



ICBO Evaluation Service, Inc.

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ACCEPTANCE CRITERIA FOR MOLDED POLYOLEFIN-PLASTIC PAD FOOTINGS

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PREFACE

Evaluation reports issued by the ICBO Evaluation Service, Inc. (ICBO ES), are based upon performance features of the Uniform Building Code,[™] Uniform Mechanical Code, Uniform Plumbing Code and related codes. Section 105 of the Uniform Building Code is the primary charging section upon which evaluation reports are issued. Section 105 reads as follows:

The provisions of this code are not intended to prevent the use of any material or method of construction not specifically prescribed by this code, provided any alternate has been approved and its use authorized by the building official.

The building official may approve any such alternate, provided he finds that the proposed design is satisfactory and complies with 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 suitability, strength, effectiveness, fire resistance, durability, safety and sanitation.

The building official shall require that sufficient evidence or proof be submitted to substantiate any claims that may be made regarding its use. The details of any action granting approval of an alternate shall be recorded and entered in the files of the code enforcement agency.

The attached acceptance criteria for the general code sections noted have been issued to provide all interested parties with guidelines on implementing performance features of the codes. The attached acceptance criteria were developed and adopted following public hearings conducted by the Evaluation Committee. These criteria may be revised from time to time as the need dictates.

ICBO ES may consider alternate criteria, provided the proponent submits valid data demonstrating that the alternate criteria are at least equivalent to the attached criteria and otherwise meet the applicable performance requirements of the codes. Notwithstanding that a material, type or method of construction, or equipment, meets the attached acceptance criteria, or it can be demonstrated that valid alternate criteria are equivalent and otherwise meet the applicable performance requirements of the codes, if the material, product, system or equipment 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 thereof, ICBO ES retains the right to refuse to issue or renew an evaluation report.

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I. SCOPE

The purpose of this criteria is to establish minimum conditions of acceptance for recognition in an ICBO Evaluation Service, Inc. (ICBO ES) report for molded polyolefin-plastic pad footings used as alternates to concrete footings supporting residential decks. The polyolefin-plastic is considered an alternate to requirements in Section 2907 of the Uniform Building Code. Basis of recognition is Section 105.

II. DEFINITIONS

A. **Polyolefin-Plastic:** A plastic based on simple olefins such as ethylene, propylene, and butene is generally called a polyolefin. The word polyolefin describes a chain of unsaturated hydrocarbons with the general formula $C_x H_{2x}$.

B. **Residential Deck:** For the purpose of this criteria and evaluation reports based thereon, a residential deck is a porch or landing with a floor height not exceeding 4 feet above grade and used only in conjunction with a single dwelling in Group R, Division 3, and Group R, Division 1, serving only an individual unit. Patio covers or other types of roof construction shall not be connected to residential decks supported by polyolefin-plastic footings.

III. REQUIRED DATA AND TEST PROCEDURES

A. **Mechanical Degradation:** 1. **General:** The following tests are necessary to evaluate the plastic qualities in resisting mechanical degradation when exposed to underground soil environments:

- a. Flexural-strength tests conducted in accordance with ASTM D 790-86.
- b. Izod Impact tests conducted in accordance with ASTM D 256-88.
- c. Water-absorption tests conducted in accordance with ASTM D 570-81.
- d. Dimensional-change tests conducted in accordance with ASTM D 1042-83

2. **Test specimen conditioning:** Test specimens are injection molded according to ASTM specifications. Each set of specimens consists of at least five specimens conditioned in accordance with the following:

- a. Control set maintained at room temperature.

- b. Set of specimens immersed for 21 days in 23°C. sulfuric acid solution having a concentration of pH 3.

- c. Set of specimens immersed for 21 days in 23°C. sodium hydroxide solution having a concentration of pH 12.

- d. Set of specimens immersed for 21 days in 23°C. deionized water.

3. **Conditions of Acceptance:** Conditioned specimens described in Items Nos. 2b, 2c and, 2d must exhibit a minimum 60 percent flexural strength and impact resistance of control specimens described in Item No. 2a. The percentage of weight change between the conditioned specimens described in Item No. 2d and the control set of specimens shall not exceed 1.0 percent.

B. **Stiffness:** 1. **General:** Flexural modulus of elasticity test conducted in accordance with ASTM D 790-86 is necessary to evaluate the plastic pad footing as a rigid footing which transmit loads uniformly to the supporting soil.

2. **Conditions of Acceptance:** Test samples representative of the pad footing thermoplastic must exhibit a flexural modulus of elasticity of 250,000 psi or greater.

C. **Mechanical Fastener Pull-through Capacity:** Mechanical fasteners which secure the wood post foundation to the plastic footing must be used to transmit wind uplift loads to the plastic footing. Tests for pull-through capacity of the fasteners are necessary. Tests are necessary on a minimum of three test specimens. If the results of any one test vary more than 15 percent from the average, two additional tests must be conducted and the five test results averaged. At the option of the proponent, fastener capacities may be based on the lowest test result of the original three in lieu of performing additional tests. Allowable pull-through capacity of fasteners attaching the plastic footing to the wood post foundation must be determined by application of a safety factor of three to the average of the ultimate pull-through loads.

D. **Creep:** 1. **General:** Flexural creep affects shall be determined by ASTM D 2990-77 (Reapproved, 1982).

2. **Conditions of Acceptance:** The creep modulus computed after 100 hours of exposure to applied stress shall be a minimum of 75 percent of the initial creep modulus.