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ENVIRONMENTAL CRITERIA FOR DETERMINATION OF BIO-BASED MATERIAL CONTENT

EC102

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PREFACE

ICC-ES issues Environmental Criteria (ECs) to provide interested parties with information on the requirements for obtaining an ICC-ES Verification of Attributes Report (VAR). An ICC-ES VAR provides independent verification of a manufacturer's environmental claims and product attributes. ECs address the production stage of the report subject, beginning with raw material acquisition through final manufacturing and packaging, and may also include information on projections for installation, use, reuse, and end-of-life, where specifically stated therein.. This EC is effective as of the date referenced above and may be amended from time to time.

All VARs must comply with the applicable EC in effect on the date of issuance or reissuance of the report. Any technical changes to the EC will be marked within the EC. A solid vertical line (|) shall be placed in the margin within the EC to indicate a change, addition, or deletion from the previous edition. A deletion indicator (➔) shall be placed in the margin where wording has been deleted.

ICC-ES may consider alternate approaches to those contained in this EC, provided the applicant submits valid data demonstrating that the alternate approach is at least equivalent to the requirements set forth in this EC, subject to approval by ICC-ES staff. Notwithstanding that a product, material, or type or method of construction meets the requirements set forth in this EC, or that it can be demonstrated that valid alternate ECs are equivalent to the requirements in this document, ICC-ES retains the right to refuse to issue or renew a VAR, 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.

This EC is limited to the scope statement in Section 1.2 and is not intended to construe a comprehensive environmental claim where considerations are given to other environmental trade-offs, impacts or full life cycle assessment.

NOTE: The Preface for ICC-ES environmental criteria was revised in February 2012 to reflect changes in policy.

Environmental criteria are developed for use solely by ICC-ES for purpose of issuing ICC-ES VARs.

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1.0 INTRODUCTION

1.1 Purpose: This document provides a procedure for determination of *bio-based* material content of products for recognition in an ICC-ES Sustainable Attributes Verification and Evaluation, Verification of Attributes Report (VAR).

- **1.2 Scope:** Reports issued under this Environmental Criteria (EC) address raw material acquisition and production stages. Life cycle assessment considerations are outside the scope of this EC. Report users are responsible for determining compliance with applicable codes, standards and environmental regulations.

1.3 Applicability: *Bio-based material* content shall be evaluated based on the criteria in the following:

- 1.3.1 IgCC Section 505.2.4
- 1.3.2 CALGreen Sections A4.405.4 and A5.405.2
- 1.3.3 ICC 700 Section 606.1
- 1.3.4 ASHRAE Standard 189.1 Section 9.4.1.3
- 1.3.5 ANSI/GBI 01-2010 Sections 10.1.2.2 and 10.2.2.2
- 1.3.6 Note: The requirements of the ICC-ES Environmental Criteria for Determination of Certified Wood and Certified Wood Content (EC109) are applicable to wood and *wood-based products* seeking to comply as a *bio-based material* under ICC 700 Section 606.1(a) and ANSI/GBI 01-2010 Sections 10.1.2.2, 10.2.2.2 and 10.3.2.1.

1.4 Referenced Documents:

- 1.4.1 ASTM D6866-11, Standard Test Methods for Determining the Biobased Content of Solid, Liquid, and Gaseous Samples Using Radiocarbon Analysis, ASTM International.
- 1.4.2 ASTM D7612-10, Standard Practice in Categorizing Wood and Wood-Based Products according to their Fiber Sources, ASTM International.
- 1.4.3 2012 *International Building Code*® (IBC), International Code Council.
- 1.4.4 2012 *International Residential Code*® (IRC), International Code Council.
- 1.4.5 2012 *International Green Construction Code*™ (IgCC), International Code Council.
- 1.4.6 2010 California Green Building Standards Code (CALGreen), California Building Standards Commission.
- 1.4.7 2008 National Green Building Standard™ (ICC 700), National Association of Homebuilders.
- 1.4.8 ANSI/ASHRAE/USGBC/IES Standard 189.1-2009 – Standard for the Design of High-Performance Buildings (Except Low-Rise Residential Buildings), American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.
- 1.4.9 ANSI/GBI 01-2010 Green Building Assessment Protocol, Green Building Initiative, Inc.

