BS EN 16582-3:2015

BSI Standards Publication

Domestic swimming pools

Part 3: Specific requirements including safety and test methods for aboveground pools

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National foreword

This British Standard is the UK implementation of EN 16582-3:2015.

The UK participation in its preparation was entrusted to Technical Committee SW/136/8, Swimming pools and aquatic equipment.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Domestic swimming pools - Part 3: Specific requirements including safety and test methods for aboveground pools

Piscines privées à usage familial - Partie 3 : Exigences spécifiques et de sécurité et méthodes d'essai pour piscines hors sol

Schwimmbäder für private Nutzung - Teil 3: Besondere Anforderungen einschließlich sicherheitstechnischer Anforderungen und Prüfverfahren für auf dem Boden aufgestellte Schwimmbäder

This European Standard was approved by CEN on 20 June 2015.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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European foreword

This document (EN 16582-3:2015) has been prepared by Technical Committee CEN/TC 402 “Domestic pools and spas”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2016 and conflicting national standards shall be withdrawn at the latest by February 2016.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document is part of a series of standards dealing with domestic swimming pools which consist of:

— *Part 1: General requirements including safety and test methods;*

— *Part 2: Specific requirements including safety and test methods for inground pools;*

— *Part 3: Specific requirements including safety and test methods for aboveground pools.*

This European Standard has to be read in conjunction with local and national regulations if they exist.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This part of EN 16582 specifies the specific safety and quality requirements and test methods for domestic aboveground swimming pools in addition to the general requirements of EN 16582-1 and shall be read in conjunction with it. The requirements of this standard take priority over those in EN 16582-1.

These requirements and test methods are applicable to aboveground pool structures, including their means of access.

This European Standard applies to pools with a minimum water depth of more than 400 mm.

This European Standard does not apply to:

— pools of public use covered by EN 15288-1;

— paddling pools according to EN 71-8;

— domestic or public use spas.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1875-3, *Rubber- or plastics- coated fabrics - Determination of tear strength - Part 3: Trapezoidal method*

EN 16582-1:2015, *Domestic swimming pools - Part 1: General requirements including safety and test methods*

EN ISO 1421, *Rubber- or plastics-coated fabrics - Determination of tensile strength and elongation at break (ISO 1421)*

EN ISO 2411, *Rubber- or plastics-coated fabrics - Determination of coating adhesion (ISO 2411)*

EN ISO 4674-2, *Rubber- or plastics-coated fabrics - Determination of tear resistance - Part 2: Ballistic pendulum method (ISO 4674-2)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 16582-1:2015 and the following apply.

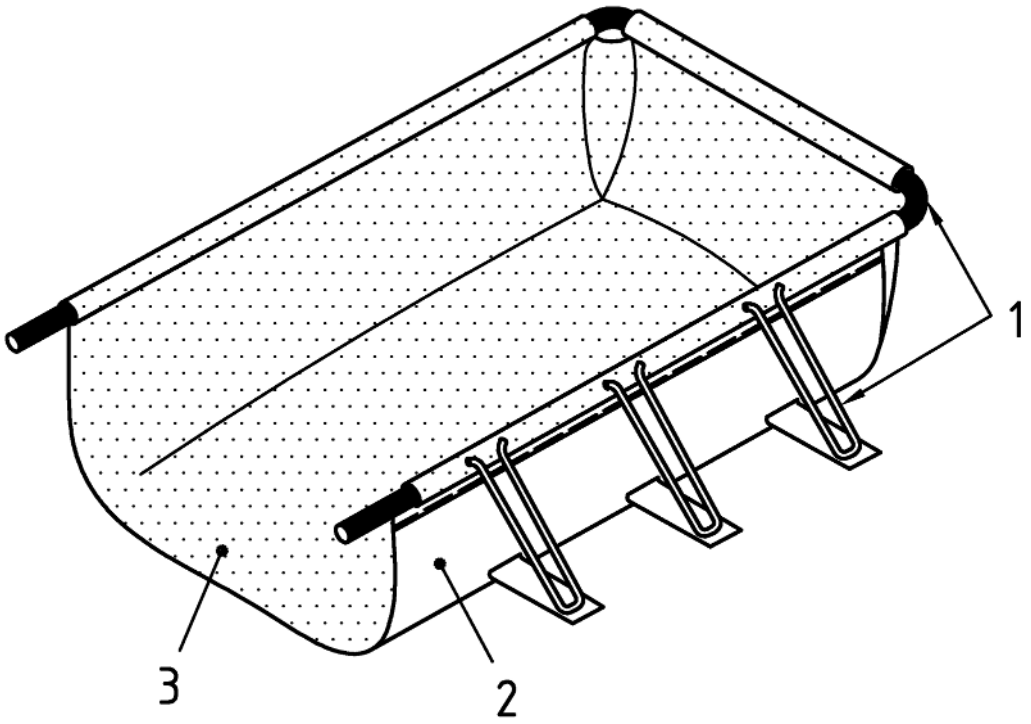
3.1
frame
all of the resistant parts that support and/or reinforce the wall in view of forming the peripheral structure

