

ACCEPTANCE CRITERIA FOR IN-GROUND, RESIDENTIAL, FIBER-REINFORCED PLASTIC SWIMMING POOLS AND PERMANENTLY INSTALLED PLASTIC SPAS

AC274

Approved December 2006

(Editorially revised July 2011)

Previously approved October 2005

PREFACE

Evaluation reports issued by ICC Evaluation Service, LLC (ICC-ES), are based upon performance features of the International family of codes. (Some reports may also reference older code families such as the BOCA National Codes, the Standard Codes, and the Uniform 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.

This acceptance criteria has been issued to provide interested parties with guidelines for demonstrating compliance with performance features of the codes referenced in the criteria. The criteria was developed through a transparent process involving public hearings of the ICC-ES Evaluation Committee, and/or on-line postings where public comment was solicited.

New acceptance criteria will only have an “approved” date, which is the date the document was approved by the Evaluation Committee. When existing acceptance criteria are revised, the Evaluation Committee will decide whether the revised document should carry only an “approved” date, or an “approved” date combined with a “compliance” date. The compliance date is the date by which relevant evaluation reports must comply with the requirements of the criteria. See the ICC-ES web site for more information on compliance dates.

If this criteria is a revised edition, a solid vertical line (|) in the margin within the criteria indicates a technical change from the previous edition. A deletion indicator (→) is provided in the margin where wording has been deleted if the deletion involved a technical change.

ICC-ES may consider alternate criteria for report approval, provided the report applicant submits 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. ICC-ES retains the right to refuse to issue or renew any evaluation report, if the applicable product, material, 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 injury or unreasonable damage.

NOTE: The Preface for ICC-ES acceptance criteria was revised in July 2011 to reflect changes in policy.

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

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1.0 INTRODUCTION

1.1 Purpose: The purpose of this acceptance criteria is to establish requirements for in-ground, residential, fiber-reinforced plastic swimming pools and permanently installed plastic spas to be recognized in an ICC Evaluation Service, LLC (ICC-ES), evaluation report under the 2012, 2009 and 2006 *International Building Code*[®] (IBC), the 2012, 2009 and 2006 *International Residential Code*[®] (IRC), the 2012, 2009 and 2006 *International Plumbing Code*[®] (IPC), the BOCA[®] *National Building Code/1999* (BNBC), the 1999 *Standard Building Code*[®] (SBC), the 1997 *Uniform Building Code*[™] (UBC), and the 2006 IAPMO *Uniform Plumbing Code*[®] (UPC). Bases of recognition are IBC Section 104.11, IRC Section R104.11 and Appendix G, IPC Section 105.2, BNBC Section 106.4, SBC Section 103.7, UBC Section 104.2.8 and IAPMO UPC Section 301.2.

The reason for development of this criteria is to allow the evaluation of in-ground, residential, fiber-reinforced plastic swimming pools and permanently installed plastic spas, since the codes do not provide complete standards for evaluation of these types of plastic pools and spas.

1.2 Scope: This acceptance criteria establishes procedures for recognition of in-ground, residential, fiber-reinforced plastic swimming pools and permanently installed residential plastic spas designed and constructed in accordance with ANSI/NSPI-5 2003, for swimming pools; and ANSI/NSPI-3 1999, for plastic spas. This acceptance criteria applies to the prefabricated pool or spa shell only. Electrical, plumbing, pumping and water heating equipment and decking are beyond the scope of this acceptance criteria and are required to be installed in accordance with the applicable code and the requirements of the code official.

1.3 Codes and Referenced Standards:

1.3.1 2012, 2009 and 2006 *International Building Code*[®] (IBC), International Code Council.

1.3.2 2012, 2009 and 2006 *International Residential Code*[®] (IRC), International Code Council.

1.3.3 2012, 2009 and 2006 *International Plumbing Code*[®] (IPC), International Code Council.

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

1.3.5 1999 *Standard Building Code*[®] (SBC).

1.3.6 1997 *Uniform Building Code*[™] (UBC).

1.3.7 2006 *Uniform Plumbing Code* (UPC), International Association of Plumbing and Mechanical Officials.

1.3.8 ANSI/NSPI-5 2003, Residential Inground Swimming Pools, American National Standards Institute.

1.3.9 ANSI/NSPI-3 1999, Permanently Installed Residential Spas, American National Standards Institute.

1.3.10 ANSI Z124.7-97, Prefabricated Plastic Spa Shells, American National Standards Institute.

1.3.11 ASTM D 543-95, Standard Practices for Evaluation of the Resistance of Plastics to Chemical Reagents, ASTM International.

1.3.12 ASTM D 638-02a, Standard Test Method for Tensile Properties of Plastics, ASTM International.

1.3.13 ASTM D 790-02, Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials, ASTM International.

1.3.14 ASTM D 1499-99, Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Plastics, ASTM International.

1.3.15 ASTM D 2583-95, Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor, ASTM International.

1.4 Definitions: Definitions not specifically stated herein shall be in accordance with the codes and referenced standards.

