



ACCEPTANCE CRITERIA FOR NONASPHALTIC FIBERGLASS-BASED ROOF UNDERLAYMENT

AC160

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PREFACE

Evaluation reports issued by ICC Evaluation Service, Inc. (ICC-ES), are based upon performance features of the International family of codes and other widely adopted code families, including the Uniform Codes, the BOCA National Codes, and the SBCCI Standard Codes. Section 104.11 of the *International Building Code*® reads as follows:

The provisions of this code are not intended to prevent the installation of any materials or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative material, design or method of construction shall be approved where the building official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety.

Similar provisions are contained in the Uniform Codes, the National Codes, and the Standard Codes.

This acceptance criteria has been issued to provide all interested parties with guidelines for demonstrating compliance with performance features of the applicable code(s) referenced in the acceptance criteria. The criteria was developed and adopted following public hearings conducted by the ICC-ES Evaluation Committee, and is effective on the date shown above. All reports issued or reissued on or after the effective date must comply with this criteria, while reports issued prior to this date may be in compliance with this criteria or with the previous edition. If the criteria is an updated version from the previous edition, a solid vertical line (|) in the margin within the criteria indicates a technical change, addition, or deletion from the previous edition. A deletion indicator (→) is provided in the margin where a paragraph has been deleted if the deletion involved a technical change. This criteria may be further revised as the need dictates.

ICC-ES may consider alternate criteria, provided the report applicant submits valid data demonstrating that the alternate criteria are at least equivalent to the criteria set forth in this document, and otherwise demonstrate compliance with the performance features of the codes. Notwithstanding that a product, material, or type or method of construction meets the requirements of the criteria set forth in this document, or that it can be demonstrated that valid alternate criteria are equivalent to the criteria in this document and otherwise demonstrate compliance with the performance features of the codes, ICC-ES retains the right to refuse to issue or renew an evaluation report, if the product, material, or type or method of construction is such that either unusual care with its installation or use must be exercised for satisfactory performance, or if malfunctioning is apt to cause unreasonable property damage or personal injury or sickness relative to the benefits to be achieved by the use of the product, material, or type or method of construction.

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1.0 INTRODUCTION

1.1 Purpose: The purpose of this acceptance criteria is to establish requirements for recognition of nonasphaltic fiberglass roof underlayment, in ICC-ES evaluation reports, under the 1997 *Uniform Building Code*[™], the 2003 *International Building Code*[®] and the 2003 *International Residential Code*[®].

1.2 Scope: This acceptance criteria is limited to a proprietary sheet material consisting of a fiberglass mat, factory-impregnated and coated on both sides with polymers that are filled with inert and noncombustible fillers; and to materials that are compatible with hot asphalt and hot coal-tar. The sheet materials are alternates to the Type 15 and Type 30 underlayment specified in Chapter 15 of the UBC, Chapter 15 of the IBC, and Chapter 9 of the IRC, and must be installed over spaced and solid sheathing.

1.3 Codes and Reference Standards:

1.3.1 2003 *International Building Code*[®] (IBC), International Code Council.

1.3.2 2003 *International Residential Code*[®] (IRC) International Code Council.

1.3.3 1997 *Uniform Building Code*[™] (UBC).

1.3.4 ASTM International (see Tables 1 and 2 for editions of the standard applicable to the codes).

1.3.4.1 ASTM D 146, Standard Test Methods for Sampling and Testing Bitumen-Saturated Felts and Woven Fabrics for Roofing and Waterproofing.

1.3.4.2 ASTM D 828, Standard Test Method for Tensile Properties of Paper and Paperboard Using Constant-Rate-of-Elongation Apparatus.

1.3.4.3 ASTM D 1922, Standard Test Method for Propagation Tear Resistance of Plastic Film and Thin Sheeting by Pendulum Method.

1.3.4.4 ASTM D 4869, Standard Specification for Asphalt-Saturated Organic Felt Underlayment Used in Steep Roofing.

1.3.4.5 ASTM E 96, Standard Test Method for Water Vapor Transmission of Materials.

1.3.4.6 ASTM E 108, Standard Test Method for Fire Tests of Roof Coverings.

1.3.5 TAPPI T-1013 OM92, Loss on Ignition of FiberGlass Mats.

1.3.6 UL 790, Tests for Fire Resistance of Roof Covering Material, Underwriters Laboratories Inc. (See Table 2 for editions of standard applicable to the codes.)

2.0 BASIC INFORMATION AND REPORTS OF TESTS

2.1 Product Description: A description of the underlayment sheet materials, and of the manufacturing process, must be submitted.

2.2 Installation Instructions: Installation instructions must be submitted.

2.3 Packaging and Identification: Description of the method of packaging, and identification of the underlayment,

must be submitted. Product labeling must include the evaluation report number and the name or logo of the quality control agency.