Note 1 to entry: See Figure 1.

3.2
pool wall
generally upright structure serving to enclose or divide water or to protect an area

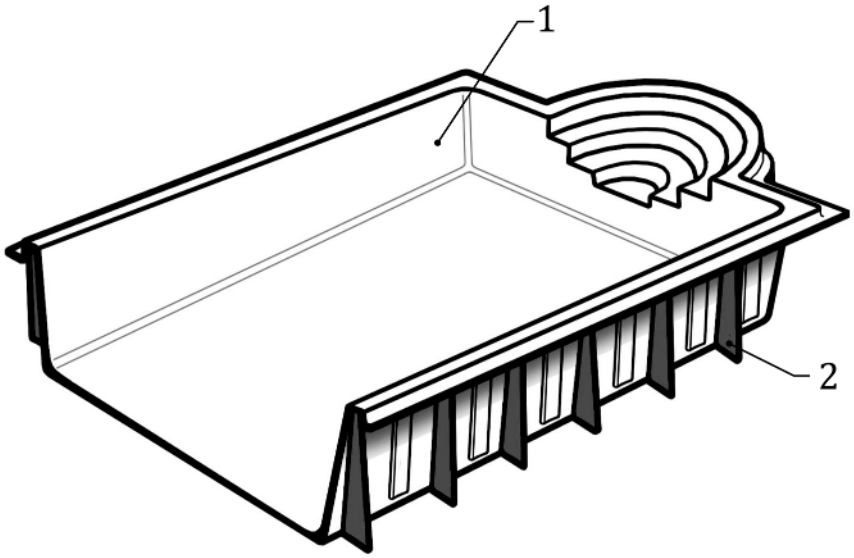
3.3
frame-supported wall
wall whose stability is ensured solely by the constitutive elements supplied and which does not require additional reinforcement for its resistance to internal pressure (see Figure 1)

Note 1 to entry: Foundation or ground-anchoring elements are not considered as reinforcements.



a) Case 1

Key
1 frame
2 structure
3 waterproofing membrane (reinforced membrane)



