



August 1, 2008

TO: PARTIES INTERESTED IN WATER-RESISTIVE BARRIERS

SUBJECT: Proposed Revisions to the ICC-ES Acceptance Criteria for Water-resistive Barriers, Subject AC38-0808-R1 (MB/ST)

Dear Madam or Sir:

The revisions proposed to the subject acceptance criteria, as presented in the enclosed criteria draft, are being posted on the ICC-ES web site to allow for public comment. The revisions include adding provisions for qualification of the barriers in an air barrier assembly. AC38 was revised in February 2008 to include provisions for qualification as an *air barrier material*. Subsequently, in May 2008, the ICC-ES Acceptance Criteria for Water-resistive Membranes Factory-bonded to Wood-based Structural Sheathing, Used as Water-resistive Barriers (AC310), was revised to include provisions for qualification of *air barrier assemblies*. An evaluation report applicant has requested that AC38 also be revised, to include the same provisions as AC310.

You are cordially invited to submit written comments, within 30 days of the date of this letter. Please use the comment form on the web site attaching any letters to the form. An explanation of the alternate criteria process can be found on our web site at http://www.icc-es.org/Criteria_Development/alternative_criteria_process.shtml.

All comments received in the 30-day comment period will be considered. During this same 30-day period, however, the draft criteria will be balloted to the Evaluation Committee. If the public comments raise major issues, generate controversy, or require the criteria to be substantially rewritten, then ICC-ES staff may decide to reballot the criteria; or place a revised draft on the web site for further public comment; or put the criteria on the agenda for a future Evaluation Committee meeting.

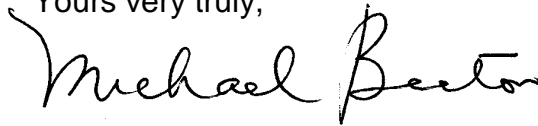
Correspondence received and a memo outlining staff's resolution of the comments in the correspondence will be posted on the web site shortly after the close of the comment period.

Your cooperation is requested in forwarding to the Los Angeles business/regional office all material directed to the Evaluation Committee. Parties interested in the deliberations of the committee should refrain from communicating, whether in writing or verbally, with committee members. The committee reserves the right to refuse communications that do not comply with this request.

Newly approved acceptance criteria may involve test methods or test protocols that are not currently included in the scope of testing services offered by accredited testing laboratories. As noted in the ICC-ES Rules of Procedure for Evaluation Reports, the scope of the laboratory's accreditation must include the type of testing that is to be reported to ICC-ES. We encourage accredited laboratories to expand their scopes of accreditation to include testing under newly approved acceptance criteria. Please note that testing laboratories must be accredited by the International Accreditation Service (IAS) or by another accreditation body that is a signatory to the International Laboratory Accreditation Cooperation Mutual Recognition Arrangement. For further information, please contact IAS at (562) 699-0541, extension 3309, or send an e-mail to pmccullen@iasonline.org.

Please submit all comments using the form on the web site. Attach any letters to the comment form. If you have any questions (not comments), please contact the undersigned at (800) 423-6587, extension 3289, or Steve Thorsell, Director of ICC-ES Projects, at extension 4313. You may also reach us by e-mail at es@icc-es.org.

Yours very truly,

A handwritten signature in black ink that reads "Michael Beaton". The signature is written in a cursive, flowing style.

Michael Beaton, P.E.
Senior Regional Manager

MB/raf

Enclosure

cc: Evaluation Committee



PROPOSED REVISIONS TO THE ACCEPTANCE CRITERIA FOR WATER-RESISTIVE BARRIERS

AC38

Proposed August 2008

Previously approved February 2008, June 2004, July 2000, September 1990

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.

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 proposed in this document, and otherwise meet the applicable performance requirements of the codes. Notwithstanding that a product, material, or type or method of construction meets the requirements of the criteria proposed in this document, or that it can be demonstrated that valid alternate criteria are equivalent to the criteria in this document and otherwise meet the applicable performance requirements 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 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.

Acceptance criteria are developed for use solely for purposes of issuing ICC-ES evaluation reports.

