



**SLOVENSKI STANDARD**  
**SIST EN 13451-1:2011+A1:2017**  
**01-januar-2017**

**Nadomešča:**  
**SIST EN 13451-1:2011**

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**Oprema za plavalne bazene - 1. del: Splošne varnostne zahteve in preskusne metode**

Swimming pool equipment - Part 1: General safety requirements and test methods

Schwimmbadgeräte - Teil 1: Allgemeine sicherheitstechnische Anforderungen und Prüfverfahren

Équipement de piscine - Partie 1 : Exigences générales de sécurité et méthodes d'essai

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**Ta slovenski standard je istoveten z EN 13451-1:2011+A1:2016**

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**ICS:**

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EUROPEAN STANDARD

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## Swimming pool equipment - Part 1: General safety requirements and test methods

Équipement de piscine - Partie 1 : Exigences générales de sécurité et méthodes d'essai

Schwimmbadgeräte - Teil 1: Allgemeine sicherheitstechnische Anforderungen und Prüfverfahren

This European Standard was approved by CEN on 29 July 2011 and includes Amendment 1 approved by CEN on 13 June 2016.

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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 13451-1:2011+A1:2016) has been prepared by Technical Committee CEN/TC 136 “Sports, playground and other recreational facilities and equipment”, the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by April 2017, and conflicting national standards shall be withdrawn at the latest by April 2017.

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 includes Amendment 1 approved by CEN on 13 June 2016.

This document supersedes A1 EN 13451-1:2011 A1.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

EN 13451, *Swimming pool equipment*, consists of the following parts:

- *Part 1: General safety requirements and test methods;*
- *Part 2: Additional specific safety requirements and test methods for ladders, stepladders and handle bends;*
- *Part 3: Additional specific safety requirements and test methods for inlets and outlets and water/air based water leisure features;*
- *Part 4: Additional specific safety requirements and test methods for starting platforms;*
- *Part 5: Additional specific safety requirements and test methods for lane lines;*
- *Part 6: Additional specific safety requirements and test methods for turning boards;*
- *Part 7: Additional specific safety requirements and test methods for water polo goals;*
- *Part 10: Additional specific safety requirements and test methods for diving platforms, diving springboards and associated equipment;*
- *Part 11: Additional specific safety requirements and test methods for moveable pool floors and moveable bulkheads.*

This standard may also be applicable to other equipment not specified, provided the safety requirements are fulfilled.

There can be additional requirements for purposes such as competition swimming and advice should be sought from the governing body of the sport in question.

**EN 13451-1:2011+A1:2016 (E)**

**A1** In relation to EN 13451-1:2001 the following main amendments have been made:

- a) scope modified in accordance with EN 15288-1 and EN 15288-2;
- b) normative references have been updated: CEN/TS 16165 was added and EN 12503-1, -5 and -6 were deleted;
- c) the test failure requirements for the structural integrity was modified (see 4.1.1);
- d) definition pool/swimming pool deleted;
- e) requirements for materials (see 4.1.2) added;
- f) requirements for barriers (see 4.3) added;
- g) requirements for suctions deleted and will be moved to EN 13451-3;
- h) requirements for entrapment, crushing and shearing points (see 4.7) added;
- i) requirements for the test report (see 5.2) modified;
- j) values of total vertical user load (see Table A.1) modified;
- k) only two test probes for the test methods of head and neck entrapment (see Annex D);
- l) Annex F was deleted and the reference to CEN/TS 16165 was added instead;
- m) Steel 1.4571 was corrected. **A1**

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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 European Standard specifies general safety requirements and test methods for equipment used in classified swimming pools as specified in EN 15288-1 and EN 15288-2.

Where specific standards exist, this general standard should not be used alone.

Special care is required in applying this general standard alone to equipment for which no product specific standard has yet been published.

## 2 Normative references

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

EN 1990, *Eurocode — Basis of structural design*

EN 1991-1-2, *Eurocode 1: Actions on structures — Part 1-2: General actions — Actions on structures exposed to fire*

EN 1991-1-3, *Eurocode 1 - Actions on structures — Part 1-3: General actions — Snow loads*

EN 1991-1-4, *Eurocode 1: Actions on structures — Part 1-4: General actions — Wind actions*

EN 10088-1, *Stainless steels — Part 1: List of stainless steels*

EN 10088-2, *Stainless steels — Part 2: Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purposes*

A1 deleted text A1

EN 15288-1, *Swimming pools — Part 1: Safety requirements for design*

A1

CEN/TS 16165, *Determination of slip resistance of pedestrian surfaces — Methods of evaluation* A1

A1

EN ISO 12100, *Safety of machinery — General principles for design — Risk assessment and risk reduction (ISO 12100)* A1

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 15288-1 and the following apply.