b) Case 2

Key

1 polyester shell

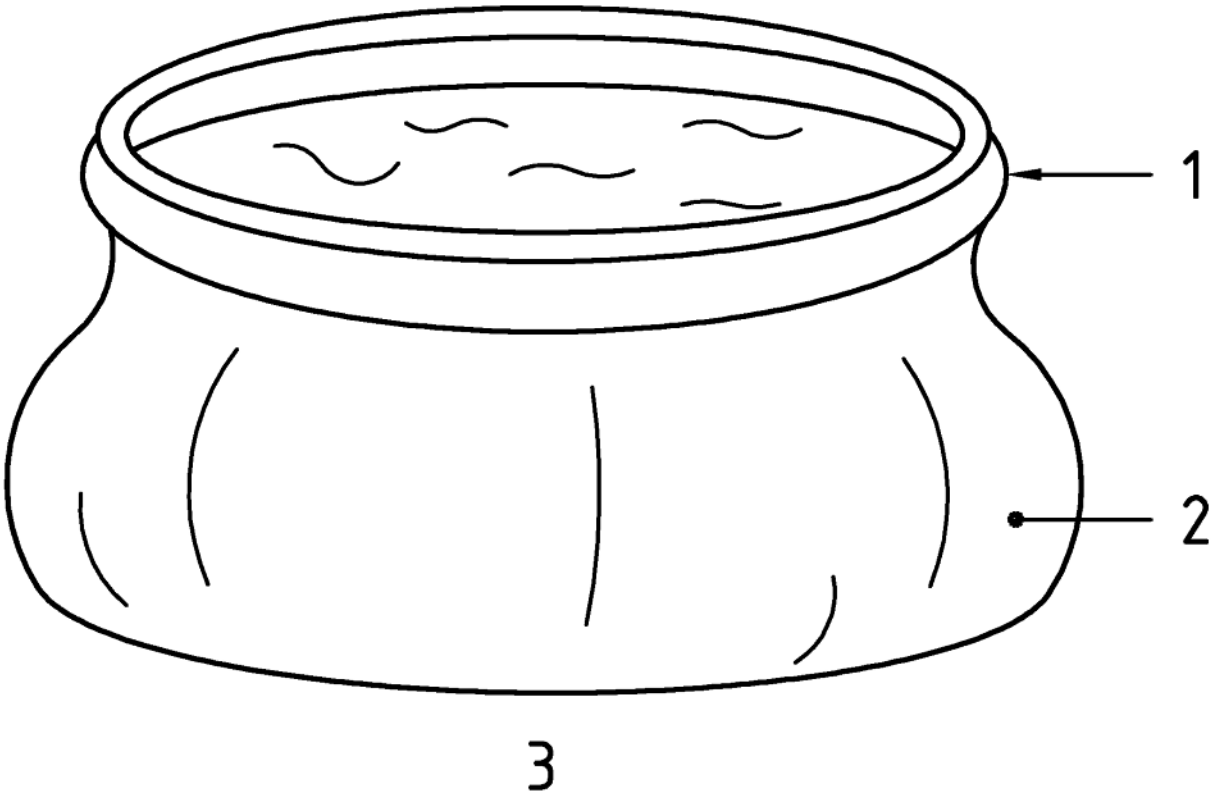
2 structure

Figure 1 — Example of frame-supported wall

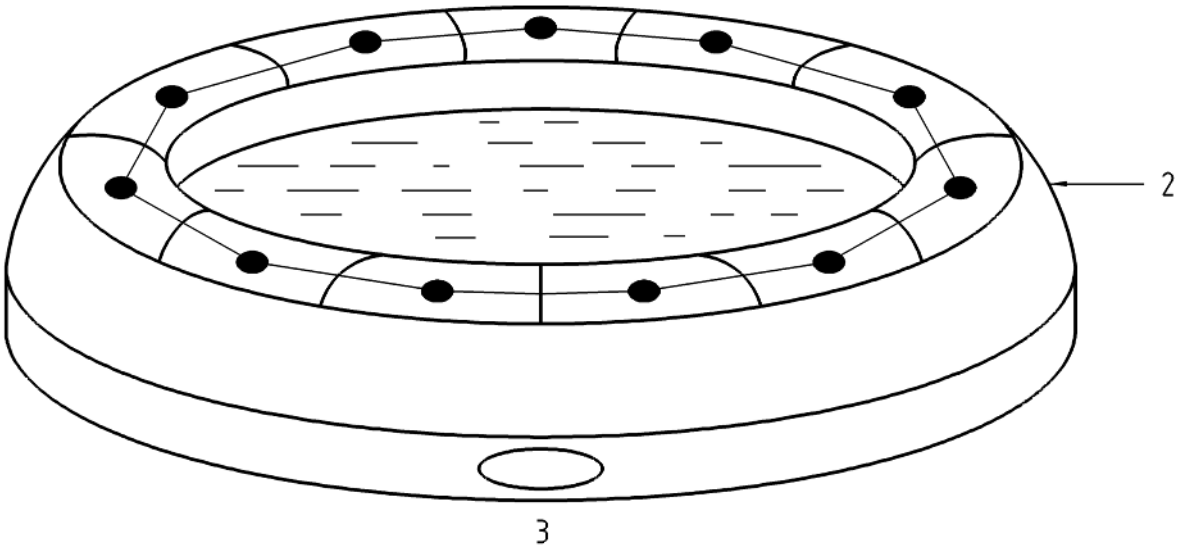
3.4
self-stabilizing wall
generally flexible wall whose stability is ensured by the presence of water in the pool

Note 1 to entry: See Figure 2.

