating through the nail hem and sheathing, and into the studs.	132
		1-1/2" long, 7/16" crown staples spaced 10" on center, penetrating through the nail hem and sheathing,	213
		1-1/2" long galvanized roofing nails spaced 16" on center, with every nail penetrating through the sheathing and into the studs	150
		1-1/2" long galvanized roofing nails spaced 10" on center penetrating through the sheathing	225
		1-1/2" long galvanized roofing nails spaced 8" on center, with every other nail penetrating through the sheathing and into the studs.	166
		1-1/2" long galvanized #8 pan head screws spaced 16" on center penetrating through the sheathing into the studs	151
		1-1/2" long galvanized #8 pan head screws spaced 10" on center penetrating through the sheathing	250

- (1) Allowable wind loads are applicable to wind design pressure derived from nominal wind speed (V_{asd}) per IBC Section 1609.3.1
- (2) Allowable Design Pressures are determined in accordance with Annex A1 of ASTM D3679, using a pressure equalization factor (PEF) of 0.36 and safety factor of 1.5.
- (3) Allowable Design Pressures apply to siding installed on walls with solid internal and external sheathing. For applications where siding is installed on walls without internal sheathing (open studs), Allowable Design Pressures shall be reduced by applying a 0.36 adjustment factor.



Table 2 (Continued) - Wind Resistance – Maximum Allowable Negative Design Pressure (psf)

Product Name	Exposure Width	Fasteners	Allowable Design Pressure ⁽¹⁾
Grayne Engineered Shake and Shingle	7.5 inches	1-1/2" long, 7/16" crown staples spaced 16" on center, penetrating through the nail hem and sheathing, and into the studs.	157
		1-1/2" long, 7/16" crown staples spaced 10" on center, penetrating through the nail hem and sheathing.	179
		1-1/2" long galvanized roofing nails spaced 16" on center, with every nail penetrating through the sheathing and into the studs	123
		1-1/2" long galvanized roofing nails spaced 10" on center penetrating through the sheathing	97
		1-1/2" long galvanized #8 pan head screws spaced 16" on center penetrating through the sheathing into the studs	169
		1-1/2" long galvanized #8 pan head screws spaced 10" on center penetrating through the sheathing	250

- (1) Allowable loads are applicable to wind design pressure derived from nominal wind speed (V_{asd}) per IBC Section 1609.3.1
- (2) Allowable Design Pressures are determined in accordance with Annex A1 of ASTM D3679, using a pressure equalization factor (PEF) of 0.36 and safety factor of 1.5
- (3) Design Pressures apply to siding installed on walls with solid internal and external sheathing. For applications where siding is installed on walls without internal sheathing (open studs), Allowable Design Pressures shall be reduced by applying a 0.36 adjustment factor.