1.4.1 Partially Above Ground: Where the normal surface of the water is above the adjacent grade.

2.0 BASIC INFORMATION

2.1 General: The following information shall be submitted:

2.1.1 Product Description: The description shall include complete information concerning material specifications, wall thickness, physical dimensions and shape, and the manufacturing process.

2.1.2 Installation Instructions: Installation details and limitations, including requirements for setback from slopes and structure foundations.

2.1.3 Packaging and Identification: A description of the method of packaging and field identification shall be provided. Identification information shall include the manufacturer's name and address, the evaluation report number, the pool model designation, information to provide traceability to production and quality control information, and, when required by Section 5.1.1 of this acceptance criteria, the name or logo of the accredited inspection agency.

2.1.4 Field Preparation: A description of the methods of preparation for installation.

2.2 Testing Laboratories: 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.

2.3 Test Reports: Test reports shall comply with AC85.

2.4 Product Sampling:

2.4.1 Products Subject to Inspections by an Accredited Inspection Agency: Test specimens of products subject to quality control inspections by an accredited inspection agency, as set forth in Section 5.1.1 of this acceptance criteria, shall be sampled in accordance with Section 3.1 of AC85.

2.4.2 Products Not Subject to Inspections by an Accredited Inspection Agency: Test specimens of products not subject to quality control inspections by an accredited inspection agency shall be sampled in accordance with Section 3.2 of AC85.

3.0 TEST AND PERFORMANCE REQUIREMENTS

3.1 General: The following information shall be submitted:

3.2 Fiber-reinforced Plastic Pools:

3.2.1 Data showing compliance with Sections 5, 6, 8 and 15 of ANSI/NSPI-5 shall be submitted for each pool type, model and size, except that the slip resistance requirement noted in Section 8.1 of ANSI/NSPI-5 shall be addressed as set forth in Section 6.4 of this acceptance criteria.

3.2.2 Tensile Strength: Reports of tests exhibiting a minimum tensile strength of 9,000 psi (62 MPa), when testing is in accordance with ASTM D 638, shall be submitted.

3.2.3 Flexural Strength: Reports of tests exhibiting a minimum flexural strength of 16,000 psi (110 MPa), when testing is in accordance with ASTM D 790, shall be submitted.

3.2.4 Hardness Test: Reports of tests in accordance with ASTM D 2583, establishing an average Barcol hardness from a minimum of 10 units, for use in determining quality control parameters.

3.2.5 Surface Test:

3.2.5.1 Reports of tests in accordance with Section 4.1 of this acceptance criteria shall be submitted.

3.2.5.2 Conditions of Acceptance: The units shall be free from cracks, crazing, chipped areas and blisters, based on visual inspection.

3.2.6 Weathering Test:

3.2.6.1 Reports of tests in accordance with Section 4.2 of this acceptance criteria shall be submitted.

3.2.6.2 Conditions of Acceptance: When testing is in accordance with ASTM D 1499, the test specimens shall not show, under visual inspection, any increase in degradation beyond that of the control samples. When inspection is conducted under the alternate weathering procedure, the units inspected shall be free of any cracks, crazing, chipped areas and blisters.

3.2.7 Resistance to Chemicals: Reports of tests in accordance with Section 4.3 of this acceptance criteria shall be submitted.

3.2.7.1 Conditions of Acceptance: The test specimens shall not show any reduction in tensile strength or flexural strength compared to control specimens, when tested in accordance with ASTM D 638 and D 790. When inspection and testing is conducted under the alternate chemical test procedure, the units shall be free of any cracks, crazing, chipped areas and blisters, and shall have a Barcol hardness equal to the specifications for new pools, when tested in accordance with ASTM D 2583.

3.3 Plastic Spas: Data showing compliance with ANSI Z 124.7 and Article V of ANSI/NSPI-3 shall be submitted for each spa type, model and size, except that the slip resistance requirement noted in Sections 5.4.1, 5.6.3.2

and 5.6.4.4 of ANSI/NSPI-3 shall be addressed as set forth in Section 6.4 of this acceptance criteria.

4.0 TEST METHODS

4.1 Surface Test: Three randomly selected units shall be subjected to the surface test. The units shall be sourced from different molds. The surface of the units shall be inspected, at the manufacturing facility, with the unaided eye for defects and blemishes from a distance of between 1 and 2 feet (305 to 610 mm). The light source shall be equivalent to an illumination intensity near the surface to be inspected of 150 ± 50 foot-candles (1615 ± 540 lx).