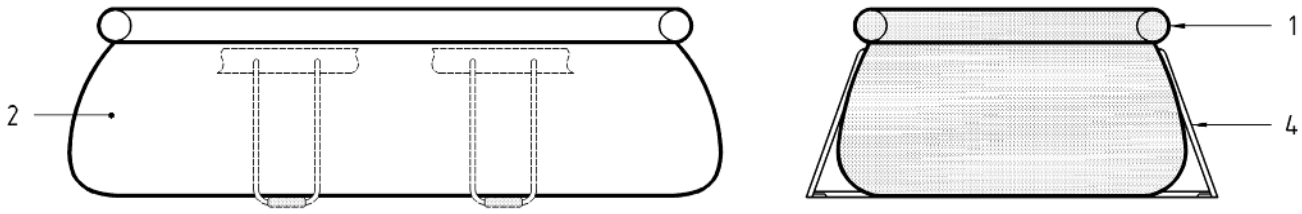
Note 2 to entry: Swimming pools with self-stabilizing walls may be equipped with lateral devices that help maintain the product's final shape.



a) Self-stabilizing swimming pool with inflatable tube



b) Self-stabilizing swimming pool with tube partly filled with water



c) Self-stabilizing swimming pool with inflatable tube and strut

Key

1 floating tube
2 watertight flexible structure (reinforced membrane)
3 self-stabilizing wall (2 + 4)
4 lateral device

Figure 2 — Examples of self-stabilizing wall

3.5
structure
assembly of parts designed to support loads and provide a sufficient degree of rigidity (see Figure 1)

[SOURCE: EN 1990:2002, 1.5.1.6, modified]

Note 1 to entry: The structure guarantees the stability and cohesion of a pool.

4 Requirements and test methods specific to aboveground swimming pools

4.1 General

For new basin designs and for existing basin constructions that are structurally modified, the following tests shall be carried out with at least one test sample.

4.2 Aboveground swimming pool with frame-supporting walls

4.2.1 Resistance to horizontal deformation

4.2.1.1 Requirements

On completion of the test defined in 4.2.1.2, the swimming pool shall not collapse and shall meet the requirements set forth in EN 16582-1:2015, 4.5.

4.2.1.2 Test method

— Install the swimming pool.

— Fill it with water.

— Place a 400 mm long, 100 mm wide angle bracket on the top of the wall at the most unfavourable place.

— Exert a horizontal force of 400 N, 50 mm from the top of the angle bracket for 5 s (see Figure 3).

The force shall be applied at the appropriate position on the angle bracket to ensure that the force is exerted horizontally onto the top of the wall.

