UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
4330 EAST WEST HIGHWAY
BETHESDA, MD 20814

This document has been electronically approved and signed.

THIS MATTER IS SCHEDULED FOR A BALLOT VOTE.

Date: July 20, 2011

TO : The Commission
Todd A. Stevenson, Secretary

THROUGH: Kenneth R. Hinson, Executive Director

FROM : Cheryl A. Falvey, General Counsel
Philip L. Chao, Assistant General Counsel, RAD
Barbara E. Little, Regulatory Affairs Attorney

SUBJECT : Virginia Graeme Baker Pool and Spa Safety Act; Incorporation by Reference of Successor Standard

Ballot Vote Due - July 26, 2011

Section 1404(b) of the Virginia Graeme Baker Pool and Spa Safety Act requires each swimming pool or spa drain cover manufactured, distributed, or entered into commerce in the United States to conform to ANSI/ASME A112.19.8 performance standard, or any successor standard. If a successor standard to ANSI/ASME A112.19.8 is proposed, the Commission, upon a determination that the standard is in the public interest, is to incorporate the standard into its regulations. Id.

Staff is forwarding to you a briefing package recommending that the Commission determine ANSI/APSP-16 2011 (the successor standard to ANSI/ASME A112.19.8) to be in the public interest and incorporate this standard by reference into its regulations.

Please indicate your vote on the following options:

I. Approve publication of the draft *Federal Register* notice, without change.

_____ _____
Signature Date

II. Approve publication of the draft *Federal Register* notice, with changes (please specify changes):

_____

_____

_____

_____ _____
Signature Date

III. Do not approve publication of the draft *Federal Register* notice.

_____ _____
Signature Date

IV. Take other action (please specify):

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_____ _____
Signature Date

[Billing Code 6355-01-P]

CONSUMER PRODUCT SAFETY COMMISSION

16 CFR Part 1450

Virginia Graeme Baker Pool and Spa Safety Act; Incorporation by Reference of Successor Standard

AGENCY: U.S. Consumer Product Safety Commission.

ACTION: Final Rule.

SUMMARY: The Consumer Product Safety Commission ("Commission," "CPSC," or "we") finds the successor drain cover standard, ANSI/APSP 16-2011, to be in the public interest, and incorporates the standard by reference into its regulations implementing the Virginia Graeme Baker Pool and Spa Safety Act.

DATES: The rule takes effect [**insert date that is 30 days after publication in the *Federal Register*].** The incorporation by reference of the publication listed in this rule is approved by the Director of the Federal Register as of [**insert date that is 30 days after publication in the *Federal Register***].

FOR FURTHER INFORMATION CONTACT: Mark Eilbert, Mechanical Engineer, Directorate for Laboratory Sciences, Consumer Product Safety Commission, 5 Research Place, Rockville, Maryland 20850; telephone (301) 987-2232 or e-mail meilbert@cpsc.gov.

SUPPLEMENTARY INFORMATION:

A. What Does the Virginia Graeme Baker Pool and Spa Safety Act Do? What Standard is Involved?

The Virginia Graeme Baker Pool and Spa Safety Act (VGB Act), 15 U.S.C. §§ 8001 *et seq.*, was signed into law on December 19, 2007, and became effective on

December 19, 2008. The VGB Act's purpose is to prevent drain entrapment and child drowning in swimming pools and spas.

The VGB Act requires that each swimming pool or spa drain cover manufactured, distributed, or entered into commerce in the United States conform to the entrapment protection standards of the ANSI/ASME A112.19.8 performance standard or any successor standard regulating such swimming pool or spa drain cover. 15 U.S.C. § 8003(b). The standard in existence at the time the VGB Act was passed was ANSI/ASME A112.19.8-2007. The VGB Act provides that if a successor standard is proposed, ASME must notify the Commission of the proposed revision. Id. The Commission, if it determines that the proposed revision is in the public interest, shall incorporate the revision into the standard, after providing 30 days' notice to the public. Id.

