

BS EN 13451-5:2014



BSI Standards Publication

## Swimming pool equipment

Part 5: Additional specific safety requirements and test methods for lane lines and dividing line

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**National foreword**

This British Standard is the UK implementation of EN 13451-5:2014. It supersedes BS EN 13451-5:2001 which is withdrawn.

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.

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## Swimming pool equipment - Part 5: Additional specific safety requirements and test methods for lane lines and dividing line

Équipement de piscine - Partie 5: Exigences de sécurité et méthodes d'essai complémentaires spécifiques aux lignes de nage et lignes d'eau de séparation des espaces

Schwimmbadgeräte - Teil 5: Zusätzliche besondere sicherheitstechnische Anforderungen und Prüfverfahren für Schwimmbahnlinien und Trennseilanlagen

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## Foreword

This document (EN 13451-5:2014) 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of an identical text or by endorsement, at the latest by February 2015 and conflicting national standards shall be withdrawn at the latest by February 2015.

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 supersedes EN 13451-5:2001.

In relation to EN 13451-5:2001, the following main changes have been made:

- a) the title has been extended by adding dividing lines;
- b) the Scope has been extended by adding dividing lines;
- c) the Scope has been updated by referring to EN 15288-1 and EN 15288-2;
- d) Safety requirements and test methods for dividing lines have been added;
- e) Annex A has been deleted.

This European Standard 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 and dividing line;*
- *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.*

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## 1 Scope

This European Standard specifies safety requirements for lane lines and dividing line in addition to the general safety requirements of EN 13451-1:2011 and should be read in conjunction within it.

The requirements of this specific standard take priority over those in EN 13451-1:2011.

This part of EN 13451 is applicable to manufactured lane lines for use in competition and training and dividing line for use in classified swimming pools as specified in EN 15288-1 and EN 15288-2.

## 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 12385-1, *Steel wire ropes — Safety — Part 1: General requirements*

EN 13451-1:2011, *Swimming pool equipment - Part 1: General safety requirements and test methods*

EN ISO 2307, *Fibre ropes - Determination of certain physical and mechanical properties (ISO 2307)*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13451-1:2011 and the following apply.

### 3.1

#### **lane line**

linear floating device that divides the water surface into areas to mark swimming lanes

### 3.2

#### **dividing line**

device located on the water surface that divides the water surface into different areas

## 4 Lane lines

### 4.1 Safety requirements

#### 4.1.1 Design

Lane lines shall extend over the full length of the swimming lane.

Where floats are fitted, they shall extend over the full length as an unbroken series without gaps.

NOTE Dimensional requirements for competitive use, stipulated by the governing body FINA (Fédération Internationale Natation Amateur), are given in [1] for information.

#### 4.1.2 Structural integrity

The lane line, its fixings and the tensioning device shall withstand a tensile force of 15 kN.

#### 4.1.3 Tensioning device

A device shall be fitted to tension the lane line after mounting in such a way that it maintains a straight position.

#### **4.1.4 Safety link**

A safety link designed to break at a force of  $(7,5 \pm 1,2)$  kN shall be fitted on each lane line.

#### **4.1.5 Entrapment**

The dimension of any variable opening shall comply with the requirements in accordance with EN 13451-1:2011, 4.7.

#### **4.1.6 Crushing**

If floats are used, a device (e.g. a spring) shall be fitted to maintain their continuity without gaps.

Parallel front surfaces of two adjacent floats should be avoided.

#### **4.1.7 Buoyancy**

The lane lines shall have a positive buoyancy in such a way that at least one half to maximum two thirds of the height of the device float above the water surface.

#### **4.1.8 Safe operation**

The lane lines, the tensioning device and the fixings shall be designed in such a way that a self-loosening action is not possible.

### **4.2 Test methods**

The requirements of 4.1 shall be verified by the most appropriate method: measurement, visual examination or practical tests.

## **5 Dividing lines**

### **5.1 General**

A lane line according to Clause 4 may be used as dividing line. In this case the requirements given in Clause 4 are applicable.

A dividing line assembly consists of a rope, two rope holders and a tensioning device.

### **5.2 Forms**

The following forms exist:

- Form A: plastic rope;
- Form B: steel wire rope made of coated steel wire;
- Form C: steel wire rope made of coated steel wire provided with floats or floating markers (plastic balls, small flags, signs);
- Form D: semi-rigid hose.

## 5.3 Safety requirements

### 5.3.1 General

When being used or assembled, all accessible edges of the dividing ropes shall be rounded to a radius of not less than 1 mm.

### 5.3.2 Dividing rope

Dividing lines shall have a thickness of at least 20 mm (excluding any floats). The breaking force shall be not less than 20 000 N.

The elongation of the dividing line shall not exceed 2,5 ‰.

Dividing lines shall be able to float or shall be provided with floats having a diameter of  $d \geq 80$  mm.

Markers having the shape of plastic ball shall have a diameter of  $d \geq 80$  mm.

Wire ropes shall be provided with a coating having a thickness of at least 1 mm.

The rope surface, the floats and the markers shall be in a colour that contrasts with the water.

### 5.3.3 Dividing rope holders

Both rope holders shall each withstand a stress parallel to the water surface of 20 000 N without undergoing permanent deformation.

The dividing rope holders shall not constitute a tripping hazard in the pool surround or at the pool edge.

### 5.3.4 Tensioning devices

Accessible openings of turnbuckles shall not exceed 8 mm.

## 5.4 Test method

### 5.4.1 General

Unless otherwise specified in 5.4.2 and 5.4.3, compliance with the requirements specified in 5.3 is verified, for example, by measurement and inspection.

### 5.4.2 Testing of dividing ropes

The breaking force and elongation of steel wire ropes (form B and form C) are tested in accordance with EN 12385-1 and that of form A and form D in accordance with EN ISO 2307.

### 5.4.3 Testing of dividing rope holders

The rope holder is installed or firmly clamped as befits the design of the casing, after which a quasi-static tensile load of 20 000 N is applied horizontally for 10 s in the direction of the dividing line. There shall be no visible deformation after the load is removed.

## 5.5 Marking

Dividing lines shall be clearly marked with the name or the sign of the manufacturer, supplier or importer.

At his own responsibility, the manufacturer may refer to EN 13451-5 to prove compliance of the dividing lines with this standard.



## Bibliography

- [1] FINA Facilities Rules 2009-2013, enforced from September 24, 2009, FR 2.6 Lane Ropes
- [2] EN 10088-3, *Stainless steels - Part 3: Technical delivery conditions for semi-finished products, bars, rods, wire, sections and bright products of corrosion resisting steels for general purposes*
- [3] EN 15288-1, *Swimming pools — Part 1: Safety requirements for design*
- [4] EN 15288-2, *Swimming pools - Part 2: Safety requirements for operation*





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