Dimensions in millimetres

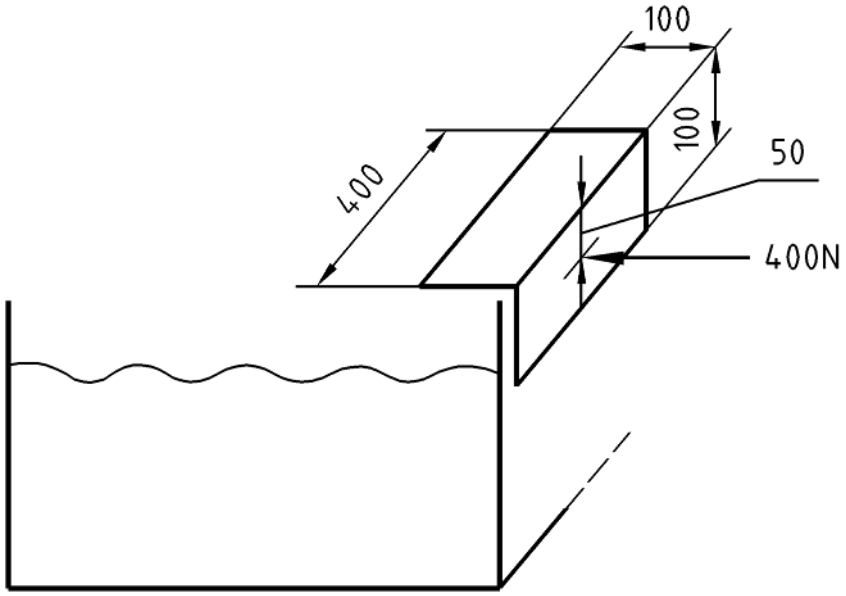


Figure 3 — Resistance to horizontal deformation

4.2.2 Resistance to vertical deformation

4.2.2.1 Requirements

On completion of the test defined in 4.2.2.2, the entire product shall not suffer any permanent deformation affecting its structural integrity.

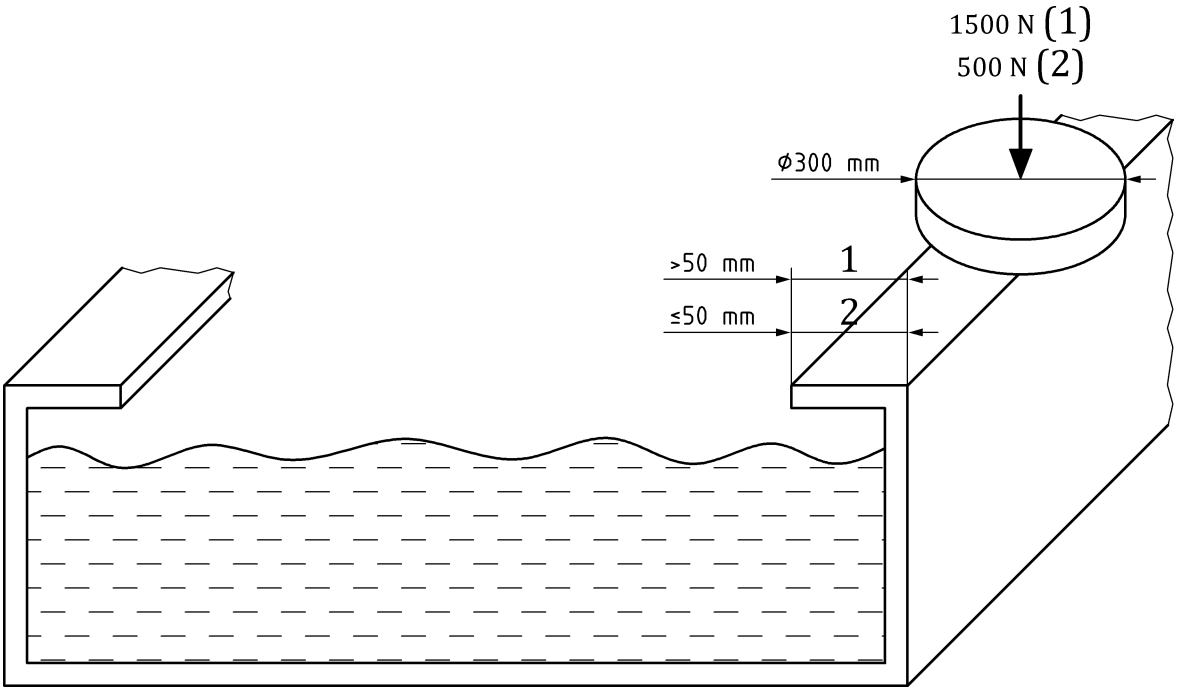
4.2.2.2 Test method

— Install the swimming pool.

— Fill it with water.

— If the width of the top wall is > 50mm, apply a force of 1500 N vertically in the axis of the wall, for 5 min. The test shall be performed on a 300 mm diameter disc (see Figure 4 – case 1).

— If the width of the top wall is ≤ 50 mm, apply a force of 500 N vertically in the axis of the wall, for 5 min. The test shall be performed on a 300 mm diameter disc (see Figure 4 – case 2).