On August 11, 2009 and October 22, 2009, ASME approved two addenda to ANSI/ASME A112.19.8-2007, namely, ASME A112.19.8a-2008 and ASME A112.19.8b-2009 (collectively referred to herein as "addenda"). On February 17, 2011, the Association of Pool and Spa Professionals (APSP) approved the ANSI/APSP/IAPMO-16 2011 standard, a successor standard to ASME/ANSI A112.19.8-2007, which is substantively identical to ANSI/ASME A112.19.8-2007 and its two addenda. (In April 2011, IAPMO terminated its status as co-secretariat to the ANSI/APSP/IAPMO-16 2011 standard, so ANSI/APSP/IAPMO-16 2011 became ANSI/APSP-16 2011.) On March 18, 2011, ANSI/ASME began the process of withdrawing the A112.19.8-2007 standard. We have reviewed the successor standard,

ANSI/APSP-16-2011, made comparisons to the requirements in ANSI/ASME A112.19.8-2007, and assessed whether the changes are in the public interest.

B. What Are the Changes to the Standard, and Are the Changes in the Public Interest?

There were two substantive changes between the ANSI/ASME A112.19.8-2007 standard and ANSI/APSP-16 2011, each of which was made in the addenda to ANSI/ASME A112.19.8-2007. The other changes to the standard were minor and were made primarily to add clarity to the standard. We discuss the substantive changes in this part of the preamble.

a. Ultraviolet Light Exposure Test

The Ultraviolet Light Exposure Test (UV test) subjects the plastic drain fitting material to the damaging effects of UV rays that accompany sun exposure when the drains are installed in pools and spas. ("Fitting" is a term used in ANSI/ASME A112.19.8-2007 instead of "cover." ANSI/ASME A112.19.8-2007 indicates that "cover" is an obsolete term.) Tests for the structural integrity of the drain fitting are performed after the drain fittings are exposed to UV light degradation. The structural integrity tests subject the drain fitting to forces expected under normal use and to excessive forces expected under extreme conditions.

In ANSI/ASME A112.19.8-2007, the UV test is conducted by a single method. According to section 3.2 of ANSI/ASME A112.19.8-2007, 12 new drain fittings are placed in a UV test chamber and exposed to UV light and water spray, according to the protocol in ASTM G 154, *Standard Practices for Operating Fluorescent Light Apparatus for UV Exposure of Non-metallic Materials.* When the

drain fitting is too large to fit in a test chamber, representative sections are tested to the intent of the structural integrity tests. This means that the test procedures in the structural integrity tests must be adapted to suit the diminished size/shape of the drain fitting section.

Changes to the UV testing were made in ANSI/ASME A112.19.8a-2008 and were carried over to ANSI/APSP-16 2011. ANSI/ASME A112.19.8a-2008 includes two UV test methods. Test Method 1 follows the general full-sample UV exposure in ASME A 112.19.8-2007, with the addition of two more choices for the UV exposure protocol, specifically, ASTM G155, *Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials*; and ASTM G153, *Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials*. Test Method 2 is an alternate UV exposure test. Here, the fitting polymeric material is molded into small uniform specimens. Half of the specimens are exposed to UV light and water spray, and half are not exposed. The exposed and unexposed (virgin) material specimens are then tested for tensile strength and impact resistance. The samples of the material must retain at least 70% of the virgin value (meaning that the samples, when tested, must retain at least 70% of the tensile strength and impact resistance values of the unexposed material) when the tensile strength and impact resistance tests are performed. The intensification factor, K, is defined as the inverse of the lowest retained portion. Thus, for example, if 80% of the tensile strength is retained in the exposed material and 85% of the impact resistance, then the intensification factor is K=1/0.80=1.25.

Complete (as sold) fittings are then tested to the structural integrity tests in sections 3.3 through 3.8 in ANSI/ASME A112.19.8-2007. For Test Method 1, the UV-

exposed drain fitting is tested in the structural tests to the forces and pressures specified. This is essentially the same procedure from the ASME A 112.19.8-2007 standard. For Test Method 2, the complete drain fitting, which has not been "weathered" in the UV exposure chamber, is tested in the structural tests to the forces and pressures specified, multiplied by the intensification factor, K. Because only the representative sample was weathered in the UV chamber, the intensification factor, K, is then used on the complete (as sold) fittings to simulate the weathering of the complete fitting. ANSI/APSP-16 2011 has substantially the same language and requirements for the Ultraviolet Light Exposure Test as the ASME A112.19.8a-2008 addendum.