4.1.1 Weathering Test: A minimum of five samples shall be tested in accordance with ASTM D 1499 for 1,500 hours.

4.1.2 Alternative Weathering Prerequisites: A manufacturer may use in situ investigational testing provided all of the following conditions are met and verified by the accredited laboratory:

- The applicant shall be an ICC-ES evaluation report holder.
- The applicant shall have been manufacturing fiberglass swimming pools for a minimum of five years.
- The applicant shall be able to provide substantiating data verifying that they have at least five pools that have been installed for a minimum of five years, in direct exposure to the elements.
- The applicant shall produce documentation, acceptable to ICC-ES, that the products being inspected under this alternative procedure are representative, in composition and design, of products considered for recognition in a current ICC-ES evaluation report.

4.1.3 Alternative Weathering Test Procedure:

■ The applicant shall provide the laboratory with a list of pool sites which are in compliance with Section 4.2.1. The laboratory shall select one pool site from the list at which to conduct the inspection. The applicant shall make the pool site available to the testing laboratory for the inspection process.

■ The pool to be inspected shall have the water level drawn down to at least 8 inches (203 mm) from the top of the pool edge.

■ The inspection shall be visual with the unaided eye from approximately 1 to 2 feet (305 mm to 610 mm).

■ Inspections and testing shall be conducted by an accredited testing laboratory as noted in Section 2.2 of this acceptance criteria.

4.2 Chemical Resistance Test: A minimum of five samples shall be tested in accordance with ASTM D 543 using cyanuric acid at 50 ppm; and sodium dichloroisocyanurate, trichloroisocyanuric acid, calcium hypochlorite, and sodium hypochlorite at 12 ppm solution.

4.2.1 Alternative Chemical Resistance Test Prerequisites: The prerequisites are the same as noted in Section 4.2.1 of this acceptance criteria.

4.2.2 Alternative Chemical Resistance Test Procedures:

■ The applicant shall provide the laboratory with a list of pool sites which are in compliance with Section 4.2.1. The laboratory shall select one pool site from the list at which to conduct the inspection. The applicant shall make

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the pool site available to the testing laboratory for the inspection process.

- The pool to be inspected shall have the water level drawn down to at least 8 inches (203 mm) from the top of the pool edge.

- The inspection shall be visual with the unaided eye from approximately 1 to 2 feet (305 mm to 610 mm).

- The laboratory shall be provided with the original Barcol hardness test reports to use as a baseline.

- Inspections and testing shall be conducted by an accredited testing laboratory as noted in Section 2.2 of this acceptance criteria.

4.3 Partially Aboveground Swimming Pools: For swimming pools that extend partially above ground, calculations, load tests and design criteria shall be submitted for evaluation. These items will be evaluated by the ICC-ES staff on a case-by-case basis.

5.0 QUALITY CONTROL

5.1 General: Quality documentation complying with the ICC-ES Acceptance Criteria for Quality Documentation (AC10) shall be submitted by all applicants.

5.1.1 Products Subject to Inspections by an Accredited Inspection Agency: Where recognition under the IPC or the UPC is requested, or recognition of aboveground or partially aboveground swimming pools or spas, the products must be manufactured under an approved quality control program with inspections by an inspection agency accredited by the International Accreditation Service, Inc. (IAS), or otherwise acceptable to ICC-ES.

5.1.2 Products Not Subject to Inspections by an Accredited Inspection Agency: Inspections are not required where recognition is limited to the IRC or where products are not above or partially above ground.

6.0 EVALUATION REPORT RECOGNITION

Each evaluation report for pools or spas, as applicable, shall contain the following statements:

6.1 A permanent label shall be applied to the pool equipment stating the following: "The pool shall remain full

of water at all times. Pool may be damaged if water level is allowed to drop below the pool inlet. When appreciable drawdown is noticed or if it becomes necessary to drain the pool, the manufacturer must be contacted for instructions."

6.2 Pools and spas may be installed without a soil investigation by a registered design professional (RDP), subject to the code official's approval, provided none of the following conditions is encountered at the site:

6.2.1 The existence of groundwater within the excavation, where the pool floor will contact the soil at the time of installation.

6.2.2 The existence of an uncompacted fill in contact with any portion of the pool or spa shell.

6.2.3 The existence of any expansive-type soils, unless the pool manufacturer has provided specific instructions regarding expansive soils within their installation instructions.

6.2.4 The existence of any soil types with an angle of repose that will not support the walls of the excavation at desired slopes.

6.2.5 Danger to adjacent structures posed by the proposed pool or spa location.

6.3 Electrical and plumbing installation shall comply with the applicable codes in effect at the construction site.

6.4 Slip resistance is outside the scope of the evaluation report. Reports of slip resistance tests that demonstrate compliance with Section 8.1 of ANSI/NSPI-5 for swimming pools, or Sections 5.4.1, 5.6.3.2 and 5.6.4.4 of ANSI/NSPI-3 for spas, shall be submitted for approval by the code official.

6.5 Pools located in flood hazard areas established in accordance with Table R301.2(1) of the IRC must comply with Sections AG101.2 and AG103.3 of the IRC.

6.6 Suction outlets must be designed and installed in accordance with IBC Section 3109.5 and IRC Section AG106.1■