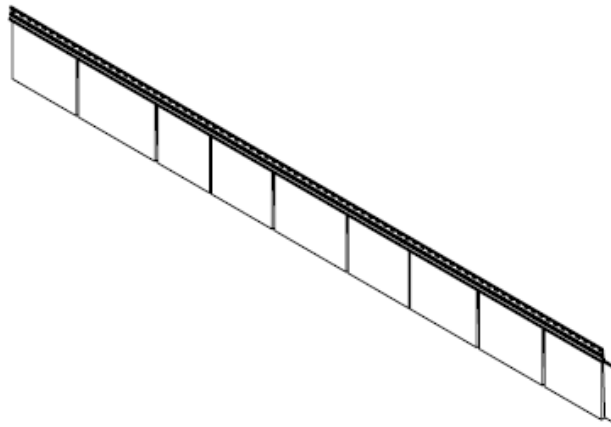


Figure 1 – Grayne Engineered Shake and Shingle Panel

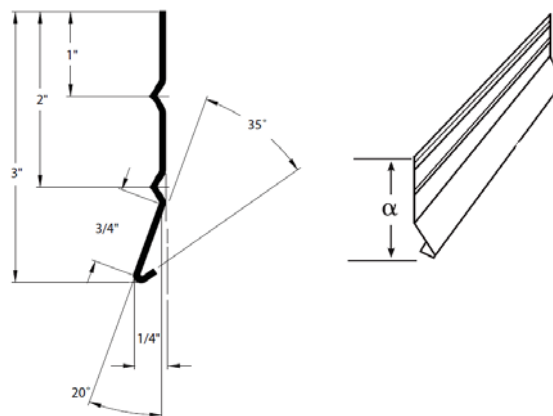


Figure 2 – Starter Strip

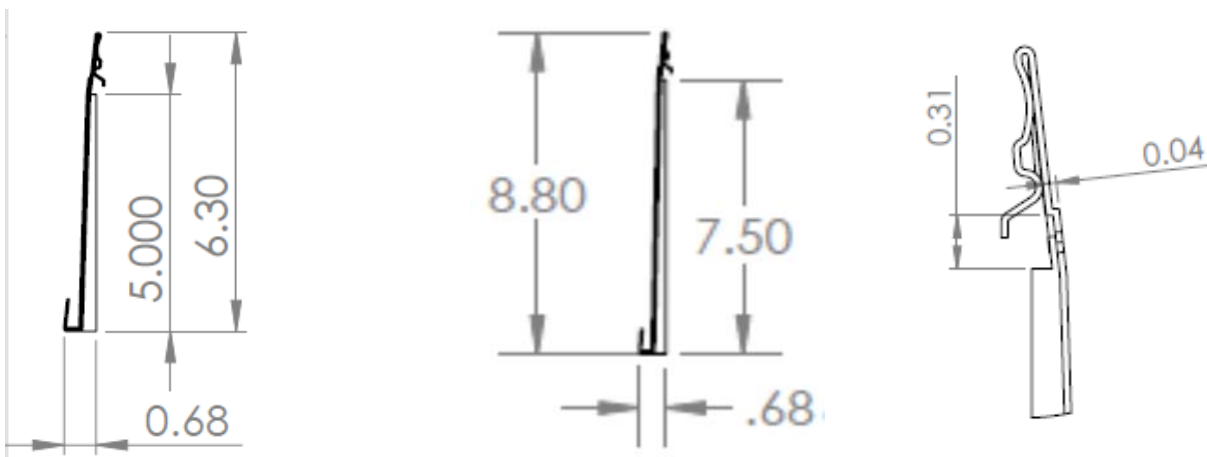


Figure 3 – Grayne Engineered Shake and Shingle Panel Cross Section and Clip Detail

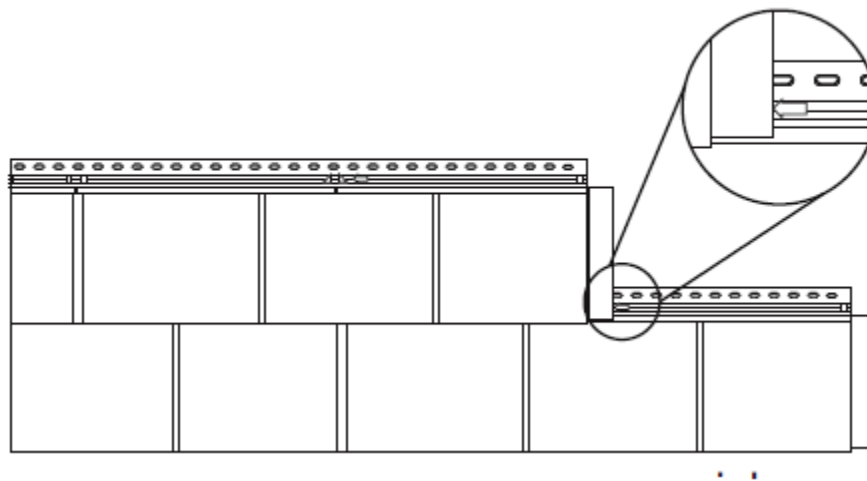
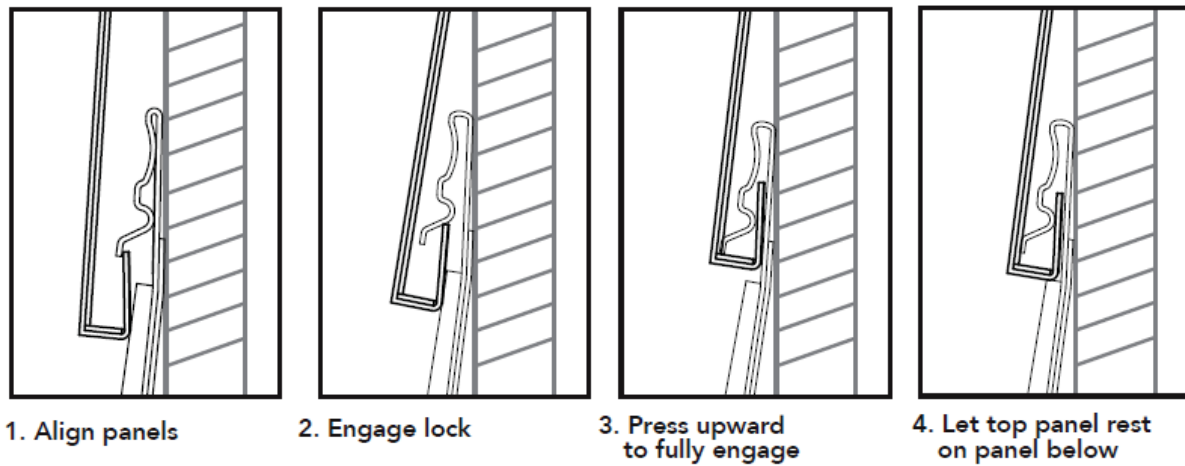


Figure 4 – Grayne Engineered Shake and Shingle Typical Installation