

Surfaces for sports areas - Determination of linear shoe/surface friction

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN 16837:2018 sisaldab Euroopa standardi EN 16837:2018 ingliskeelset teksti.	This Estonian standard EVS-EN 16837:2018 consists of the English text of the European standard EN 16837:2018.
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 04.04.2018.	Date of Availability of the European standard is 04.04.2018.
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 reprodutseerimise 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:  
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:

Homepage [www.evs.ee](http://www.evs.ee); phone +372 605 5050; e-mail [info@evs.ee](mailto:info@evs.ee)

English Version

## Surfaces for sports areas - Determination of linear shoe/surface friction

Sols sportifs - Détermination de la glissance linéaire  
entre la chaussure et la surface du sol

Sportböden - Bestimmung der linearen Reibung  
zwischen Schuh und Boden

This European Standard was approved by CEN on 21 August 2017.

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, Serbia, 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: Rue de la Science 23, B-1040 Brussels

## Contents

Page

European foreword.....	3
1 Scope.....	4
2 Normative references.....	4
3 Terms and definitions .....	4
4 Principle .....	4
5 Apparatus and materials.....	4
6 Preparation and preservation of test samples and test pieces .....	8
6.1 General.....	8
6.2 The slider rubber .....	8
6.3 Calibration .....	9
6.4 Test specimens.....	9
7 Procedure.....	10
7.1 General.....	10
7.2 Testing on site .....	11
8 Calculation of results .....	11
9 Test report.....	11
Annex A (normative) Validation of the performance of the pendulum tester.....	12
A.1 Validation of the performance of the pendulum tester.....	12
A.1.1 General.....	12
A.1.2 Procedure.....	12
A.2 Calibration of the pendulum friction tester .....	13
A.2.1 Weighing of components .....	13
A.2.2 Balancing of the pendulum arm assembly .....	13
A.2.3 Setting the effective spring tension .....	13
A.2.4 Setting the pointer stop .....	13
A.3 Details of scales.....	14
Bibliography.....	16

## European foreword

This document (EN 16837:2018) has been prepared by Technical Committee CEN/TC 217 “Surfaces for sports areas”, 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 October 2018, and conflicting national standards shall be withdrawn at the latest by October 2018.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## 1 Scope

This European Standard specifies a test method for the determination of shoe/surface friction of synthetic sports surfaces. The method can be used for the assessment of both indoor and outdoor sports surfaces.

NOTE This method is not considered suitable for long pile synthetic turf surfaces.

## 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.

ISO 48, *Rubber, vulcanized or thermoplastic — Determination of hardness (hardness between 10 IRHD and 100 IRHD)*

ISO 4662, *Rubber, vulcanized or thermoplastic — Determination of rebound resilience*

ISO 7619-2, *Rubber, vulcanized or thermoplastic — Determination of indentation hardness — Part 2: IRHD pocket meter method*

## 3 Terms and definitions

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

**3.1**  
**slip resistance**  
property of the surface which limits the relative movement between the contact patch of footwear (slip) and the sports surface

**3.2**  
**friction**  
resistance to relative motion between two bodies in contact

**3.3**  
**vertical load**  
vertical force exerted on the sports surface by the test foot

**3.4**  
**linear shoe/surface friction**  
property measured which is expressed as Pendulum Test Value (PTV)

## 4 Principle

The Pendulum Tester incorporates a spring-loaded slider (test foot) made of a standard rubber attached to the end of a pendulum. On releasing the pendulum from a horizontal position, the loss of energy as the test foot passes over the test surface is measured by the reduction in length of the upswing using a calibrated scale.

## 5 Apparatus and materials

The pendulum test shall incorporate the essential features given below and as illustrated in Figure 1. All bearings and working parts shall be enclosed as far as possible, and all materials used shall be treated to prevent corrosion under wet conditions.