



# Standard Specification for Aboveground Portable Pools for Residential Use<sup>1</sup>

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## INTRODUCTION

This specification has been developed to address the risk of drowning and other hazards associated with portable pools. Portable pools—including “self-rising,” “soft-sided self-rising,” “frame pools,” “big blue pools,” “inflatable,” or “inflatable top ring” pools—reemerged in the market in the 1990s. To date, the Consumer Product Safety Commission (CPSC) has reports of nearly 100 portable pool drowning deaths and submersions from 2000 through 2006. Most of these incidents involve children younger than four years of age. In 2005, there were 32 portable pool drowning deaths and 7 additional submersion incidents reported to the Commission. This is nearly triple the number of drowning and submersion incidents the previous year. Further, it is likely that these numbers are undercounts as the CPSC had not previously distinguished among pool types in its database. This specification has been developed by ASTM International in response to this emerging hazard.

## 1. Scope

1.1 This specification provides safety and performance requirements for portable pools for residential use.

1.2 This specification addresses pool hazards including childhood drowning, sanitation, electrical safety, and entrapment.

1.3 This specification covers both portable pools that are designed to be used with pumps and filters and those not designed to be used with pumps and filters.

1.4 This specification covers all types of portable pools with a water depth of less than 36 in. (91 cm). Aboveground/on ground residential swimming pools with a water depth of 36 in. (91 cm) or greater shall comply with ANSI/APSP-4.

1.5 This specification does not cover public pools, pools used in commercial amusement parks, water fountains, water displays, or fish ponds.

1.6 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.7 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appro-*

*priate safety and health practices and determine the applicability of regulatory limitations prior to use.*

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>2</sup>

**F963** Consumer Safety Specification for Toy Safety

**F1346** Performance Specification for Safety Covers and Labeling Requirements for All Covers for Swimming Pools, Spas and Hot Tubs

### 2.2 ANSI Standards:<sup>3</sup>

**ANSI Z535.4** American National Standard for Product Safety Signs and Labels

**ANSI/APSP-4** American National Standard for Aboveground/On-Ground Residential Swimming Pools

**ANSI/APSP-7** American National Standard for Suction Entrapment Avoidance in Swimming Pools, Spas, Hot Tubs and Catch Basins

### 2.3 CPSC Documents:<sup>4</sup>

**CPSC Pub. No. 362** Safety Barrier Guidelines for Home Pools

### 2.4 Other Standards:

**16 CFR 1501** Method for Identifying Toys and Other Articles Intended for Use by Children Under 3 Years of Age

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>3</sup> Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

<sup>4</sup> Available from U.S. Consumer Product Safety Commission (CPSC), 4330 East West Hwy., Bethesda, MD 20814, <http://www.cpsc.gov>.

## Which Present Choking, Aspiration, or Ingestion Hazards Because of Small Parts<sup>5</sup>

### 3. Terminology

#### 3.1 Definitions of Terms Specific to This Standard:

3.1.1 *compliant*, *adj*—obeying, produced in accordance with specific rules.

3.1.2 *consistent*, *adj*—harmonious with or compatible.

3.1.3 *fill line*, *n*—visible mark on the interior of the pool or as designated by the manufacturer to indicate the recommended maximum water depth.

3.1.4 *portable pool*, *n*—any movable structure with the intended purpose of being used for swimming or other water recreation by consumers, and having a water depth less than 36 in. (91 cm).

### 4. Classification

#### 4.1 Types:

4.1.1 *Type A—Portable Pools Without a Pump and Filter*—Pools with no means of water circulation or water treatment during or after use. Such pools include but are not limited to wading pools, splash pools, and kiddie pools.

4.1.2 *Type B—Portable Pools with Pumps and Filters*—Pools that are provided with a means to circulate and treat the water.

### 5. Performance Requirements

5.1 *Ladders*—Any ladders sold with or for use with Type A or Type B pools shall meet all the applicable requirements found in ANSI/APSP-4.

#### 5.2 Structural Integrity:

5.2.1 *Resistance to Horizontal Force*—Pools with a fill line at 18 in. (46 cm) or greater shall not break or collapse when tested in accordance with 6.1.1.

5.2.2 *Resistance to Vertical Force*—Pools with a fill line at 18 in. (46 cm) or greater shall not break or collapse when tested in accordance with 6.1.2.