The alternate Test Method 2 in ANSI/APSP-16 2011, incorporating the ANSI/ASME A112.19.8a-2008 Addendum, offers more consistent treatment for large drain fittings that do not fit into standard UV exposure chambers. The use of material tests to predict the structural integrity of entire products is an established industry protocol. We find that this change in test methods is in the public interest because it will enhance test repeatability for large drain fittings.

b. Self-Contained Spa Fittings

Self-contained spas are manufactured products that include drain fittings and pumps. UL 1563, *Standard for Safety for Electric Spas, Equipment Assemblies, and Associated Equipment*, Sixth Edition, July 16, 2009, requires that all suction fittings are flow rated to ANSI/ASME A112.19.8-2007 and are installed in multiples, such that the suction from the pump cannot be isolated to one blocked fitting. The relevance of UL 1563 is that it contains similar requirements for multiple layers of entrapment protection to those in the VGB Act, but in the controlled environment of a single manufactured

system. In addition to multiple drains, UL 1563 requires that the suction fittings be installed with separation on different planes, more than 3 feet apart, or have a suction limiting vent or gravity drainage system. Thus, system flows are split between two or more suction fittings that cannot both be blocked by the same body. Similarly, for hair entanglement, the split flow reduces the flow and entrapment potential at each suction fitting. Because spas have limited available space, the split suction allows smaller suction fittings and at the same time maintains the high flows required for the function of the product.

In ANSI/ASME A112.19.8-2007, the product flow rating is the lesser of the ratings achieved in the hair and body entrapment tests in sections 4 and 5 of the standard. Each suction fitting is tested by direct connection to a test pump. Self-contained spa fittings are tested like any other suction fitting. The multiple-suction fitting requirements in UL 1563 are ignored. In ANSI/ASME A112.19.8-2007, the test flow is the total system flow from the pump and not the flow through individual suction fittings. As a result, suction fittings in self-contained spas that always perform in multiples are tested in isolation in ANSI/ASME A112.19.8-2007, without the mitigating effect of another source of water to the pump. The resultant flow ratings have been significantly lower in the hair tests, typically due to the hair entering and blocking the pipe behind the single spa suction fitting.

In ANSI/ASME A112.19.8b-2009, self-contained spa fittings are treated as a special case in the hair tests. In the new section 4.2.2.1, self-contained spa fittings are installed in pairs. One fitting is tested for hair entrapment, while the other is free flowing. The pull from the water is less because the pump can pull water from the

unblocked suction fitting. The new test models the actual installation of self-contained spa fittings, as required in UL 1563. The body block test remains unchanged with no special treatment for spa fittings. ANSI/APSP-16 2011 has substantially the same language and requirements as ASME A112.19.8b-2009 for self-contained spa fittings.

ANSI/APSP-16 2011, incorporating the ASME A112.19.8b-2009 addendum, corrects a severe ratings test in ASME A112.19.8-2007 for self-contained spa fittings. Modeling the requirements in UL 1563 ensures that manufactured spa drains are not isolated with a pump and thus, have multiple layers of safety. This change in test methods recognizes the UL 1563 spa drain requirements and is a more representative test of actual manufactured spas. We find the change to be in the public interest.

C. Why is the CPSC Issuing a Final Rule?

Under the Administrative Procedure Act (5 U.S.C. § 553(b)(B)), a notice of proposed rulemaking is not required when an agency, for good cause, finds that notice and public procedure are impracticable, unnecessary, or contrary to the public interest. The successor standard, ANSI/APSP-16-2011, is substantively identical to ANSI/ASME A112.19.8-2007 and its two addenda, and, as stated in part A of this preamble, ANSI/ASME is in the process of withdrawing ANSI/ASME A112.19.8-2007. It is, therefore, important to have a successor standard in place before ANSI/ASME completes its withdrawal of ANSI/ASME A112.19.8-2007 so that each swimming pool or spa drain cover manufactured, distributed, or entered into commerce in the United States continues to conform to entrapment protection standards. We are giving 30 days' notice of the incorporation of this successor standard by providing for an effective date 30 days following the rule's publication.

D. Paperwork Reduction Act

This rule does not impose any information collection requirements. Accordingly, this rule is not subject to the Paperwork Reduction Act, 44 U.S.C. 3501–3520.

E. Environmental Considerations

The Commission's regulations provide a categorical exemption for the Commission's rules from any requirement to prepare an environmental assessment or an environmental impact statement as they "have little or no potential for affecting the human environment." 16 CFR 1021.5(c)(2). This rule falls within the categorical exemption.

