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Swimming pools - Part 1: Safety requirements for design

Schwimmbäder - Teil 1: Sicherheitstechnische Anforderungen an Planung und Bau

Piscines - Partie 1 : Exigences de sécurité pour la conception

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Swimming pools - Part 1: Safety requirements for design

Piscines - Partie 1 : Exigences de sécurité pour la
conception

Schwimmbäder - Teil 1: Sicherheitstechnische
Anforderungen an Planung und Bau

This European Standard was approved by CEN on 25 July 2008 and includes Amendment 1 approved by CEN on 9 August 2010.

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Foreword

This document (EN 15288-1:2008+A1:2010) 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of an identical text or by endorsement, at the latest by March 2011, and conflicting national standards shall be withdrawn at the latest by March 2011.

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 2010-08-09.

This document supersedes EN 15288-1:2008.

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

This standard EN 15288 "Swimming pools" consists of the following parts:

— Part 1: Safety requirements for design

— Part 2: Safety requirements for operation

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

To provide a swimming pool which can be managed as safely as possible, considerations have to start with careful design. All of those involved in designing new pools or upgrading existing ones will need to give the highest priority to ensuring that they provide users and staff with a facility that is safe. Four steps need to be developed in order to achieve this:

- a) the layout of the pool hall (if any) and the pool basin (including its dimensions, profile and any water features) should be designed so as to make the safe use and supervision of the pool to achieve without complex or costly management arrangements;
- b) the layout of the ancillary areas, including the changing, clothes storage, shower and toilet areas, should be similarly designed for safe use;
- c) the structural elements, materials, finishes and details, including the pool hall enclosure (if any), basin and equipment and the way they are assembled should be those which are the most appropriate to achieving a safe-to-use physical environment;
- d) criteria relevant for the planning of the safe and functionally correct maintenance.

There are specific sources of information from which the technical design and planning standards that are recommended in the design of swimming pools can be obtained. Everyone who is involved in the process of specifying, designing and constructing pools should be familiar with these design and planning standards and should ensure that they are given careful consideration in all pool projects.

It is also important to draw the attention of all of those involved in the design process to the implications of their work for the pool operator. What might be thought a small change in the layout of the pool or in the finishes specified could have a significant impact on the ability of the pool to be used safely. If that change is ill-considered and creates a serious design flaw, the result might be an increase in accidents. More likely it will be an increase in the cost of operating the pool (perhaps through the employment of additional staff) in order to compensate for the resulting problems.

One way of anticipating the management consequences of design decisions is to include a qualified/competent person on the design team. The person should give advice and guidance during the various development stages of the project.

This standard includes requirements, recommendations and notes. While compliance with requirements is mandatory, recommendations indicate best practices and notes give additional information and/or explanations.

1 Scope

This European Standard specifies safety requirements relevant to certain aspects of design and construction of classified pools according to Clause 4. It is intended for those who are concerned with construction, planning and operation of classified swimming pools. It provides guidance about the risks associated by identifying the design characteristics required for a safe environment.

The requirements of this European Standard are applicable to all new classified pools and, as appropriate, to specific refurbishments of classified existing pools.

This European Standard has limited application to classified pools which consist of segregated areas of rivers, lakes or the sea but should be followed where relevant.

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 1838, *Lighting applications — Emergency lighting*

EN 13451-1:2001, *Swimming pool equipment — Part 1: General safety requirements and test methods*

EN 13451-2, *Swimming pool equipment — Part 2: Additional specific safety requirements and test methods for ladders, stepladders and handle bends*

EN 13451-8:2001, *Swimming pool equipment — Part 8: Additional specific safety requirements and test methods for leisure water features*

ISO 7010, *Graphical symbols — Safety colours and safety signs — Safety signs used in workplaces and public areas*

HD 384.7.702 S2, *Electrical installations of buildings — Part 7: Requirements for special installations or locations; Section 702: Swimming pools and other basins (IEC 60364-7-702:1997, modified)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

pool/swimming pool

facility, with one or more water areas, intended for swimming, leisure or other water based physical activities

3.2

indoor swimming pool

one or more constructed water areas for bathing enclosed in a building, covered by a roof (fixed or moveable)

3.3

outdoor swimming pool

one or more constructed open-air water areas for bathing

3.4

private use

use of an installation designated solely for the owner's/proprietor's/operator's family and guests including the use connected with renting houses for family use

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3.5 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

3.6 therapeutic pool
designed to provide medical and physiotherapeutic care under control of a competent person

NOTE Pools destined for fitness and related activities are not considered therapeutic pools.

3.7 pool basin
water tank where water-related activities can take place

3.8 pool surround
walkable area around a pool basin, associated with the use of the basin itself, like circulation areas, areas of entry and exit, etc.

3.9 deck level pool basin
pool basin with the water level at the level of the pool surround

3.10 Finnish overflow
inclined upper side of the pool basin wall, designed to dissipate the wave action, leading the water to the overflow channel

3.11 built in staircase/ladder
staircase/ladder which is integral to the basin construction

3.12 rest ledge
submerged step, recessed or protruding for users to rest on in standing position

3.13 control point
designated space, room or pod, placed at basin deck level or higher, designed to allow control at least of the water leisure features and overview of water areas and pool surrounds

3.14 bather
people in bathing costume and barefoot, or in comparable conditions

4 Classification**4.1 Swimming pool Type 1**

Pool where the water-related activities are the main business (e.g. communal pools, leisure pools, water parks, aqua parks) and whose use is "public" according to 3.5.

4.2 Swimming pool Type 2

Pool which is an additional service to the main business (e.g. hotel pools, camping pools, club pools, therapeutic pools) and whose use is "public" according to 3.5.