PROPOSED REVISIONS TO THE ACCEPTANCE CRITERIA FOR WATER-RESISTIVE BARRIERS (AC38)

1.0 INTRODUCTION

1.1 Purpose: The purpose of this criteria is to establish requirements for recognition of water-resistive barriers in ICC Evaluation Service, Inc. (ICC-ES), evaluation reports under the 2006 *International Building Code*[®] (IBC), the 2006 *International Residential Code*[®] (IRC), the BOCA[®] *National Building Code/1999* (BNBC), the 1999 *Standard Building Code*[®] (SBC) and the 1997 *Uniform Building Code*[™] (UBC), and optionally as an air barrier material under the 2006 International Energy Conservation Code (IECC)..

1.2 Scope: This criteria is limited to sheet materials used on exterior walls as water-resistive barriers under Sections 1404.2 and 2510.6 of the IBC, Section R703 of the IRC and Section 1404.3 of the BNBC; moisture protection barriers under Section 2303.3 of the SBC; and weather-resistive barriers under Sections 1402.1 and 2506.4 of the UBC, and optionally as an air barrier material under IECC Sections 402.4.1 and 502.4.3.

1.3 Definitions:

1.3.1 Water-resistive Barrier: For the purposes of this criteria, the term water-resistive barrier describes a material that is intended to perform as a secondary barrier behind an exterior cladding, providing a means to resist penetration of liquid water that penetrates behind the exterior covering or cladding, and includes within its scope water-resistive barriers under Section 1404.2 of the IBC, Section R703 of the IRC and Section 1404.3 of the BNBC; moisture protection barriers under Section 2303.3 of the SBC; and weather-resistive barriers under Section 1402.1 of the UBC.

1.3.2 Paper-based Barrier: Paper-based barriers are building papers composed predominantly of sulfate pulp fibers, that comply with UBC Standard 14-1, and that are intended for use as water-resistive barriers.

1.3.3 Felt-based Barrier: Felt-based barriers are asphalt-saturated organic felts that comply with ASTM D 226, and are intended for use as water-resistive barriers.

1.3.4 Polymeric-based Barrier: Polymeric-based barriers are proprietary polymeric sheet materials for use as water-resistive barriers.

1.3.5 Air Barrier Material: A material in building construction that is designed and installed to reduce air leakage either into or through an opaque wall.

1.3.6 Air Barrier Assembly: The air barrier materials and accessories that provide a continuous designated plane to the movement of air through portions of building enclosure assemblies.

1.4 Codes and Reference Documents:

1.4.1 2006 *International Building Code*[®] (IBC), International Code Council.

1.4.2 2006 *International Residential Code*[®] (IRC), International Code Council.

1.4.3 2006 *International Energy Conservation Code*[®] (IECC), International Code Council.

1.4.4 BOCA[®] *National Building Code/1999* (BNBC).

1.4.5 1999 *Standard Building Code*[®] (SBC).

1.4.6 1997 *Uniform Building Code*[™] (UBC).

1.4.7 UBC Standard 14-1 (1997), Kraft Waterproof Building Paper.

1.4.8 ASTM D 226-97a, Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing, ASTM International.

1.4.9 ASTM D 779-03, Standard Test Method for Water Resistance of Paper, Paperboard, and Other Sheet Materials by the Dry Indicator Method, ASTM International.

1.4.10 ASTM D 5034-95, Standard Test Method for Breaking Strength and Elongation of Textile Fabrics (Grab Test), ASTM International.

1.4.11 ASTM E 96-00e01, Test Method for Water Vapor Transmission of Materials, ASTM International.

1.4.12 ASTM E 2178-03 Standard Test Method for Air Permeance of Building Materials, ASTM International.

1.4.13 AATCC Test Method 127-1985, Water Resistance: Hydrostatic Pressure Test. (A copy of the test method may be obtained from the American Association of Textile Chemists and Colorists, at PO Box 12215, 1 Davis Drive, Research Triangle Park, North Carolina, (919) 549-8141.)

1.4.14 ASTM E 2357-05, Test Method for Determining Air Leakage of Air Barrier Assemblies, ASTM International.

2.0 BASIC INFORMATION AND REPORTS OF TESTS

2.1 Product Description: Descriptions of the materials and the manufacturing process shall be submitted.

2.2 Installation Instructions: Installation instructions shall be submitted. The instructions shall include requirements that the barrier be installed horizontally on vertical walls, with the upper layer lapped over the lower layer not less than 2 inches (51 mm), and that where vertical joints occur, the barrier shall be lapped not less than 6 inches (152 mm) and must include the maximum exposure time permitted by the manufacturer. If the material is to be evaluated as an air barrier material in addition to a water-resistive barrier, installation instructions shall identify specific installation provisions for air barrier material applications.