F. Preemption

Section 26(a) of the CPSA, 15 U.S.C. 2075(a), provides that where a "consumer product safety standard under [the CPSA]" is in effect and applies to a product, no state or political subdivision of a state may either establish or continue in effect a requirement dealing with the same risk of injury unless the State requirement is identical to the federal standard. (Section 26(c) of the CPSA also provides that states or political subdivisions of states may apply to the Commission for an exemption from this preemption under certain circumstances.) Section 8003(a) of the VGB Act provides that the requirements in section 8003(b) of the VGB Act "shall be treated as a consumer product safety rule issued by the Consumer Product Safety Commission under the Consumer Product Safety Act." Therefore, this rule will invoke the preemptive effect of section 26(a) of the CPSA when it becomes effective.

List of Subjects in 16 CFR Part 1450

Consumer protection, Incorporation by reference, Infants and children, Law enforcement.

For the reasons stated above, the Commission amends title 16 of the Code of the Federal Regulations as follows:

Part 1450—VIRGINIA GRAEME BAKER POOL AND SPA SAFETY ACT REGULATIONS

1. The authority citation for part 1450 continues to read as follows:

Authority: 15 U.S.C. 2051-2089, 86 Stat. 1207; 15 U.S.C. 8001-8008, 121 Stat. 1794.

2. Add § 1450.3 to read as follows:

§ 1450.3 Incorporation by Reference.

(a) Each swimming pool or spa drain cover manufactured, distributed, or entered into commerce in the United States shall conform to the entrapment protection standards of ANSI/APSP-16 2011, *Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, and Hot Tubs*, approved on February 17, 2011. The Director of the Federal Register approves this incorporation by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. You may obtain a copy from the Association of Pool & Spa Professionals, 2111 Eisenhower Avenue, Alexandria, Virginia 22314; www.apsp.org, telephone 703-838-0083. You may inspect a copy at the Office of the Secretary, U.S. Consumer Product Safety Commission,

Room 820, 4330 East West Highway, Bethesda, MD 20814, telephone 301-504-7923, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030 or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.

(b) [Reserved]

Dated: _____

_____

Todd A. Stevenson, Secretary

U.S. Consumer Product Safety Commission

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Memorandum

July 20, 2011

TO : The Commission
Todd A. Stevenson, Secretary

THROUGH: Cheryl A. Falvey, General Counsel
Kenneth R. Hinson, Executive Director

FROM : DeWane Ray, P.E. Deputy Assistant Executive Director
Hazard Identification and Reduction

Andrew G. Stadnik, P.E., Associate Executive Director
Directorate for Laboratory Sciences

James Hyatt, P.E., Division Director
Mechanical Engineering Division

Mark Eilbert, Mechanical Engineer
Mechanical Engineering Division

SUBJECT : ANSI/ASME A112.19.8-2007 Successor Standard - Staff Review of APSP-16-2011.

The Virginia Graeme Baker Pool and Spa Safety Act, (VGB Act), 15 U.S.C.S. §§ 8001 *et seq*., was signed into law on Dec. 19, 2007. It requires that, effective Dec. 19, 2008, each swimming pool or spa drain cover manufactured, distributed, or entered into commerce in the United States conform to the entrapment protection standards of the ANSI/ASME[1] A112.19.8, *Suction Fittings for Use in Swimming Pools, Wading Pools, Spas and Hot Tubs* or any successor standard. The VGB Act also provides that if a standard successor regulating drain covers is proposed, the Commission shall determine whether the proposed revision is in the public interest.[2] If the Commission determines the proposed revision is in the public interest, it shall incorporate the revision into the standard after providing 30 days notice to the public.[3]

The Standard in existence when the VGB Act became law was ANSI/ASME A112.19.8-2007. Since that time, the Standard has been modified through two addenda—one each

[1] American National Standards Institute; American Society of Mechanical Engineers
[2] 15 U.S.C. §8003(b).
[3] Id.

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in 2008[4] and 2009.[5] In 2011, ASME began the process of withdrawing ANSI/ASME A112.19.8. This process is expected to be completed in early August. The Association of Pool and Spa Professionals (APSP) has approved ANSI/APSP-16 2011, *Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, and Hot Tubs*, which is nearly identical to ANSI/ASME A112.19.8-2007 and its two addenda. Staff has reviewed APSP-16 2011, made comparisons to the requirements in ANSI/ASME A112.19.8-2007, and assessed whether the changes are in the public interest.

Background

The first edition of ANSI/ASME A112.19.8-2007 was ANSI/ASME A112.19.8M-1987. The entrapment requirement then was a single "ponytail" hair test. Structural test requirements on the drain cover were intended to evaluate the cover for the prevention of body entrapment. There was no separate body block test. For materials, ultraviolet light (UV) stabilizers were required, but there was no UV conditioning test.

