

Understanding underlayments

Some roofing underlayment products may not be code-compliant

by Mark S. Graham

Proper underlayment is a critical component for steep-slope roof system performance. Building codes provide minimum requirements for underlayments, but some of these requirements may limit underlayment options.

Code requirements

Minimum requirements for underlayment products used as components for steep-slope roof systems are provided in the *International Building Code, 2015 Edition* (IBC 2015),

Section 1507—Requirements for Roof Coverings. Separate requirements are provided for each steep-slope roof system type located in areas where the nominal design wind speed (V_{asd}) is less than 120 mph or 120 mph and greater.

Similarly, the *International Residential Code, 2015 Edition* (IRC 2015) provides product requirements for steep-slope underlayments in Table R905.1.1(1) Underlayment Types. Separate requirements are

provided for each steep-slope roof system type located in areas where the ultimate design wind speed (V_{ult}) is less than 140 mph or 140 mph and greater.

IRC 2015's 140-mph V_{ult} threshold is equivalent to a V_{asd} of about 108 mph, making IRC 2015's "high-wind" underlayment provisions slightly more stringent than IBC 2015's provisions.

The figure provides a summary of the underlayment product requirements for IBC 2015 and IRC 2015. It is important to note each underlayment is an asphalt-based product; no nonasphaltic or synthetic underlayments are specifically permitted by IBC 2015 or IRC 2015.

Careful selection

NRCA recommends underlayment products for steep-slope roof systems be carefully selected based on specific project requirements, building code requirements and the steep-slope roofing product manufacturer's recommendations.

If use of a nonasphaltic or synthetic underlayment product is being considered for a specific project, code acceptance can be sought by making a specific request to the authority having jurisdiction (AHJ). AHJs typically will request an evaluation report, such as those provided by ICC Evaluation Service or Underwriters Laboratories Inc. AHJs may grant code acceptance for alternative underlayment products on a project-by-project basis and typically not a blanket acceptance applying to all future projects in a specific jurisdiction.

Additional information regarding steep-slope underlayment products is provided in *The NRCA Roofing Manual: Steep-slope Roof Systems—2017*. 🌐🔗

Roof system type	IBC 2015			IRC 2015		
	Section	$V_{asd} < 120$ mph	$V_{asd} \geq 120$ mph	Section	$V_{ult} < 140$ mph	$V_{ult} \geq 140$ mph
Asphalt shingles	1507.2	ASTM D226, Type I ASTM D4869, Type I ASTM D6757	ASTM D226, Type II ASTM D4869, Type IV ASTM D6757 ASTM D1970	R905.2	ASTM D226, Type I ASTM D4869, Type I, II, III or IV ASTM D6757	ASTM D226, Type II ASTM D4869, Type IV ASTM D6757 ASTM D1970
Clay and concrete tile	1507.3	ASTM D226, Type II ASTM D2626 ASTM D6380, Class M	ASTM D226, Type II ASTM D2626 ASTM D6380, Class M ASTM D1970	R905.3	ASTM D226, Type II ASTM D2626, Type I ASTM D6380, Class M	ASTM D226, Type II ASTM D2626, Type I ASTM D6380, Class M ASTM D1970
Metal panels	1507.4	Not applicable	ASTM D226, Type II ASTM D4869, Type IV ASTM D1970	R905.10	Manufacturer's instructions	ASTM D226, Type II ASTM D4869, Type IV ASTM D1970
Metal shingles	1507.5	ASTM D226, Type I ASTM D4869	ASTM D226, Type II ASTM D4869, Type IV ASTM D1970	R905.4	ASTM D226, Type I or II ASTM D4869, Type I, II, III or IV	ASTM D226, Type II ASTM D4869, Type IV ASTM D1970
Mineral-surfaced roll roofing	1507.6	ASTM D226, Type I ASTM D4869	ASTM D226, Type II ASTM D1970	R905.5	ASTM D226, Type I or II ASTM D4869, Type I, II, III or IV	ASTM D226, Type II ASTM D4869, Type IV ASTM D1970
Slate shingles	1507.7	ASTM D226, Type II ASTM D4869, Type III or IV	ASTM D226, Type II ASTM D4869, Type IV ASTM D1970	R905.6	ASTM D226, Type I ASTM D4869, Type I, II, III or IV	ASTM D226, Type II ASTM D4869, Type IV ASTM D1970
Wood shingles	1507.8	ASTM D226, Type I ASTM D4869	ASTM D226, Type II ASTM D4869, Type IV ASTM D1970	R905.7	ASTM D226, Type I or II ASTM D4869, Type I, II, III or IV	ASTM D226, Type II ASTM D4869, Type IV ASTM D1970
Wood shakes	1507.9	ASTM D226, Type I ASTM D4869	ASTM D226, Type II ASTM D4869, Type IV ASTM D1970	R905.8	ASTM D226, Type I or II ASTM D4869, Type I, II, III or IV	ASTM D226, Type II ASTM D4869, Type IV ASTM D1970

IBC 2015 and IRC 2015 product requirements for steep-slope underlayments

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