



SLOVENSKI STANDARD
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Oprema za plavalne bazene - 1. del: Splošne varnostne zahteve in preskusne metode za opremo, vgrajeno v javne plavalne bazene

Swimming pool equipment - Part 1: General safety requirements and test methods for equipment installed in pools for public use

Schwimmbadgeräte - Teil 1: Allgemeine sicherheitstechnische Anforderungen und Prüfverfahren für in öffentlichen Schwimmbädern installierte Schwimmbadgeräte

Équipement de piscine - Partie 1 : Exigences générales de sécurité et méthodes d'essai pour les équipements installés dans des piscines à usage public

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Swimming pool equipment - Part 1: General safety requirements and test methods for equipment installed in pools for public use

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (prEN 13451-1:2019) 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 document is currently submitted to the CEN Enquiry.

This document will supersede EN 13451-1+A1:2016.

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

- *Part 1: General safety requirements and test methods for equipment installed in pools for public use;*
- *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 installed in pools for public use not specified in Parts 2 to 11, 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.

prEN 13451-1:2019 (E)**1 Scope**

This document specifies general safety requirements and test methods for equipment installed in swimming pools for public use as classified 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 documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 1993-1-4, *Eurocode 3 - Design of steel structures - Part 1-4: General rules - Supplementary rules for stainless steels*

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

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

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

ISO 5725-2, *Accuracy (trueness and precision) of measurement methods and results — Part 2: Basic method for the determination of repeatability and reproducibility of a standard measurement method*

ISO 5725-5, *Accuracy (trueness and precision) of measurement methods and results — Part 5: Alternative methods for the determination of the precision of a standard measurement method*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1**swimming pool equipment**

item in and/or around a pool basin, accessible by users of the swimming pool, designated:

- to operate the pool basin and its functionally adjoining areas; and/or
- to use the pool basin and its functionally adjoining areas

Note 1 to entry: These items 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 1176-1:2017, 3.11]

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 1176-1:2017, 3.10]

3.4**grip**

holding of the hand round the entire circumference of a support

Note 1 to entry: See Figure 1.

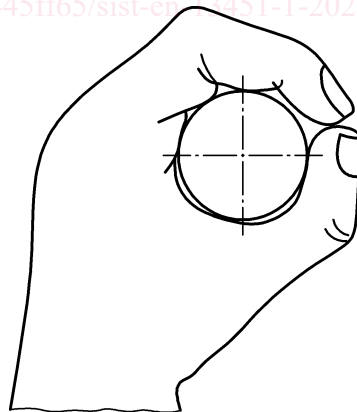


Figure 1 — Grip

[EN 1176-1:2017, 3.16]

3.5**grasp**

holding of the hand round part of the circumference of a support

Note 1 to entry: See Figure 2.

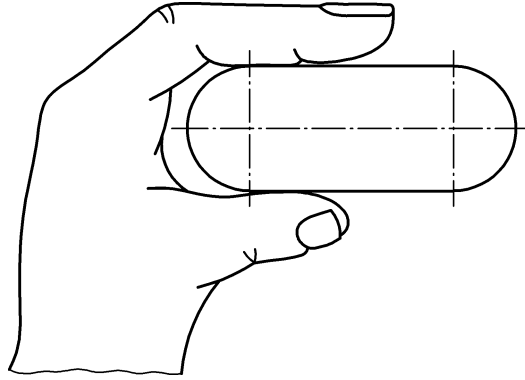


Figure 2 — Grasp

[EN 1176-1:2017, 3.17]

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 1 to entry: 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

Note 1 to entry: A protrusion typically has a width of < 200 mm and height of < 75 mm.

3.13**handrail**

rail intended to assist the user to balance

[EN 1176-1:2017, 3.22]

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 longitudinal opening with a width < 8 mm

3.17**grid**

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

3.18**public use**

use of an installation open to everyone or to a defined group of users, not designated solely for the owner's/proprietor's/operator's family and guests independently from paying an entrance fee

[SOURCE: EN 15288-1:2018, 3.5]

4 Safety requirements**4.1 Structural integrity****4.1.1 General**

Structural integrity, including stability, of the equipment shall be assessed for the reasonably foreseeable types of load they may be subjected to 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, limit states as defined in B.1 shall not be exceeded at combinations of loads as given in B.2.

Each structure shall resist both the permanent and variable loads acting on equipment and parts of equipment.

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

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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.

If a piece of equipment is made by components, it shall be safe in any working position.

4.1.2 Materials**4.1.2.1 General**

Any material may be used provided it is fit for purpose, also considering the particular characteristics of the swimming pool environment (e.g. oxidizing atmosphere, humidity, ageing).

Where stainless steel is used, see 4.1.2.2, and where plastic material is used, see 4.1.2.3.

When required, risk assessment shall be developed according to EN ISO 12100.

4.1.2.2 Use of stainless steel

For the selection and use of stainless steel with safety critical load bearing function in the swimming pool atmosphere EN 1993-1-4 applies.

The coating of stainless steel surfaces is not sufficient protection against corrosion and never justifies the selection of a less corrosion-proof material.

4.1.2.3 Use of plastic

Wherever the risk assessment identifies possible hazards for users in case of progressive degradation of plastic components, appropriate actions shall be taken (e.g. stating a maximum life span, necessity of periodical inspection).

Wherever the design risk assessment identifies the possibility of fracture or failure due to degradation, the component shall be subject to continuing risk assessment.

NOTE For a possible ageing test see NF T54-405-1.

4.2 Minimum space

The manufacturer/supplier shall indicate the minimum space needed for the installation, operation and use of their equipment.

4.3 Handrails, barriers, safety barriers**4.3.1 Handrails**

Handrails for general use shall be not less than 800 mm and not more than 1 100 mm above the foot position. Handrails designed for children only shall be not less than 600 mm and not more than 850 mm above the foot position.

4.3.2 Barriers

The design of the barriers shall not encourage the users to stand or sit on them and shall prevent climbing.

Barriers may be in form of gratings, full faced panels or walls.

The design should consider the visual needs connected with the use of the facility.