ANSI/ASME A112.19.8-2007 was issued in March 2007. This major revision includes requirements for fasteners, UV conditioning, structural testing, two hair entrapment rating tests, a body entrapment rating test, finger and limb entrapment tests, and requirements for content of labeling and instructions. UV conditioning is required on the whole drain cover or on sections when the size of the drain cover exceeds the capacity of the conditioning apparatus. All conditioned drain covers are subject to the structural tests. For drain covers that are larger than the conditioning apparatus, "representative sections of the cover/grate shall be tested in order to comply with the intent" . . . of the structural integrity tests. Fastener requirements include tamper-resistance, corrosion-resistance, and suitable attachment means to the underlying sump or other substrate. Requirements for marking the drain fittings include the flow rating, expected lifetime, specific orientation (wall or floor), systems configuration (single drain or multiple drains), and the designation, "ASME A112.19.8-2007." Requirements for instructions include statements about proper installation and maintenance, inspection for damaged or loose drain fittings, and cautionary notes advising against exceeding the flow rating when installed.

There are two hair tests and one body block entrapment test. In each test, a water flow rating is established by testing for entrapment forces. The lowest flow rating achieved in

[4] ANSI/ASME A112.19.8a-2008.
[5] ANSI/ASME A112.19.8b-2009.

the three tests establishes the final flow rating that is marked on the drain cover. Type 1 hair is a 16-inch, full head wig of natural, blond, European, human hair. Type 2 hair is a 16-inch ponytail of light-brown human hair. In either hair test, the test hair is brought into contact with the drain cover at each test flow. The force to remove the hair may not exceed 5 lbf. The highest water flow in which the 5 lbf is not exceeded establishes the flow rating for that type of hair. In the body block test, an 18 inch x 23 inch foam blocker is brought down and held against the drain cover and then pulled up while the removal force is measured. The maximum allowable removal force depends on the size of the drain cover and ranges from 15 lbf for drains 9 inches or less to 120 lbf for drains that exceed the size of the 18 inch x 23 inch blocker. The highest water flow in which the maximum force is not exceeded becomes the flow rating for the body block test. The lowest rating from the three entrapment tests becomes the flow rating for the drain cover. For example, if the flow ratings for the type 1 and type 2 hair and body block tests were 100, 120, 140 gallons per minute (gpm), then the final flow rating would become the lesser, 100 gpm.

The ANSI/ASME A112.19.8a-2008 addendum to ANSI/ASME A112.19.8-2007 was issued in August 2008. The salient change revised the Ultraviolet Light Exposure Test. The revision adds procedures to condition and thereafter assess the strength of the plastic materials comprising a drain cover, in lieu of conditioning the entire drain cover. The strength of the nonconditioned drain cover is still assessed through structural tests, and then is adjusted, based on the material tests on the conditioned plastic samples. The change allowed the material composition of drain covers to be sampled and conditioned in standard conditioning ovens in cases where the drain covers themselves were too large to fit in the conditioning ovens.

The ANSI/ASME A112.19.8b-2009 addendum to ANSI/ASME A112.19.8-2008 was issued in March 2010. ANSI/ASME A112.19.8b-2009 includes ANSI/ASME A112.19.8-2007 and the 2008 addendum. The salient change was to add self-contained spa fittings as a new class of drain fittings with distinct hair test requirements. Spa fittings are required to be tested with dual drains in the new section: "Self-Contained Spa Fittings."

Beginning in 2010, ASME began the process to withdraw ANSI/ASME A112.19.8b-2009. APSP,[6] which specializes in pool and spa technology, volunteered to replace ASME as secretariat. The ANSI/APSP-16 2011 Standard was approved on February 17, 2011. Staff reviewed and compared this Standard to ANSI/ASME A112.19.8-2007 and the two addenda. Staff found the ANSI/APSP-16 2011 Standard to be substantially the same as ANSI/ASME A112.19.8b-2009 with some editorial changes. All substantive

[6] Association of Pool and Spa Professionals

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changes were made in the addenda to ANSI/ASME A112.19.8-2007. The following review compares the proposed successor standard, ANSI/APSP-16 2011, to the Standard required in the Virginia Graeme Baker Pool and Spa Safety Act, ANSI/ASME A112.19.8-2007.

