

This document is a review generated by EVS

Domestic swimming pools - Water systems - Part 2:  
Circulation systems - Requirements and test methods

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 16713-2:2016 sisaldb Euroopa standardi EN 16713-2:2016 ingliskeelset teksti.	This Estonian standard EVS-EN 16713-2:2016 consists of the English text of the European standard EN 16713-2:2016.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 10.02.2016.	Date of Availability of the European standard is 10.02.2016.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile [standardiosakond@evs.ee](mailto:standardiosakond@evs.ee).

ICS 97.220.10

Standardite reproduutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:  
Aru 10, 10317 Tallinn, Eesti; koduleht [www.evs.ee](http://www.evs.ee); telefon 605 5050; e-post [info@evs.ee](mailto:info@evs.ee)

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Aru 10, 10317 Tallinn, Estonia; homepage [www.evs.ee](http://www.evs.ee); phone +372 605 5050; e-mail [info@evs.ee](mailto:info@evs.ee)

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

EN 16713-2

February 2016

ICS 97.220.10

English Version

Domestic swimming pools - Water systems - Part 2:  
Circulation systems - Requirements and test methods

Piscines privées à usage familial - Systèmes de  
distribution d'eau - Partie 2: Systèmes de circulation -  
Exigences et méthodes d'essai

Schwimmbäder für private Nutzung - Wassersysteme -  
Teil 2: Umwälzsysteme - Anforderungen und  
Prüfverfahren

This European Standard was approved by CEN on 5 December 2015.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.



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

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

## Contents

	Page
<b>European foreword.....</b>	<b>4</b>
<b>1 Scope.....</b>	<b>5</b>
<b>2 Normative references.....</b>	<b>5</b>
<b>3 Terms and definitions .....</b>	<b>5</b>
<b>4 Requirements .....</b>	<b>6</b>
<b>4.1 Filtration system design .....</b>	<b>6</b>
<b>4.2 Filtration system nominal flow rate.....</b>	<b>6</b>
<b>4.3 Extraction of pool water .....</b>	<b>7</b>
<b>4.3.1 General.....</b>	<b>7</b>
<b>4.3.2 Overflow channel .....</b>	<b>7</b>
<b>4.3.3 Skimmer .....</b>	<b>8</b>
<b>4.3.4 Main drain.....</b>	<b>8</b>
<b>4.4 Risk of suction entrapment .....</b>	<b>8</b>
<b>4.4.1 General.....</b>	<b>8</b>
<b>4.4.2 Suction chamber for floor and wall water outlets.....</b>	<b>10</b>
<b>4.4.3 Skimmers .....</b>	<b>10</b>
<b>4.5 Introduction of pool water.....</b>	<b>11</b>
<b>4.5.1 General.....</b>	<b>11</b>
<b>4.5.2 Introduction of pool water at reduced filtration flow rate .....</b>	<b>11</b>
<b>4.5.3 Air and water operated leisure feature .....</b>	<b>11</b>
<b>4.5.4 Other dangers.....</b>	<b>12</b>
<b>4.6 Pipe work.....</b>	<b>12</b>
<b>4.7 Pumps.....</b>	<b>13</b>
<b>4.7.1 Principle .....</b>	<b>13</b>
<b>4.7.2 General.....</b>	<b>13</b>
<b>4.7.3 Hydrostatic pressure test.....</b>	<b>14</b>
<b>4.7.4 Resistance of materials .....</b>	<b>14</b>
<b>4.7.5 Performance characterization .....</b>	<b>14</b>
<b>4.7.6 Self-priming performance.....</b>	<b>15</b>
<b>4.7.7 Endurance running test .....</b>	<b>15</b>
<b>4.7.8 Cyclical endurance test .....</b>	<b>15</b>
<b>4.7.9 Installation requirements.....</b>	<b>15</b>
<b>4.8 Information to the user and to the installer.....</b>	<b>15</b>
<b>5 Test methods .....</b>	<b>16</b>
<b>5.1 Dye test .....</b>	<b>16</b>
<b>5.2 Entrapment test.....</b>	<b>16</b>
<b>5.3 Hair entrapment test .....</b>	<b>17</b>
<b>5.3.1 Application .....</b>	<b>17</b>
<b>5.3.2 Test equipment.....</b>	<b>17</b>
<b>5.3.3 General.....</b>	<b>17</b>
<b>5.3.4 Hair entrapment in slits.....</b>	<b>20</b>
<b>5.4 Obstruction test for outlet suction grilles .....</b>	<b>20</b>
<b>5.4.1 General.....</b>	<b>20</b>
<b>5.4.2 Test device .....</b>	<b>20</b>
<b>5.4.3 Water flow .....</b>	<b>22</b>