Key

(1) case 1 : width of the top wall > 50mm

(2) case 2 : the width of the top wall ≤ 50 mm

Figure 4 — Resistance to vertical deformation

4.2.3 Bursting strength

4.2.3.1 General

The bursting strength test defined in 4.2.3.3 is performed after carrying out the resistance tests for horizontal deformation (4.2.1.2) and vertical deformation (4.2.2.2).

4.2.3.2 Requirements

On completion of the test defined in 4.2.3.3, the pool shall not burst and shall not suffer any permanent deformation affecting the product's structural integrity.

4.2.3.3 Test methods

— Fill the swimming pool with water.

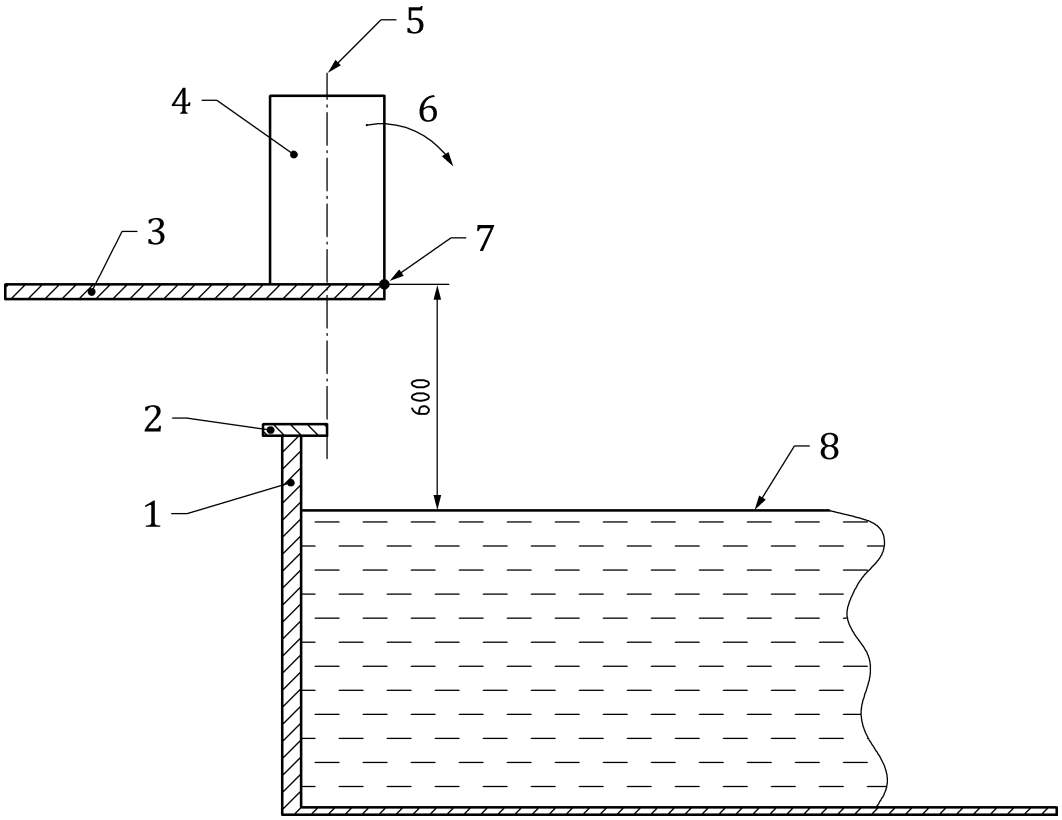
— Bring a plastic cylindrical barrel with a diameter between 400 mm and 500 mm, a capacity of 120 l and a total weight of 120 kg including ballast, in the vertical position, perpendicular to the wall.

— Tip it into the water.

The drop height, compared to the water level recommended by the manufacturer, is $600\ ^{+40}_{0}$ mm (see Figure 5). Position the central axis of the barrel perpendicular to the inner edge (on the pool side) of the coping.

Apply pressure on the upper edge of the barrel so as to tip the barrel into the swimming pool under its own inertia, at the most unfavourable point.