Drain Cover Standards Since VGB Act

ANSI/ASME A112.19.8-2007

⇩

ANSI/ASME A112.19.8A-2008

⇩

ANSI/ASME A112.19.8B-2009 ⇔ **ANSI/APSP-16 2011**

Review of Changes to ASME A 112.19.8-2007

Staff reviewed and cataloged the differences between ANSI/APSP-16 2011 and ANSI/ASME A112.19.8-2007 in Table 1. As noted, all substantive differences between ANSI/APSP-16-2011 and ANSI/ASME A112.19.8-2007 were actually made in the A112.19.8a-2008 and A112.19.8b-2009 addenda. Staff assessed whether each of these differences is in the public interest. Staff used the following criteria to evaluate whether a change is in the public interest: whether the change enhances the repeatability of a test, enhances safety, adds clarity to the Standard, or provides more information. Those changes that staff assessed to be in the public interest are marked "Y" for yes. Changes that were assessed not to be in the public interest are marked "N" for no. Changes that staff assessed as having little or no relevance to the public interest are marked with the asterisk*.

The substantive changes are the revision to the Ultraviolet Light Exposure Test and the addition of the hair entrapment test for Self-Contained Spa Fittings. These are discussed below. Most other changes reflect the inclusion of these tests into the Standard. One other notable change was the revised requirement of certification from "nationally recognized testing laboratory" to ISO/IEC 17025. This change is in the public interest because it specifies a formal process for accreditation of the test laboratories by a third party.

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Ultraviolet Light Exposure Test (Section 3.2 revised)

Background

All physical testing is conducted after the drain fittings have been exposed to Ultraviolet Light degradation. The Ultraviolet Light Exposure Test (UV test) subjects the plastic drain fitting material to the damaging effects of UV rays that accompany sun exposure when installed in pools and spas. The UV test precedes the structural integrity tests in sections 3.3 through 3.8.[7] The structural integrity tests subject the drain fitting to forces expected under normal use and to excessive forces expected under extreme conditions.

ASME A 112.19.8-2007

In this Standard, the UV test has a single method. In section 3.2, 12 new drain fittings are placed in a UV test chamber and exposed to UV light and water spray according to the protocol in ASTM G 154.[8] When the drain fitting is too large to fit a test chamber, representative sections are tested to the intent of the structural integrity tests. This means that the test procedures in the structural integrity tests must be adapted to suit the diminished size/shape of the drain fitting section.

ASME A 112.19.8a-2008

In this addendum to the Standard, there are two UV test methods. Test Method 1 follows the general full-sample UV exposure in ASME A 112.19.8-2007, with the addition of two more choices for the UV exposure protocol.[9] Test Method 2 is an alternate UV exposure test. Here, the drain fitting material (plastic) is molded into small uniform specimens.

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[7] 3.3 Vertical Load and Deformation Test; 3.4 Horizontal Load and Deformation Test; 3.5 Point Load to Excess Test; 3.6 Shear load Test; 3.7 Vacuum and Point Impact Test; 3.8 Pull Load Test. Note that the titles of these sections have been modified in ASME A 112.19.8a-2008 and ASME A 112.19.8b-2009

[8] ASTM G 154, *Standard Practices for Operating Fluorescent Light Apparatus for UV Exposure of Non-metallic Materials.*

[9] ASTM G155, *Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials*; ASTM G153, *Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials.*

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Half of the specimens are exposed to UV light and water spray, and half are not exposed. The exposed and unexposed material specimens are then tested for tensile strength[10] and impact resistance.[11] The ratio of exposed and unexposed tensile strength from the tests is calculated and called the intensification factor, K. The K-factor for the impact resistance is also calculated. The K-value is the fraction of strength or impact resistance, whichever is less, that is retained after UV exposure. The K-factor must be at least 0.70.

The entire drain fittings are then tested to the structural integrity tests in sections 3.3 through 3.8 in the Standard. For Test Method 1, the UV-exposed drain fitting is tested in the structural tests to the forces and pressures specified. This is essentially the same procedure from the ASME A 112.19.8-2007 Standard. For Test Method 2, the nonexposed drain fitting is tested in the structural tests to the forces and pressures specified, *divided by factor K*. Thus, factor K is a general down-rating of the drain fitting based on the separate UV-exposed material tests.

ANSI/APSP-16 2011

ANSI/APSP-16 2011 has substantially the same language and requirements for the Ultraviolet Light Exposure Test as the ASME A 112.19.8a-2008 addendum.

