



BSI Standards Publication

Determination of slip resistance of pedestrian surfaces - Methods of evaluation

This is a preview of BS EN 16165:2021. [Click here to purchase the full version from the ANSI store.](#)

National foreword

This British Standard is the UK implementation of EN 16165:2021. It supersedes BS 7976-1:2002+A1:2013, BS 7976-2:2002+A1:2013, and BS 7976-3:2002+A1:2013, which are withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/507/7, Pedestrian slip resistance.

A list of organizations represented on this committee can be obtained on request to its committee manager.

The UK committee considers that the pendulum test (Annex C) is the only method of the four test methods described in EN 16165:2021 that should be relied upon to correctly assess the risk of pedestrian slipping in wet conditions. This opinion is based on tribological analysis and over four decades of experience in the forensic investigation of pedestrian slipping accidents.

It is the opinion of the UK committee that reliance on results from the other three methods described in EN 16165:2021 could potentially lead to accidents and injury.

Support for this opinion can be found in informative National Annex NA, which is appended at the back of this document.

Slider 55 rubber has been in use in the UK for several decades, and the UK committee considers it to be the preferred alternative to slider 57 rubber, which is specified in EN 16165:2021.

NOTE Slider 55 rubber as supplied is normally within the specification range of slider 57 rubber.

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Amendments/corrigenda issued since publication

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28 February 2022	Supersession information updated in National foreword.

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EUROPÄISCHE NORM

October 2021

ICS 17.040.20; 91.060.30; 93.080.10

Supersedes CEN/TS 16165:2016

English Version

Determination of slip resistance of pedestrian surfaces - Methods of evaluation

Détermination de la résistance à la glissance des
surfaces piétonnières - Méthodes d'évaluation

Bestimmung der Rutschhemmung von Fußböden -
Ermittlungsverfahren

This European Standard was approved by CEN on 25 July 2021.

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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.

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European foreword

This document (EN 16165:2021) has been prepared by Technical Committee CEN/TC 339 “Slip resistance of pedestrian surfaces - Methods of evaluation”, 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 April 2022, and conflicting national standards shall be withdrawn at the latest by April 2022.

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.

This document supersedes CEN/TS 16165:2016.

The main changes compared to the previous edition are as follows:

- a) description of test surface used in the barefoot ramp test and the shod ramp test changed;
- b) calibration procedure of the test device used in the barefoot ramp test changed;
- c) angles of slip for the three standard surfaces used in the barefoot ramp test changed;
- d) procedure for verification and correction in the barefoot ramp test changed;
- e) description of the test procedure used in the barefoot ramp test changed;
- f) description of test footwear used in the shod ramp test changed;
- g) angles of slip for the three standard surfaces used in the shod ramp test changed;
- h) information when slider pads and slider assemblies shall be re-prepared or discarded added to the pendulum test;
- i) description of the verification procedure used in the pendulum test and the tribometer test changed;
- j) Reference surfaces for pendulum test and tribometer tests were removed;
- k) procedure for the preparation of sliders used in the tribometer test changed.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This document describes four test methods commonly used in Europe for the determination of the slip resistance of floorings.

The method in Annex A describes the test method based on the ramp using water as the test liquid and with the operator barefoot. This method cannot be used *in situ*. It is referred to as the “Barefoot ramp method”.

The method in Annex B describes the test method based on the ramp using oil as the test liquid and with the operator wearing specified shoes. This method cannot be used *in situ*. It is referred to as the “Shod ramp test”.

NOTE Oil is used as the test liquid to make the test more sensitive.

The method in Annex C describes the test method based on the pendulum in dry and wet conditions using specified rubber sliders. This method can be used *in situ*. It is referred to as the “Pendulum test”.

The method in Annex D describes the test method based on the tribometer in dry and wet conditions using specified rubber sliders. This method can be used *in situ*. It is referred to as the “Tribometer test”.

The purpose of this document is to harmonize the procedures used when using any of the above test methods. It is not intended to promote any particular test method to Product Group Technical Committees or to limit their choice.

The test methods given in this document cannot be compared with each other. The results can only be compared with results that are obtained with the same test method.

1 Scope

This document specifies test methods for determining the slip resistance of surfaces used by pedestrians.

NOTE It is also possible to use this document for measurements where persons might walk on trafficked areas.

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 ISO 868, *Plastics and ebonite — Determination of indentation hardness by means of a durometer (Shore hardness) (ISO 868)*

ISO 48-2, *Rubber, vulcanized or thermoplastic — Determination of hardness — Part 2: Hardness between 10 IRHD and 100 IRHD*

ISO 48-4, *Rubber, vulcanized or thermoplastic — Determination of hardness — Part 4: Indentation hardness by durometer method (Shore hardness)*

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 following terms and definitions apply.

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

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

3.1 General terms

3.1.1

pedestrian surface

surface which is designed for people to walk upon

3.1.2

test liquid

standardized liquid applied on the surface for the purpose of the test

3.1.3

friction

resistance to relative motion between two bodies in contact, e.g. the test slider or the footwear sole and the pedestrian surface

Note 1 to entry: The frictional force is the force acting tangentially in the contact area.