Dimensions in millimetres



Key

1 wall
2 coping
3 barrel support
4 barrel
5 central vertical axis of barrel
6 tip over
7 rotation point for tip over
8 water level

Figure 5 — Testing of bursting strength

4.3 Aboveground swimming pool with self-stabilizing walls

4.3.1 Capacity to stop an overflow

4.3.1.1 Requirement

On completion of the tests described in 4.3.1.2 and 4.3.1.3, the swimming pool with self-stabilizing walls shall not collapse or empty suddenly.

4.3.1.2 Pool overflow

— Install the pool with self-stabilizing walls on flat horizontal ground (maximum slope allowed is 5 mm/m);

— Fill the pool with self-stabilizing walls until it overflows with a flow rate of 2,5 m^3 /h minimum and allow it to overflow for 1 min.

4.3.1.3 Behaviour test of the wall under load

— Stop filling the swimming pool and restore the level to that recommended by the installation manual (if no other indications are given by the manufacturer, fill the swimming pool under the tube to the maximum permissible height);

— Place on the tube a 0,50 m long overflow channel with a minimum opening of 0,25 m (adapted to the tube size) ballasted with two 40 kg weights on each side (one on the inside of the pool and the other on the outside);

— Maintain the load for 5 s at the tube's maximum deflection, making sure that the test weights do not come into contact with the base of the pool at any time during the test. The pool shall not collapse resulting in a total loss of water and shall not become unusable;

— Lift the load up immediately after 5 s making sure that the loading device does not interfere during this operation.

NOTE In the case of swimming pools fitted with a strut, this test is performed at the most unfavourable point.

4.3.2 Inflatable compartment

The swimming pool with self-stabilizing walls generally comprises an air-inflatable upper tube. In this case, all of the air inlets provided for inflation shall be fitted with caps permanently secured on an accessible part of each inflatable compartment of the swimming pool with self-stabilizing walls. Once this part is inflated, the caps located inside the swimming pool with self-stabilizing walls shall be able to be pushed back inside the upper part so that they do not protrude from the surface by more than 5 mm.

The caps of the inflation ports should not be able to become detached and should be protected against accidental removal. Check valves shall be fitted in order to prevent an instantaneous deflation.

4.3.3 Stability in the event of deflation of the upper tube

4.3.3.1 Requirement

On completion of the test described in 4.3.3.2, the swimming pool with self-stabilizing walls shall not collapse.

4.3.3.2 Test method

— Install the pool on flat horizontal ground (maximum slope allowed is 5 mm/m).

— Fill the pool with water up to the level normally recommended in the installation manual.

— Open the inflatable part by its normal air release device until it is apparently fully deflated.

4.3.4 Bursting strength

4.3.4.1 Requirement

On completion of the test defined in 4.3.4.2, the swimming pool with self-stabilizing walls shall not burst and shall not present any permanent deformation affecting the product's resistance.

4.3.4.2 Test method

— Fill the swimming pool with water.

— Bring a cylindrical barrel with a diameter between 400 mm and 500 mm, a capacity of 120 l and a total weight of 120 kg including ballast, in the vertical position, above the pool.

— Tip it into the water.

The drop height, compared to the water level recommended by the manufacturer, is $600\ ^{+40}_{0}$ mm. The central vertical axis of the barrel is positioned in the middle of the wall.

Apply pressure on the upper edge of the barrel so as to tip the barrel into the pool under its own inertia, at the most unfavourable point.

4.4 Mechanical strength of the membrane of a swimming pool with tubular frame and/or flexible structure

The membranes composing the structure of swimming pools (see Figure 1 and Figure 2) shall meet the following requirements:

— Wall tear resistance according to EN 1875-3 and EN ISO 4674-2.

  Acceptable results:

  — warp direction: 10 DaN;

  — weft direction: 5 DaN.

— Wall/wall weld tensile/breaking strength according to EN ISO 1421.

  Acceptable results:

  — warp direction: 100 DaN/50 mm;

  — weft direction if applicable: 100 DaN/50 mm.

— Adhesion test according to EN ISO 2411.

  Acceptable results:

  — warp direction: 9 DaN/50 mm;

  — weft direction: 9 DaN/50 mm.

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[7] AC P90-328, *Domestic swimming pools - Shells made of composite materials*

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