1.5 Terms and Definitions:

- **1.5.1 Bio-based Material:** A commercial or industrial product, other than food or feed, that is composed of, or

derived from, in whole or in significant part, of biological products or renewable domestic agricultural materials, including plant, animal, and marine materials, or *forestry materials*. (IgCC Section 202)

1.5.2 Fiber Procurement System: A system that ensures that fiber procured for the manufacture of wood and *wood-based products* comes from responsible or certified sources in accordance with ASTM D7612. (IgCC Section 202)

1.5.3 Forestry Materials: Materials derived from the practice of planting and caring for forests and the management of growing timber. Such materials must come from short rotation woody crops (less than 10 years old), sustainably managed forests, wood residues, or forest thinnings.

1.5.4 Wood-based Product: Any material that consists, in whole or significant part, of *forestry materials* as measured by either weight or volume.

2.0 REQUIRED DATA

2.1 Product Description: Information on the product to be evaluated. The information shall include the product name, style, part or model number, physical description, and a production flowchart with respect to amount and type of *bio-based material* content, as well as the overall manufacturing process for the product. Additionally, all relevant specifications for the product must be provided, along with the components and/or constituents used to manufacture the product, and the components used with the product in the final assembly. Specifications must be consistent with the product as described in the submitted test reports and quality documentation. As an example, for mixed materials (wet and dry), the following must be provided:

- i. Specifications of incoming materials, or the date of the signed, controlled document that describes each constituent and its specification.
- ii. Mix ratios of the constituents, or the date of the signed, controlled document that describes the mix ratio.
- iii. Finished product specifications (for example, for wet products, specific gravity and viscosity; for formed products, weight, compressive strength, etc.).

When agreed to by ICC-ES, in lieu of providing the actual specifications, the applicant may identify the controlled document that describes the product specifications, provided the document is identified by a revision level and/or date.

When the product specifications are not provided to ICC-ES except through reference to a controlled document as described in the preceding paragraph, the controlled document describing the product specifications shall be made available to the inspection agency for their review and their verification, during the qualifying inspection described in Section 3.3, that the product specifications are consistent with the product described in the original qualifying data.

2.2 Packaging and Identification: A description of the packaging method and field identification of the product

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shall be submitted. Identification shall include the ICC-ES VAR number.

2.3 Bio-based Documentation: The following data shall be submitted:

2.3.1 Identification of all suppliers for the *bio-based material* raw materials, including alternate and secondary suppliers.

2.3.2 Evidence that the *bio-based material* content complies with one of the following requirements:

2.3.2.1 Results of testing performed in accordance with ASTM D6866. *Bio-based material* content shall be determined based on weight (%) of the total finished product.

2.3.2.2 Results of testing that establishes compliance with the minimum bio-based content of the United States Department of Agriculture (USDA) Designation of Biobased Items for Federal Procurement (7 CFR Part 2902).

2.3.2.3 Documentation that establishes compliance with the requirements of the USDA Certified Biobased Product program.

2.3.2.4 For wood and *wood-based products*, documentation demonstrating compliance with the *fiber procurement system* requirements of Section 505.2.4(3) of the IgCC. Wood and *wood-based products* or *forestry materials* for which evidence is provided that the products meet the requirements of the applicable product standards set forth in Section 2303 of the IBC and/or Sections 502, 602 or 802 of the IRC are exempt from the submission requirements of Sections 3.1, 3.2 and 3.3, where evidence of compliance with those standards is submitted.

2.3.3 Where *bio-based material* content is derived from short rotation crops, the rotation age (i.e., average time between regeneration/planting and harvesting of the bio-based raw materials) shall be submitted.

3.0 QUALITY CONTROL

3.1 Required Elements of the Quality System Documentation: Quality system documentation shall be submitted that meets the requirements below.

Exception: Where the VAR subject is also the subject of an ICC-ES evaluation report indicating compliance with the requirements of the IBC and/or IRC, this quality system documentation is not required to be submitted, provided that the applicant submits applicable documentation set forth in Section 2.3.2.4 of this criteria.