2.4 Testing Laboratories, Reports of Tests and Product Sampling:

2.4.1 Testing laboratories shall comply with Section 2.0 of the ICC-ES Acceptance Criteria for Test Reports (AC85) and Section 4.2 of the ICC-ES Rules of Procedure for Evaluation Reports.

2.4.2 Test reports shall comply with AC85.

2.4.3 Sampling of the underlayment for tests under this criteria shall comply with Section 3.1 of AC85.

2.4.4 Unless otherwise noted in this criteria, specimen sizes, quantities, and test configurations are as noted in the referenced standards.

3.0 REQUIRED DATA

3.1 Reports of tests showing conformance of the material to the physical requirements specified in Table 1 and the performance requirements specified in Table 2 must be submitted.

3.2 Reports of tests must be submitted to demonstrate that the finished product does not crack, and is not so sticky as to cause tearing or other damage upon being unrolled, at temperatures between 50°F and 140°F (10°C and 60°C).

3.3 For recognition for use in Class A, B or C roofing systems, reports of tests showing compliance with ASTM E 108 or UL 790 must be submitted for recognition under the IBC or IRC, while reports of tests showing compliance with UBC Standard 15-2 must be submitted for recognition under the UBC.

3.4 For recognition as an alternate to the covering materials specified in Section 1516.3 of the Appendix to the UBC, Section 1510.4 of the IBC or Section R907.4 of the IRC, when the application of new roofing over existing wood shingle or wood shake roofs creates a combustible space, reports of successful completion of Class A spread-of-flame tests, with one layer of the underlayment applied directly to the deck, and conducted in accordance with UBC Standard 15-2, must be submitted.

4.0 TEST METHODS

Durability Tests: As required by Table 2 of this criteria, representative specimens must be conditioned for 336 ± 4 hours at 140°F (60°C) and 100 percent relative humidity. Breaking strength, tear strength and pliability tests must be conducted, following the test methods specified in Table 2 of this criteria, on unconditioned (control) specimens and on conditioned specimens. For both conditioned and control specimens, the number of test specimens must be as specified in the appropriate test method.

Condition of Acceptance: The average of the test results for conditioned specimens must not be less than 90 percent of the average of the test results for control specimens.

5.0 QUALITY CONTROL

5.1 The products shall be manufactured under an approved quality control program with inspections by an

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inspection agency accredited by the International Accreditation Service (IAS) or otherwise acceptable to ICC-ES.

5.2 A quality control manual complying with the ICC-ES Acceptance Criteria for Quality Control Manuals (AC10) shall be submitted.■

TABLE 1—PRESCRIPTIVE REQUIREMENTS

DESCRIPTION	TEST METHOD	REQUIREMENTS
Linear feet per roll	ASTM D 146-04, Section 8	100 feet, minimum
Roll width	ASTM D 146-04, Section 8	Report value
Area per roll	ASTM D 146-04, Section 8	350 square feet, minimum
Net mass	ASTM D 146-04, Section 7	52.5 pounds per roll, minimum
Met mass per unit area	ASTM D 146-04, Section 9	15 pounds per 100 square feet, minimum

For SI: 1 foot = 304.8 mm, 1 pound = 0.454 kg, 1 square foot = 0.093 m².

TABLE 2—PERFORMANCE REQUIREMENTS

TEST REQUIREMENT	TEST METHOD	TEST REQUIREMENT
Average breaking strength	ASTM D 828-97, using ten 1-inch-by-5-inch specimens, each direction	Machine direction—60 lbf, min. Cross direction—30 lbf, min.
Average tear strength at 77°F ± 2°F	ASTM D 1922-06a, using ten 2.5-inch-by-3-inch specimens, each direction	Machine direction—350 grams, minimum Cross direction—30 lbf, min.
Water vapor transmission	ASTM E 96-95, Procedure A (UBC recognition) ASTM E 96-00, Procedure A (IBC and IRC recognition)	3 perms, min.
Liquid water transmission	ASTM D 4869-05, Section 8.3	Product must pass as specified in Section 8.3.5 of ASTM D 4869
Loss on ignition	TAPPI T-1013 OM92	25 percent, maximum
Pliability	ASTM D 146-04, Section 14	1/2-inch-radius mandrel
Durability	Section 4.1 of this acceptance criteria	Section 4.1 of this acceptance criteria
Fire properties	UBC Standard 15-2 (UBC recognition) ASTM E 108-00 (IBC recognition) UL 790-97 (IBC recognition) UL 790-98 (IRC recognition) ASTM E 108-99 (IRC recognition)	Two layers of the underlayment must comply with the conditions of acceptance for the Class B burning brand and Class B intermittent flame tests. Two decks must be tested for each test.

For SI: 1 lbf = 4.448 N, 1 perm = 5.745 × 10⁻¹¹ kg/Pa · s · m².