Assessment

The alternate Test Method 2 in ANSI/APSP-16 2011, incorporating the ANSI/ASME A 112.19.8a-2008 Addendum, offers more consistent treatment for large drain fittings that do not fit into standard UV exposure chambers. The use of material tests to predict the structural integrity of entire products is an established industrial protocol. This change in test methods is in the public interest because it will enhance test repeatability for large drain fittings.

[10] ANSI/ASTM D 638, *Standard Test Method for Tensile Properties of Plastics*.
[11] ASTM D 256, *Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics*.

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Self-Contained Spa Fittings (Sections Added)

Background

Self-contained spas are manufactured products that include drain fittings and pumps. UL 1563[12] requires that all suction fittings are flow rated to ANSI/ASME A112.19.8-2007 and are installed in multiples, such that the suction from the pump cannot be isolated to one blocked fitting. The relevance of UL 1563 is that the Standard contains similar requirements for multiple layers of entrapment protection to those in the VGB Act, but in the controlled environment of a single manufactured system. In addition to multiple drains, UL 1563 requires that the suction fittings be installed with separation on different planes, more than 3 feet apart, or have a suction limiting vent or gravity drainage system. Thus, system flows are split between two or more suction fittings that cannot both be blocked by the same body. Similarly, for hair entanglement, the split flow reduces the flow and entrapment potential at each suction fitting. Because spas have limited available space, the split suction allows smaller suction fittings and at the same time maintains the high flows required for the function of the product.

ASME A 112.19.8-2007

In this Standard, the product flow rating is the lesser of the ratings achieved in the hair and body entrapment tests in section 4 and 5 of the Standard. Each suction fitting is tested by direct connection to a test pump. Self-contained spa fittings are tested like any other suction fitting. The multiple-suction fitting requirements in UL 1563 are ignored. In ASME A 112.19.8-2007, the test flow is the total system flow from the pump and not the flow through individual suction fittings. As a result, suction fittings in self-contained spas that always perform in multiples are tested in isolation in ASME A 112.19.8-2007, without the mitigating effect of another source of water to the pump. The resultant flow ratings have been significantly lower in the hair tests, typically due to the hair entering and blocking the pipe behind the single spa suction fitting.

ASME A 112.19.8b-2009

In this addendum to the Standard, self-contained spa fittings are treated as a special case in the hair tests. In the new section 4.2.2.1, self-contained spa fittings are installed in pairs. One fitting is tested for hair entrapment, while the other is free flowing. The pull

[12] UL 1563 Standard for Safety for Electric Spas, Equipment Assemblies, and Associated Equipment, Sixth Edition, July 16, 2009.

from the water is less because the pump can pull water from the unblocked suction fitting. The new test models the actual installation of self-contained spa fittings as required in UL 1563. The body block test remains unchanged with no special treatment for spa fittings.

ANSI/APSP-16 2011

ANSI/APSP-16 2011 has substantially the same language and requirements as ASME A 112.19.8b-2009 for Self-Contained Spa Fittings.

Assessment

ANSI/APSP-16 2011, incorporating the ASME A 112.19.8b-2009 addendum, corrects a severe ratings test in ASME A 112.19.8-2007 for self-contained spa fittings. Modeling the requirements in UL 1563 ensures that manufactured spa drains are not isolated with a pump and thus, have multiple layers of safety. This change in test methods recognizes the UL 1563 spa drain requirements and is a more representative test of actual manufactured spas. The change is in the public interest.

Conclusion

The successor Standard to ANSI/ASME A112.19.8-2007 is ANSI/APSP-16 2011. ANSI/APSP-16 2011 contains changes that clarify the test procedures and result in enhanced repeatability of test results. The changes are in the public interest.

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Table 1
Assessment of Revisions to ASME A112.19.8-2007 by Addendums A and B