2.3 Packaging and Identification: A description of the method of packaging and identifying the material shall be submitted. Product labeling shall include the evaluation report number at regular intervals.

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.

PROPOSED REVISIONS TO THE ACCEPTANCE CRITERIA FOR WATER-RESISTIVE BARRIERS (AC38)

2.4.3 Test specimens shall be sampled in accordance with Section 3.2 of AC85.

2.4.4 Unless otherwise specified in the applicable test method, a minimum of five specimens shall be tested.

3.0 REQUIRED DATA

3.1 For paper-based barriers under the IBC, IRC or UBC, reports of tests demonstrating compliance with UBC Standard 14-1 shall be submitted. Test methods for dry tensile strength, water resistance and water vapor transmission tests are noted in Table 2 of this criteria.

3.2 For felt-based barriers under the IBC, IRC, BNBC, SBC or UBC, reports of tests demonstrating compliance with ASTM D 226, and with Section 3.3.4 of this criteria, shall be submitted.

3.3 For polymeric-based barriers under the IBC, IRC, BNBC, SBC or UBC, data in accordance with Sections 3.3.1 through 3.3.4 of this criteria shall be submitted. Test methods for dry tensile strength or dry breaking force, water-resistance and water vapor transmission tests are noted in Table 3 of this criteria.

3.3.1 Reports of dry tensile strength tests shall be conducted in accordance with ASTM D 828 or D 882. Reports of dry breaking force tests shall be conducted in accordance with ASTM D 5034, using the Grab Method set forth in Section 4.2.1.1 of ASTM D 5034 and using a constant-rate-extension (CRE) testing machine as described in Section 4.2.2.1 of ASTM D 5034. Test specimens shall be tested in both warp (machine) and filling (cross) direction as set forth in Section 7.3 of ASTM D 5034. The number of test specimens shall be as required in Section 7.3 of ASTM D 5034. Minimum conditions of acceptance shall be as noted in Table 1 of this criteria.

3.3.2 Water-resistance tests shall be conducted in accordance with ASTM D 779. For Grade D barriers, where testing in accordance with ASTM D 779 is not applicable, tests shall be conducted in accordance either with the water ponding test set forth in either Section 4.2.1 or 4.2.2 of this criteria. For each of the three specified tests, the testing shall be conducted on both control and weathered specimens. Control specimens shall be conditioned at 73°F (23.7°C) and 50 percent relative humidity for a minimum of 40 hours. Weathered specimens shall be conditioned in accordance with Section 4.1 of this criteria.

For tests conducted under ASTM D 779, minimum conditions of acceptance shall be as noted in Table 1 of this criteria. For tests conducted under Section 6.4.5 of CCMC 07102, conditions of acceptance shall be that no water shall transmit through the membrane. For tests conducted under Section 4.2 of this criteria, the condition of acceptance is that no leakage is permitted on the underside of any specimen.

3.3.3 Reports shall be submitted of water-vapor transmission tests conducted in accordance with ASTM E 96, Desiccant Method. Conditions of acceptance shall be as noted in Table 1 of this criteria.

3.3.4 Reports shall be submitted of tests demonstrating that the material does not crack when bent over a $\frac{1}{16}$ -inch-diameter (1.6 mm) mandrel at a temperature of 32°F (0°C).

3.4 When the product is to be evaluated as an air barrier material, reports of air permeance testing in accordance with

ASTM E 2178 shall be submitted. A minimum of three specimens shall be tested. The specimens shall be taken from across the width of the roll. Minimum conditions of acceptance shall be an air permeance less than or equal to 0.02 L/(s·m²) @ 75 Pa (0.004 cfm/ft² @ 0.3 inch w.g. (1.57 psf)) for all three specimens.

3.5 Air Barrier Assembly Test: When the product is to be evaluated as a component of an air barrier assembly, reports of air leakage testing in accordance with ASTM E 2357 shall be submitted. A minimum of two assemblies shall be tested. The test report shall indicate which cycling procedure was used (four stages of 500 cycles or two stages of 1000 cycles.)