### 3.1

#### **swimming pool equipment**

components installed in and around a basin, designated:

— to operate the basin and its functionally adjoining areas;

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— to use it and its functionally adjoining areas

NOTE These components can be part of the swimming pool technology (e.g. water inlets or outlets), to assist the users (e.g. ladders), or for competitive and training use (e.g. starting platforms), or for leisure (e.g. fountains).

**3.2**  
**crushing point**  
place where parts of the equipment can move against each other, or against a fixed area so that persons, or parts of their body, can be crushed

[EN 1176-1:2008, 3.10]

**3.3**  
**shearing point**  
place where part of the equipment can move past a fixed or other moving part, or past a fixed area so that persons, or parts of their body, can be cut

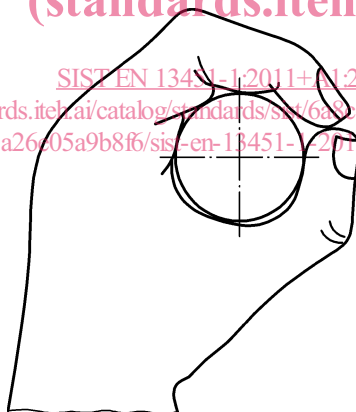
[EN 1176-1:2008, 3.11]

**3.4**  
**grip**  
holding of the hand around the entire circumference of a support

NOTE See Figure 1.

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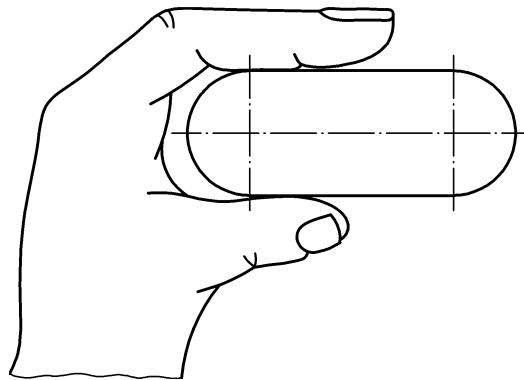


**Figure 1 — Grip**

[EN 1176-1:2008, 3.15]

**3.5**  
**grasp**  
holding of the hand around part of the circumference of a support

NOTE See Figure 2.



**Figure 2 — Grasp**

[EN 1176-1:2008, 3.16]

### 3.6

#### **finger hold**

holding which is found with hand, at least with the finger head by hooking in

### 3.7

#### **entrapment**

hazard presented by the situation in which a body, or part of a body, the hair or clothing can become trapped

**NOTE** Entrapment hazard can arise from situations where the body, its parts, etc. get trapped, but also from situations where the body of the user has no complete freedom to emerge from the water, e.g. when swimming underneath a stepladder.

### 3.8

#### **edge**

line being formed by two surfaces of something solid which meet one another

### 3.9

#### **corner**

point being formed by two or more edges which meet one another

### 3.10

#### **minimum space**

smallest space required for the safe installation and use of the equipment

### 3.11

#### **minimum zone for use**

minimum space required for anyone who may come into contact with equipment

### 3.12

#### **protrusion**

object, or a portion of an object, that stands or protrudes in/into the minimum zone for use

**EN 13451-1:2011+A1:2016 (E)****3.13****handrail**

rail intended to assist the user to balance

[EN 1176-1:2008, 3.21]

**3.14****barrier**

means of segregation to prevent movement or access

**3.15****safety barrier**

barrier designed to prevent users from falling over, through or beneath

**3.16****slit**

small opening < 8 mm, where entrapment is possible, which can cause a risk of drowning

**3.17****grid**

component to cover an overflow channel or an opening, designed to allow the passage of water

**4 Safety requirements**

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**4.1 Structural integrity****4.1.1 General**

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Structural integrity, including stability, of the equipment shall be assessed by one of the following:

- a) calculation, carried out in accordance with Annex A and Annex B;
- b) physical testing, in accordance with Annex C; or
- c) a combination of a) and b).

When calculations are carried out in accordance with Annex B, no limit states shall be exceeded at combinations of loads as given in B.2.

**[A1]** *deleted text* **[A1]**

In some cases, these specific calculations or tests are not appropriate but the structural integrity shall be at least equivalent.

Each structure shall resist both the permanent and variable loads acting on equipment and parts of equipment as described in Annex C.

No allowance for accidental loads, i.e. loads produced by fire, collision by vehicles or earthquake has to be made for swimming pool equipment.

The loads associated with fatigue are much smaller than the loads in combination with the appropriate load factors when calculated according to B.2. Therefore, swimming pool equipment need not be verified for fatigue.

Structural parts shall resist the worst case loading condition.