

**CHAPTER 9
ROOF ASSEMBLIES**

**SECTION R905.1
2009 Edition
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R905.1 Roof covering application. Roof coverings shall be applied in accordance with the applicable provisions of this section and the manufacturer's installation instructions. Unless otherwise specified in this section, roof coverings shall be installed to resist the component and cladding loads specified in Table R301.2(2), adjusted for height and exposure in accordance with Table R301.2(3).

REFERENCED SECTIONS:

R905.2.4 Asphalt shingles. Asphalt shingles shall comply with ASTM D 225 or D 3462.

R905.2.4.1 Wind resistance of asphalt shingles. Asphalt shingles shall be tested in accordance with ASTM D 7158. Asphalt shingles shall meet the classification requirements of Table R905.2.4.1(1) for the appropriate maximum basic wind speed. Asphalt shingle packaging shall bear a label to indicate compliance with ASTM D 7158 and the required classification in Table R905.2.4.1(1).

Exception: Asphalt shingles not included in the scope of ASTM D 7158 shall be tested and labeled to indicate compliance with ASTM D 3161 and the required classification in Table R905.2.4.1(2).

TABLE R905.2.4.1(1)
CLASSIFICATION OF ASPHALT ROOF SHINGLES PER ASTM D 7158

MAXIMUM BASIC WIND SPEED FROM FIGURE 301.2(4) (mph)	CLASSIFICATION REQUIREMENT
85	D, G, or H
90	D, G, or H
100	G or H
110	G or H
120	G or H
130	H
140	H
150	H

For SI: 1 mile per hour = 0.447 m/s.

TABLE R905.2.4.1(2)
CLASSIFICATION OF ASPHALT SHINGLES PER ASTM D 3161

MAXIMUM BASIC WIND SPEED FROM FIGURE 301.2(4) (mph)	CLASSIFICATION REQUIREMENT
85	A, D or F
90	A, D or F
100	A, D or F
110	F
120	F
130	F
140	F
150	F

For SI: 1 mile per hour = 0.447 m/s.

R905.2.6 Attachment. Asphalt shingles shall have the minimum number of fasteners required by the manufacturer, but not less than four fasteners per strip shingle or two fasteners per individual shingle. Where the roof slope exceeds 21 units vertical in 12 units horizontal (21:12, 175 percent slope), shingles shall be installed as required by the manufacturer.



Q: Based on the words "unless otherwise specified" in Section R905.1, and the references to ASTM D7158 and ASTM D3161 (given that these standards do not test fasteners) in Section R905.2.4.1, are asphalt shingles excluded

from the requirement to be installed to resist the component and cladding loads specified in Table R301.2(2)?

A: Yes. Unlike membrane-type roof systems (built-up, single-ply), which provide for continuous air barriers, asphalt shingle systems are recognized to be air-permeable. As a result, conventional wind-test methods do not yield representative results when used on asphalt shingle roof systems. Hence, asphalt shingles are classified in accordance ASTM D7158 or ASTM D3161 to resist the maximum basic wind speed specified in Table R905.2.4.1.(1) or Table R905.2.4.1(2), not the component and cladding loads specified in Table R301.2(2).

The standards do not test the fasteners used to attach the asphalt shingles to the roof deck. The asphalt shingles are applied to the roof deck using the number of fasteners in accordance with the manufacturer's installation instructions. The test confirms the fastener pull-through resistance for shingles that comply with ASTM D225 or ASTM D3462 applied in accordance with the manufacturer's installation instructions.

The asphalt shingles are then installed with the number of fasteners that were used by the manufacturer in the testing for the classification required to resist the maximum basic wind speed, but not less than 4 fasteners per strip shingle or two fasteners per shingle in accordance with Section R905.2.6.