#### 5.3 Air Valves for Inflatable Pool Sections:

5.3.1 All air valves shall be accessible for each inflatable section. Once a section of the pool is inflated, the air valve shall be capable of being inserted inside the inflated section without extending beyond the surface more than 0.2 in. (5 mm).

5.4 *Small Parts, Sharp Edges*—No small parts, as defined by 16 CFR 1501, shall be readily accessible. There shall be no accessible, potentially hazardous sharp edges or corners, as defined by Consumer Safety Specification F963.

5.5 *Pool Covers*—If a pool “safety” cover is included or made available as an optional accessory, the cover shall comply with Performance Specification F1346. If the cover is not claimed to be a safety cover, it shall bear a warning as indicated in 8.3.6.

#### 5.6 Type A—Portable Pools without Pump and Filter:

5.6.1 Type A pools shall have a means of removing the water from the pool in a timely manner so as to not create a drowning hazard.

5.6.2 When water is intended to be emptied from a portable pool through the use of a drain(s), the pool shall have a large enough drain(s) to empty the pool of water to a level of not more than ½ in. (1 cm) in depth within 30 min after the drain(s) are opened.

#### 5.7 Type B—Portable Pools with Pumps and Filters:

5.7.1 Manufacturers of Type B pools shall provide the minimum necessary filtration equipment to keep the pool clean and sanitary. Pumps and filters shall be designed to provide recirculation of the pool water no less than once every 12 h.

5.7.2 Manufacturers shall provide a ground-fault circuit-interrupter (GFCI) as an integral part of the power supply to the pump. The GFCI shall be listed by a third party test laboratory.

5.7.3 Type B pools shall be designed to prevent suction entrapment hazards per ANSI/APSP-7.

### 6. Tests

6.1 All tests conducted under Section 6.1 shall be tested with the pool fully inflated and filled to the manufacturer’s recommended fill line.

6.1.1 *Resistance to Horizontal Force*—Place a two-sided corner block with the dimensions 15¾ by 4 in. (400 by 100 mm) on the top edge of the pool’s most vulnerable point. Apply a horizontal force of 90 lbf (400 N) to the vertical center of the block for a period of 10 s.

NOTE 1—This is based on the weight of the average 5.5- to 6.5-year-old child (combined genders), which is 45 lb (20.5 kg). Two children of this age or younger impulsively leaning or sitting together on a pool’s side is a foreseeable use.

6.1.2 *Resistance to Vertical Force*—Place a two-sided corner block with the dimensions 15¾ by 4 in. (400 by 100 mm) on the top edge of the pool’s most vulnerable point. Apply a vertical force of 90 lbf (400 N) to the horizontal center of the block for a period of 10 s.

### 7. Instructions

7.1 *General*—Instructions for all pools subject to this specification.

7.1.1 Written instructions shall be provided with each pool. Instructions may be accompanied by illustrations that the manufacturer determines are necessary, appropriate, or may facilitate proper assembly, use, maintenance, and storage, or a combination thereof.

7.1.2 Instructions shall contain the following (or equivalent) header: “Read and Follow All Safety Information and Instructions. Keep for Future Reference. Failure to follow these warnings and instructions can result in serious injury or death to users, especially children.” The font of the header should be larger and bolder compared to the body of the text.

7.1.3 Instructions shall include the pool model name or number, the name, address, and phone number of the manufacturer, distributor, or retailer and shall cover, at a minimum: pool safety, product description, parts and assembly (including where and how to affix safety tags and warnings),

<sup>5</sup> Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401, <http://www.access.gpo.gov>.

filling (including information on the fill line), emptying, deflation (if applicable), cleaning, maintenance, and storage.

7.1.4 The instructions shall list barrier recommendations as described in CPSC Pub. No. 362.

7.1.5 The instructions shall make recommendations regarding placement of the pool and shall state that portable pools shall be set up so that they comply with local safety and building codes.