3.5.1 Conditions of Acceptance: The air leakage rate shall be no more than 0.2L/(s·m²) at 75 Pa [0.04 cfm/ft² at 0.3 inch w.g.(1.57 psf)] for all specimens.

4.0 TEST METHODS

4.1 Weathering Tests: This test method applies to polymeric-based barriers.

4.1.1 General: Three samples, each measuring 18 inches by 48 inches (457 mm by 1219 mm), are required. One sample shall be used for preparing control specimens and shall be conditioned at 73°F (23.7°C) and 50 percent relative humidity for a minimum of 40 hours. Two samples shall be exposed to ultraviolet light, followed by exposure to accelerated aging in accordance with Sections 4.1.2 and 4.1.3 of this criteria.

4.1.2 Ultraviolet Light Exposure: Two 18-inch-by-48-inch (457 mm by 1219 mm) samples shall be exposed to light from ultraviolet sun lamps for 210 hours (10 hours per day for 21 days) in an enclosure as depicted in Figure 1. Ultraviolet light exposure shall be directed on the sample surfaces that will be exposed to sunlight in normal application. Lamps and enclosure shall be adjusted so the specimen temperature is between 135°F and 140°F (57°C and 60°C). Sunlamp bulbs shall be General Electric Type H275 RUV (275 W) or equivalent bulbs, providing UV characteristics of 5.0 W/m²/nm irradiance at a wavelength of 315 to 400 nm at 1 meter.

4.1.3 Accelerated Aging: Three 10-inch-square (254 mm²) specimens shall be cut from the ultraviolet-light-exposed samples. The three specimens shall be subjected to 25 cycles of drying and soaking as follows:

1. Oven drying at 120°F (49°C) for three hours, with all surfaces exposed.
2. Immersion in room-temperature water for three hours, with all surfaces exposed.
3. After removal from the water, specimens are blotted dry, then air-dried for 18 hours at a 75°F ± 5°F (23.8°C ± 2.8°C) room temperature, with all surfaces exposed.

4.2 Alternate Water-resistance Test Method: ~~This~~ These test methods are applicable to polymeric-based barriers, and may be used in lieu of the water-resistance test method described in ASTM D 779.

4.2.1 Control specimens and weathered specimens that have been conditioned in accordance with Section 4.1 of this criteria shall be tested in accordance with AATCC Test Method 127, except that the specimens shall be held at a hydrostatic head of 55 cm for a period of five hours.

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4.2.2 Water Ponding Test: A ring shall be constructed with a sample of the membrane fastened between two 200-millimeter-diameter aluminum rings using a rubber-type gasket. The membrane shall be placed between the rings and cupped to permit a depth of 30.5 mm of tap water to be exposed on 160 cm² of its surface. The test shall be conducted at room temperature (20±2°C and 65±3% RH). The ring shall be raised about 250 mm above a sheet of plain craft paper placed underneath the membrane to aid in monitoring any passage of water.

The membrane shall be maintained at constant conditions of temperature (20±2°C) and relative humidity (65±3%) and inspected at frequent intervals over a period of two hours. Ten test specimens shall be chosen at random from the membrane supplied.

No water seepage shall be observed through the membrane during the water ponding test. (Copied with permission from CCMC Guide MF07102, Technical Guide for Sheathing, Membrane, Breather-type, Section 6.4.5. The CCMC Guide is published by Canadian Construction Materials Centre.)

5.0 SPECIAL REQUIREMENTS

5.1 For use over wood-based sheathing with exterior portland cement plaster, exterior insulation and finish

systems or cementitious exterior coatings in jurisdictions using the IBC, IRC or UBC, the water-resistive barrier shall be installed in accordance with IBC Section 2510.6, IRC Section R703.6.3 or UBC Section 2506.4, as applicable.

5.2 For recognition of Grade D barriers as having a 60-minute water-resistance rating, data shall be submitted in accordance with either Section 5.2.1 or 5.2.2.

5.2.1 For paper-based barriers or polymeric-based barriers tested for water resistance in accordance with ASTM D 779, tests shall demonstrate a minimum water resistance of 60 minutes.

5.2.2 For polymeric-based barriers tested in accordance with Section 4.2 of this criteria, tests shall demonstrate that the barrier resists a hydrostatic head of 55 cm for a period of five hours.

