



Designation: F 2208 – 02

Standard Specification for Pool Alarms¹

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INTRODUCTION

According to CPSC data, each year, on average, 350 children under five years of age drown in swimming pools, with most deaths occurring in residential settings. Also, each year, on average, 2600 children under five years of age are treated in hospital emergency rooms for near drowning incidents in swimming pools. About 42 % of the incidents require hospitalization of the child. About 79 % of the near drowning incidents occur in a residential setting. These numbers have remained relatively unchanged for the past several years.

1. Scope

1.1 This standard is intended to provide performance requirements for pool alarms for residential swimming pools and spas.

1.2 This standard is intended to describe devices intended to improve personal safety and reduce injuries or deaths.

1.3 This standard covers devices that provide for rapid and automatic detection and alarm in cases of unintentional, unsupervised or accidental entry of a child one year of age or older into the water of swimming pools or spas.

1.4 This standard is not intended to replace other standard safety requirements that should be in place, that is, adult supervision, fences, gates, locks, and so forth.

1.5 This standard covers four different types of alarms.

1.6 The detection criteria for this standard is for a child one year of age and older.

2. Terminology

2.1 *Definitions of Terms Specific to This Standard:*

2.1.1 *pool alarm, n*—a device designed to provide a rapid detection and automatic alarm in incidents of accidental, unintentional or unsupervised entry of a child one year of age or older into the water of a swimming pool or spa.

3. Classification

3.1 *Types:*

3.1.1 *Surface*—Pool alarm floating on water surface.

3.1.2 *Subsurface*—Pool alarm located below the water surface.

3.1.3 *Pool Perimeter*—Pool alarm located such as to detect movement at the perimeter of or above the water surface.

3.1.4 *Personal Immersion Alarm*—Pool alarm device located on the person(s).

4. Performance Requirements

4.1 *General:*

4.1.1 Alarms shall sound both at poolside and inside any adjacent residence or building of occupancy via a remote receiver within 20 s or less when tested in accordance with Section 5.

4.1.2 The condition of a swimming pool alarm, either on or off, shall be indicated with an energized lamp or other distinctive indicator, visible from a distance of 10 ft (3.5 m) at angles of $\pm 45^\circ$ perpendicular to the unit, to indicate the operability of the product.

4.1.3 Pool alarms shall have a minimum sound pressure rating of 85 decibels at 10 ft (3.5 m) for 3 min.

4.1.4 If the device is battery operated, there must be a low battery indicator. A low battery condition is defined as an inability to meet the requirements of 4.1.3.

4.1.5 Pool alarms shall automatically reset.

4.2 *Type A:*

4.2.1 Type A alarms are to provide for automatic sound of the alarm when tested in accordance with 5.1. For alarms with variable sensitivity, the setting shall be set at the least sensitive, according to manufacturer's instructions.

4.2.2 Type A alarms are not to alarm when tested in accordance with 5.2. For alarms with variable sensitivity, the setting shall be set at the most sensitive, according to manufacturer's instructions.

4.2.3 Type A alarms are not to alarm when tested in accordance with 5.3. For alarms with variable sensitivity, the setting shall be set at the most sensitive, according to manufacturer's instructions.

¹ This specification is under the jurisdiction of ASTM Committee F15 on Consumer Products and is the direct responsibility of Subcommittee F15.49 on Swimming Pool Alarms.

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4.3 Type B:

4.3.1 Type B alarms are to provide for automatic sound of the alarm when tested in accordance with 5.1. For alarms with variable sensitivity, the setting shall be set at the least sensitive, according to manufacturer's instructions.

4.3.2 Type B alarms are not to alarm when tested in accordance with 5.2. For alarms with variable sensitivity, the setting shall be set at the most sensitive, according to manufacturer's instructions.

4.3.3 Type B alarms are not to alarm when tested in accordance with 5.3. For alarms with variable sensitivity, the setting shall be set at the most sensitive, according to manufacturer's instructions.

4.4 Type C:

4.4.1 Type C alarms are to provide for automatic sound of the alarm when tested in accordance with 5.4, according to manufacturer's instructions.

4.4.2 Type C alarms are not to alarm when tested in accordance with 5.5, according to manufacturer's instructions.

4.5 Type D:

4.5.1 Type D alarms are to provide for automatic sound of the alarm when tested in accordance with 5.6, according to manufacturer's instructions.

4.5.2 Type D alarms shall have a key locking device to prevent the removal or disabling of the device.

5. Test Procedures

5.1 The Child Intrusion Simulator weighing 18 ± 0.5 lb is dropped horizontally into the water from a height of 6 in. above the water surface. The Child Intrusion Simulator shall be dropped into the pool at the farthest point from the alarm to simulate worst case conditions. This test shall be repeated two times in 10-min intervals. The Child Intrusion Simulator weighing 18 ± 0.5 lb is dropped vertically at a 45° angle $\pm 10^\circ$

into the water from a height of 6 in. above the water surface. The Child Intrusion Simulator shall be dropped into the pool at the farthest point from the alarm to simulate worst case conditions. This test shall be repeated two times in 10-min intervals. The Child Intrusion Simulator shall subsequently be dropped into the pool at a second but similar location that would also simulate worst case conditions. Both the horizontal and vertical test shall be repeated two times in 10-min intervals. (There is a total of four drops for each test location).

NOTE 1—All testing shall be done in a standard 16 by 32 ft rectangular swimming pool with a maximum depth varying between 6 and 8 ft (see Fig. 1).

NOTE 2—The Child Intrusion Simulator is a one-year-old anatomically correct mannequin purchased from a source that utilizes accurate virtual and physical simulations of the human anatomy; see 1.6. The Child Intrusion Simulator can be smaller than a one-year-old mannequin but cannot be larger than a one-year-old mannequin. For example, a 6- to 9-month-old anatomically correct mannequin can be used for testing. The weight of the mannequin must be 18 ± 0.5 lb.

5.2 A regulation size basketball is dropped into the water from a height of 6 in. above the water surface and at a distance of 36 ± 1 in. from the pool alarm. This test is repeated three times at 10-min intervals.

5.3 A simulated wind test is generated to impact the pool alarm and the pool surface. Using the test pool model (16 by 32 ft) and a 15 in. diameter fan, generate wind from one end of the pool creating a wind velocity of 15 mph on the pool surface within 24 in. of the pool wall registered by a wind anemometer (see Fig. 1). Locate another 15 in. diameter fan by the alarm location on the side of the pool creating a wind velocity of 15 mph on the pool surface within 24 in. of the pool wall and at the pool alarm, registered by a wind anemometer (see Fig. 1). Both fans must be operated at the same time for the test. See "Notes" on Fig. 1. This test is completed one time.