7.2 Safety information included in printed instructions for all pools subject to this specification.

7.2.1 Information on pool safety shall be located at the beginning of the instructions.

7.2.2 The first item mentioned under pool safety shall be a drowning warning in the format of an ANSI Z535.4-consistent safety label. This warning shall include a signal word panel (including the hazard alert symbol), a pictorial panel, and a message panel. The warning shall be offset from other text through the use of borders. The signal word shall be “**WARNING.**” The background color for the signal word panel shall be orange, except for instruction manuals that are printed exclusively in black and white or monochromatic. In such cases, the warning may be printed in black and white. The pictorial shall represent direct supervision of young children. An example of such a warning can be found in [Appendix X1](#). The text of the message panel shall state these or equivalent words:

Children, especially children younger than five years, are at high risk of drowning.

Drowning occurs silently and quickly and can occur in as little as 2 in. (5 cm) of water.

Keep children in your direct sight, stay close, and actively supervise them when they are in or near this pool and when you are filling and emptying this pool.

When searching for a missing child, check the pool first, even if child is thought to be in the house.

Empty pool completely after each use and store the empty pool in such a way that it does not collect water from rain or any other source.

7.2.3 The remainder of the safety section shall advise the following (or equivalent):

*Drowning Risk:*

Keep unsupervised children from accessing the pool by installing fencing or other approved barrier around all sides of pool. State or local laws or codes may require fencing or other approved barriers. Check state or local laws and codes before setting up pool.

Remove pool ladders before leaving the pool. Children as young as 2 years have climbed up ladders and into pools and drowned.

Do not leave toys inside pool when finished using, since toys and similar items might attract a child to the pool.

Position furniture (for example, tables, chairs) away from pool and so that children cannot climb on it to gain access to the pool.

After using pool, remove water to a level of ½ in. (1 cm) or less.

*Diving Risk:*

Do not dive into this pool. Diving into shallow water can result in a broken neck, paralysis, or death.

*Electrocution Risk:*

Keep all electrical lines, radios, speakers and other electrical appliances away from the pool.

Do not place pool near or under overhead electrical lines.

*First Aid:*

Keep a working phone and a list of emergency numbers near the pool.

Become certified in cardiopulmonary resuscitation (CPR). In the event of an emergency, immediate use of CPR can make a life-saving difference.

7.2.4 Other warnings and safety information may be added if product poses additional hazards, as determined by the pool manufacturer.

7.3 *Additional Safety Information for Type B Pools*—In addition to the requirements of 7.2, the safety section of the instructions for Type B pools shall advise the following (or equivalent):

Locate pumps and filters in such a way that children cannot climb on them and gain access to the pool.

If a drain or suction outlet cover is missing or broken, do not use the pool. Suction can cause body part entrapment, hair and jewelry entanglement, evisceration, or drowning. Repair or replace the drain or suction outlet cover before allowing the pool to be used.

7.4 *Operation and Maintenance Instructions for Type B Pools*—Instruction manuals for Type B pools shall provide the following instructions relating to setup, operation, and maintenance:

Instruct how to install, operate, and maintain the circulation system.

Instruct how to install, operate, and maintain the filtration system and include a recommended schedule for cleaning or replacing the filter.

Instruct how to maintain proper chemical balance in pool water and safe and sanitary pool water.

Include a recommended schedule for water treatment.

## 8. Product Marking, Signs, and Safety Labels

8.1 Each pool shall bear a permanent label or marking that identifies the model name or number; date (or date code) of manufacture; and the name, address, and phone number of the manufacturer, distributor, or retailer.

8.2 Each pool shall have a fill line that is clearly indicated at two or more locations on the pool's interior. The fill line shall not be removable without the use of tools or solvents and shall not degrade with exposure to environmental factors such as ultraviolet (UV) light and pool chemicals.

### 8.3 Safety Labels:

8.3.1 When more than one safety label is required per 8.3.2, they may be grouped in one or more frame(s).

8.3.2 All on-product pool safety labels shall be permanent, conspicuous, and ANSI Z535.4-compliant, and shall have a safe viewing distance of 2 ft (0.6 m).

8.3.3 Each pool shall bear a drowning label that consists of a signal word panel, a pictorial panel, and a message panel. The signal word shall be “**WARNING.**” The pictorial shall represent direct supervision of young children. The text of the warning shall address the need for close supervision. For Type A Pools, an additional statement instructing users to empty the pool after use should be included (see [Appendix X1](#)). Alternative, ANSI-compliant warning labels may be used.