6.0 QUALITY CONTROL

6.1 ~~A quality control manual~~ Quality documentation complying with the ICC-ES Acceptance Criteria for Quality Documentation (AC10) shall be submitted.

6.2 Third-party follow-up inspections are not required under this acceptance criteria. ■

TABLE 1—GRADE REQUIREMENTS FOR WATER-RESISTIVE BARRIERS

PHYSICAL PROPERTY REQUIREMENT	GRADE			
	A	B	C	D
Average dry tensile strength, minimum, pounds per inch width, both directions, (Sections 3.1, 3.2 and 3.3)	20	20	20	20
Average dry breaking force, minimum, pounds force, for polymeric woven and non-woven barriers (Section 3.3)				
Warp (machine) direction	40	40	40	40
Filling (cross) direction	35	35	35	35
Average water resistance, permeation of water through membrane, hours, minimum	24	16	8	1/6
Average water vapor transmission, grams per sq. meter per 24 hours:				
Maximum	4	6	—	—
Minimum	—	—	—	35

For **SI**: 1 pound per inch = 175 N/m, 1 pound-force = 0.454 kg-force.

TABLE 2—TEST PROCEDURES FOR PAPER-BASED BARRIERS

TEST REQUIREMENT	TEST PROCEDURE
Dry tensile strength	ASTM D 828
Water resistance	ASTM D 779
Water vapor transmission	ASTM E 96, Desiccant Method at 74.3°F (23°C)

TABLE 3—TEST PROCEDURES FOR POLYMERIC-BASED, WOVEN AND NON-WOVEN BARRIERS

TEST REQUIREMENT	TEST PROCEDURE
Dry tensile strength, or Dry breaking force	ASTM D 828 or ASTM D882, or ASTM D 5034 (Grab Method)
Water resistance	ASTM D 779, Section 4.2.2 of this criteria, or AATCC Test Method 127
Water vapor transmission	ASTM E 96, Desiccant or Water Method at 74.3°F (23°C)

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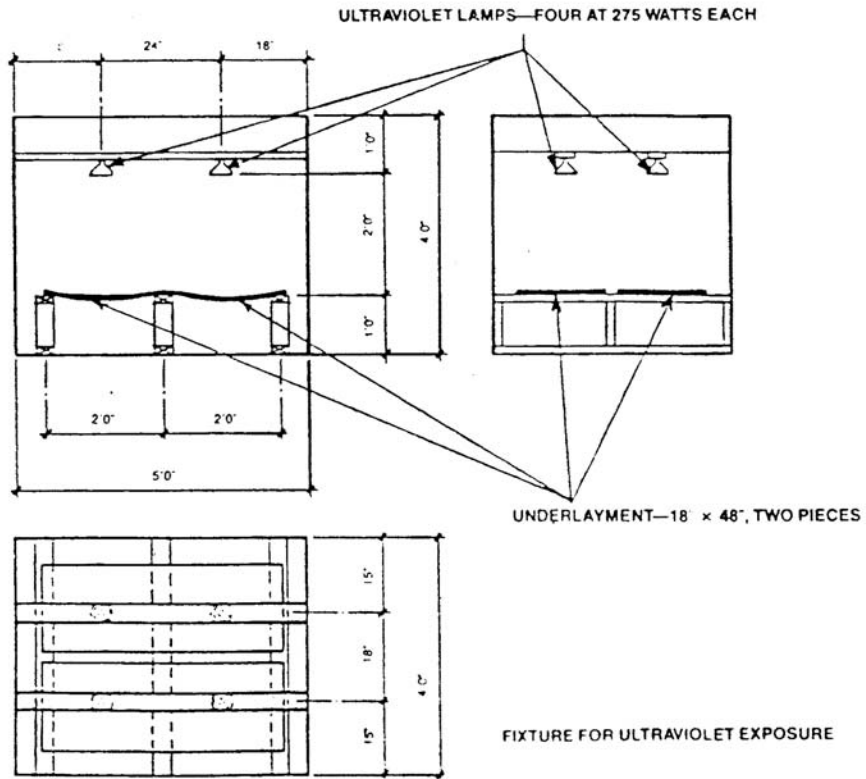


FIGURE 1