4.3 Swimming pool Type 3

All pools except:

- pools Type 1;
- pools Type 2;
- pools of private use according to 3.4.

5 Safety related design factors and requirements

5.1 General

The requirements of clause 5 refer to pools which are intended for public use within a defined classification. Optional application of requirements to specific types is explained in the related paragraphs. The requirements apply as far as the selected items are present in the swimming pool.

As safe operation is influenced by safe design, the design shall take into account the facility's use, the activity, planned occupancy and its control. Where minimum requirements are given for different types, the designer shall consider the kind of activity foreseen and, should it be more similar to those of another type, refer to the most severe requirements.

The occupancy ratio shall be defined at the design stage as the sum of the number of users:

- a) generated by the water related areas/activities;
- b) plus the number of users generated by other areas/activities.

NOTE 1 A typical occupancy ratio according to a) for swimming pools Type 1, mainly used for swimming and teaching swimming, would be a minimum of 3 m² of water area per bather.

As swimming and water-related activities carry an inherent risk (e.g. users have bare feet and wear only bathing costumes), the need for specific design requirements shall always be considered.

Facilities designed to meet specific needs or programmes (e.g. competitions, special activities, events) require special consideration.

Also at the design stage, the needs of the following shall be considered:

- c) special users (see Bibliography, e.g. with disabilities);
- d) special installations (e.g. technologies to detect users in a potential risk of drowning video supervision of pool surrounds and/or other areas).

Design construction and operation risk assessment shall be conducted for any refurbishment or alteration work. The assessments have to be developed, updated and implemented as and when required to suit the work stages and any relevant occurrences.

NOTE 2 A review at fixed intervals has proved to be effective. Requirements and advice of the following chapters should be tested for relevance during the analysis.

5.2 Layout

The layout of a facility shall be considered in terms of interaction between its components and between components and users.

Particular attention shall be paid to the intended circulation routes and to the likely behaviour of users.

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Significant planning recommendations especially for Type 1 and Type 2 are:

- a) segregation of the barefoot areas, where reasonably practicable;
- b) toilets and showers should be located at the access to the pool basins in order to encourage the users to use them before entering the pool basins;
- c) general circulation routes shall avoid dangerous areas (e.g. deep water, wave pools, pools with high freeboard, areas of potential queuing, e.g. in front of the means of access to water slides) or be suitably segregated from them;
- d) non-swimmers and paddling pools should be segregated or placed at a suitable distance from pools with deeper water;
- e) access to the pool surround should be positioned where the water is shallower;
- f) prevent unauthorized access.

5.3 Safety-Information-Systems

A Safety-Information-System (visual and aural) shall be considered. They shall be defined for the particular type and destination of the facility and its safety needs, taking into consideration also the operator's risk assessment.

The Safety-Information-System shall consider at least:

- a) the function of each pool;
- b) water depths of the pool;
- c) emergency routes.

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The Safety-Information-System shall ensure the perception (acoustic comprehensibility/visibility) for all people who are present at the swimming pool (for acoustic systems, see the relevant standards).

In certain situations, transmission of safety messages can be improved by the use of computer controlled audio equipment (reassigned, emergency based announcement text).

The water depths shall be visually indicated by figures of height ≥ 70 mm and in contrasting colour, located to be visible by all people in the water and by those on the pool surround intending to enter the pool basin. Depth indications shall be placed at least:

- d) at the access to pools;
- e) in locations corresponding to the maximum and minimum depths;
- f) in the middle in case of flat or uniformly sloping bottom, or
- g) where the pool floor profile changes abruptly to a water depth $> 1,5$ m.

Additional functional information are recommended for:

- h) swimmers/non-swimmers areas;
- i) the shallow and deep ends of a basin, where appropriate;
- j) in areas defined for diving.

5.4 Materials

All materials and finishes used shall be suitable for the selected use and the respective surroundings and conditions, and able to withstand conditions of high humidity with occasional saturation and/or corrosiveness without encouraging the growth of bacteria.

The use of stainless steel with statical function in the swimming hall atmosphere which could be subjected to stress corrosion shall be avoided, unless it can be inspected and regularly cleaned. Where stainless steel is used the grade used should be recommended for that case.

Materials and finishing shall be easy to clean, with chemicals when appropriate, to a level of hygiene appropriate to the location. Manufacturer's recommendations are to be considered.

5.5 General areas for bathers

5.5.1 General

The subsequent requirements apply to Type 1 and Type 2 and are recommendations for Type 3.

5.5.2 Circulation areas, floors

Wherever possible, abrupt changes in floor level shall be avoided, particularly in barefoot areas.

Single steps on the circulation routes shall:

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- a) have a height ≤ 250 mm, with the riser not open; a height ≤ 180 mm is recommended;
 - b) have the edge marked by contrasting colour;
 - c) have a slip-resistant finish complying with relevant standards/regulations.

Staircases shall comply with relevant standards.

Where ramps on the circulation routes are used, they shall:

- d) have an inclination ≤ 8 %; an inclination 5 % to 6 % is recommended;
- e) have a slip-resistant finish complying with relevant standards/regulations;
- f) be obviously marked at the beginning and end.

Circulation routes shall be designed to ensure a free flow of users, avoiding congestion points, constrictions and obstructions.

Service accesses should be provided separately to general circulation routes (e.g. direct access from the outside).

To prevent ponding in the barefoot areas, floors shall have a suitable and effective draining system. The inclination in direction of the drains shall be between 2 % and 5 %. With an inclination > 3 % particular attention shall be paid to the slip-resistance and to the opportunity to foresee handrails especially for long ramps.

5.5.3 Emergency routes

Design of emergency routes shall comply with relevant regulations, but taking into account also the presence of barefoot users.