In the Public Interest? : Yes, No, or * little to no relevance.			R	S	C	I
Location	**Addendum**	**Revision Summary**	**Repeatability**	**Enhance Safety**	**Clarity**	**Informative**
1.1.6.6 Self-Contained Spa Fittings	B	Added spa fitting listing type			Y	
1.1.7.1 (Single or Multiple Usage)	B	Substituted word “Outlet” for “Drain”			Y	
1.4 References	A	Added reference test methods for plastics.	Y			
1.4 References	B	Added reference for hoses used in new self-contained spa fitting test			Y	
1.5 Definitions anti-vortex	B	Substituted word “Outlet” for “Drain”			Y	
1.5 Definitions self-contained spa fittings: self-contained factory manufactured spa:	B	Added definitions for new type of drain fittings			Y	
1.5 Definitions body membrane: dual blockage. single blockage:	B	Removed definitions clarifying deleted term “body membrane”			Y	
1.5 Definitions dual outlets	B	Revised definition by deleting “body membrane” and adding the 3 ft separation. This is consistent with APSP-7.			Y	
2.3.5 Self-Contained Spa Fittings (Specific Design Requirements)	B	Added provision for these fittings to be tested as special fittings for use only in manufactured spas and in	Y		Y	

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In the Public Interest? : Yes, No, or * little to no relevance.			R	S	C	I
		multiples.				
3.1.1 Certification	B	Revised requirement of certification from "nationally recognized testing laboratory" to ISO/IEC 17025	Y			
3.2 Ultraviolet light Exposure Test	A	Add alternate method to assess strength of plastics used in drain fittings using plastic specimens and factor K.	Y			
3.3 Vertical load and Deformation Test	A	Delete requirement to always test whole drain fitting that's been UV-exposed.			Y	
3.3.1 Test Method	A	Add Factor K as multiplier			Y	
3.4 Horizontal Load and Deformation Test	A	Add Factor K as multiplier			Y	
3.5.1 Test Method (Point Load to Excess Test	A	Add Factor K as multiplier			Y	
3.5.2 Performance Requirement (Point Load to Excess Test)	A	Add Factor K as multiplier			Y	
3.6.1 Test Method (Shear Load Test)	A	Add Factor K as multiplier			Y	
3.7 Pressure Differential and Point Impact Test	A	Change Test Name			Y	
3.7.1 (a)(b)(c) Test Method	A	Change from "vacuum" to "pressure differential" since factor K can be <1, 1, or >1.			Y	
3.7.1 (b)(c) Test Method	A	The "plastic film" necessary to maintain a pressure differential is not removed and reapplied between steps (b) and (c)	*	*	*	*
3.8.1 Test Method (Pull Load Test)	A	Add Factor K as multiplier			Y	
3.8.2 Performance Requirement (Pull Load Test)	A	Add Factor K as multiplier			Y	

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3.9 Mold Stress Relief Distortion	A	Add similar heat effect to non-UV exposed drain fittings for the structural tests 3.3 through 3.8.	Y			
4.1.2.2 Type 2 Hair Testing	B	Revise requirements to allow for apparatus flexibility.	Y			
7.1 Marking of Suction Fittings	A	Remove requirement to display ASME A 112.19.8-2007 marking and logo on drain fitting.	*	*	*	*
4.1.5.7 Test Procedure (Hair tests with saddle shape surface)	B	Revise language to correct and clarify			Y	
4.2.2.1 Self-contained spa fittings (Hair test method)	B	Added section to describe test method requirement using two drains	Y			
Figure 6a (Self-contained spa fittings)	B	Added figure to illustrate test method requirement			Y	
Figure 8 (Saddle shape surface)	B	Revised figure to illustrate test method requirement			Y	
5.1.2.1.1 Self-contained spa fittings (body block test method)	B	Added section to require self-contained spa fittings be tested with a single drain	Y			
5.2.1.1 (applicable body blocking element)	B	Revised description from “cover” to “shadow or cover.”			Y	
5.2.1.2 (applicable body blocking elements sizes)	B	Revised description to reference Table 1 and the corner rounding required there.			Y	
7.1.1 (marking of suction fittings)	B	Revised marking requirements: font is smaller	*	*	*	*
7.1.1(b) (marking of suction fittings)	B	Revised marking requirements: ordering of required information is optional	*	*	*	*
7.1.1(b)(1) (certification marking)	B	Added requirement for marking of certification by “Jurisdictional authority”.				Y
7.1.1(b)(2) (certification marking)	B	Revised requirement for marking: substitute “outlet” for “drain” and added spa-fitting marking.			Y	Y

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7.1.2 (marking field fabricated Outlets)	B	Revised to update paragraph references			Y	
7.2.1 (a)(3) (packaging instructions)	B	Revised to clarify purpose of drain separation is to avoid both being blocked.			Y	
Table II-1 (Mandatory Appendix II)	B	Revised Fitting Type Requirements to include spa-fittings, certification requirements, and reference to ISO/IEC 17025.			Y	