3.1.1 The quality system documentation shall be signed and dated by an authorized representative of the manufacturer.

3.1.2 The documentation shall clearly state the facility name of the manufacturing location, the street address and telephone number, and the name of the contact person at the facility.

3.1.3 There shall be provisions for the quality system documentation to be reviewed at least annually. A record of revisions shall be maintained.

3.1.4 The documentation shall indicate how the recognized product is to be identified in the field. This information shall be consistent with the information in the "Identification" section of the VAR, and should include a copy of the product label or a description of what is included on the label. Product labeling shall include, at a minimum, the report holder's name, the VAR number (ICC-ES VAR-XXXX), and information required by the applicable environmental criteria.

3.1.5 Based on the product labeling, the quality system shall provide a means to trace finished product back to the production and quality control records at the manufacturing facility.

3.1.6 The documentation shall describe the manufacturing process.

3.1.7 The documentation shall include provisions for the documenting of product changes, evaluation of product changes and notification to the appropriate parties.

3.1.8 Incoming Materials: The documentation shall include procedures regarding inspections or tests that are conducted on incoming materials, or other means used to determine that the materials meet specifications (for example, mill test reports, certificates of analysis, certificates of compliance, etc.). If incoming material requiring a certificate at the time of receipt does not carry a certificate, then the documentation shall contain provisions for the material to be segregated until it has been appropriately tested or inspected, or the certificate is received.

3.1.9 In-process Quality Control: The documentation shall describe in-process quality control procedures, including how manufacturing processes are monitored to ensure that the product is consistently manufactured within the allowable tolerances.

3.1.10 Final Inspection: The documentation shall detail any final inspections and/or tests that are conducted before the product is labeled and shipped, to ensure that the finished product complies with specifications and applicable design values.

3.1.11 Nonconforming Materials: The documentation shall specify how nonconforming materials—incoming materials, materials in production, and finished materials—are segregated from production until a decision is made as to their disposition.

3.1.12 When products are manufactured at multiple locations, the report applicant shall submit quality system documentation for each of the manufacturing sites.

3.1.13 When the product is manufactured by a party other than the report holder, a form provided by ICC-ES to the applicant to cover this circumstance shall be submitted.

3.2 The following declarations shall be provided to ICC-ES in a signed and dated affidavit from the report holder:

3.2.1 The ICC-ES name, mark, or report number will only be used on products that are in compliance with the VAR and the quality system documentation.

3.2.2 The report holder will promptly investigate and respond to ICC-ES when apprised by ICC-ES of complaints concerning product performance.

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3.2.3 The report holder agrees to permit ICC-ES representatives to examine, at distribution points and the manufacturing plant, any product labeled as being in conformance with the VAR.

3.2.4 ICC-ES will be notified in writing if there is a significant change in the product, manufacturing procedures or quality system documentation from what was recognized upon issuance of the VAR.

3.3 Prior to issuance of a VAR, an initial on-site inspection of the manufacturing facility shall be conducted by an ICC-ES representative or a representative of an accredited inspection agency with the proper technical disciplines.

- ➔ **3.4** At the time of renewal of a VAR, a third-party inspection of the manufacturing facility shall be conducted as a condition of renewal of the report. This inspection shall verify that no changes to the manufacturing process, raw materials or quality program, as they relate to the bio-based material or content of the finished product, have occurred.

4.0 VAR RECOGNITION

4.1 The VAR shall identify the specific product, styles, or models and colors for which data was submitted.

4.2 The VAR shall state the minimum *bio-based material* content and the method by which it was determined. For *bio-based material* content consisting of short-rotation woody crops, the rotation age shall also be stated.

4.3 Where the VAR subject is regulated by the scope of the International Building Code and/or International Residential Code, and is the subject of a current ICC-ES evaluation report, the following statement shall be included:

“See ICC-ES evaluation report ESR-XXXX for compliance with IBC and/or IRC code requirements.”

4.4 Where the VAR subject is regulated by the scope of the International Building Code and/or International Residential Code but is not the subject of a current ICC-ES evaluation report, the following statement shall be included:

- ➔ “Evaluation of the VAR subject for compliance with the requirements of the IBC and/or IRC is outside the scope of this evaluation report and evidence of compliance must be submitted by the permit applicant to the Authority Having Jurisdiction for approval.” ■