<b>5.4.4</b>	<b>Procedure .....</b>	<b>22</b>
<b>5.4.5</b>	<b>Evaluation.....</b>	<b>23</b>
<b>5.5</b>	<b>Evaluation of pumps intended for pool water filtration and/or pool water circulation purposes.....</b>	<b>23</b>
<b>5.5.1</b>	<b>Principle.....</b>	<b>23</b>
<b>5.5.2</b>	<b>General comments on apparatus and test conditions.....</b>	<b>23</b>
<b>5.5.3</b>	<b>Self-priming performance .....</b>	<b>23</b>
<b>5.5.4</b>	<b>Hydrostatic pressure test .....</b>	<b>24</b>
<b>5.5.5</b>	<b>Endurance running test.....</b>	<b>25</b>
<b>5.5.6</b>	<b>Cyclical endurance test.....</b>	<b>25</b>
<b>5.6</b>	<b>Test report .....</b>	<b>25</b>
	<b>Annex A (informative) Pressure test procedure .....</b>	<b>26</b>
	<b>Annex B (informative) Pump selection principle.....</b>	<b>27</b>
	<b>Annex C (informative) Environmental aspects .....</b>	<b>28</b>
	<b>Bibliography .....</b>	<b>31</b>

## European foreword

This document (EN 16713-2:2016) 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 August 2016, and conflicting national standards shall be withdrawn at the latest by August 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.

EN 16713, *Domestic swimming pools — Water systems*, currently comprises:

- *Part 1: Filtration systems— Requirements and test methods;*
- *Part 2: Circulation systems— Requirements and test methods;*
- *Part 3: Water treatment— Requirements.*

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 European Standard specifies requirements and test methods for circulation systems and is applicable to equipment used in domestic swimming pools and designed for the circulation of water (introduction and/or extraction).

This standard applies for swimming pools as defined in EN 16582-1 and will be read in conjunction with it.

This standard does not apply to:

- pools for public use covered by EN 15288-1;
- spas for domestic or public use;
- paddling pools according to EN 71-8;
- pre filtration;
- natural and nature like pools.

NOTE For filtration systems see EN 16713-1 and for treatment systems EN 16713-3.

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

EN ISO 3386-1, *Polymeric materials, cellular flexible — Determination of stress-strain characteristic in compression — Part 1: Low-density materials (ISO 3386-1)*

EN ISO 9906:2012, *Rotodynamic pumps — Hydraulic performance acceptance tests — Grades 1, 2 and 3 (ISO 9906:2012)*

HD 60364-7-702, *Low-voltage electrical installations — Part 7-702: Requirements for special installations or locations — Swimming pools and fountains (IEC 60364-7-702)*

## 3 Terms and definitions

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

### 3.1

#### **water operated leisure feature**

feature formed as a result of water, being emitted either into, or from, a swimming pool

EXAMPLE Waves, water cannons, rain sprays, waterfalls, mushrooms and rapid rivers.

[SOURCE: EN 13451-3:2011+A2:2014, 3.12]

### 3.2

#### **air and water operated leisure feature**

feature formed as a result of air and water, being concurrently emitted into or from a swimming pool

EXAMPLE Hydromassages.