

SLOVENSKI STANDARD

SIST EN 13036-1:2010

01-oktober-2010

Nadomešča:

SIST EN 13036-1:2002

Značilnosti cestnih in letaliških površin - Preskusne metode - 1. del: Merjenje hrapavosti površine z volumetrično metodo

Road and airfield surface characteristics - Test methods - Part 1: Measurement of pavement surface macrotexture depth using a volumetric patch technique

Oberflächeneigenschaften von Straßen und Flugplätzen - Prüfverfahren - Teil 1: Messung der Makrotexturtiefe der Fahrbahnoberfläche mit Hilfe eines volumetrischen Verfahrens

Caractéristiques de surface des routes et aéroports - Méthodes d'essai - Partie 1 : Mesurage de la profondeur de macrotexture de la surface d'un revêtement à l'aide d'une technique volumétrique à la tache

Ta slovenski standard je istoveten z: EN 13036-1:2010

ICS:

17.040.20	Lastnosti površin	Properties of surfaces
93.080.10	Gradnja cest	Road construction
93.120	Gradnja letališč	Construction of airports

SIST EN 13036-1:2010

en,fr,de

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 13036-1:2010

<https://standards.iteh.ai/catalog/standards/sist/28501364-c313-4c37-a5d6-0d9c72f76a3d/sist-en-13036-1-2010>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 13036-1

May 2010

ICS 17.040.20; 93.080.10; 93.120

Supersedes EN 13036-1:2001

English Version

**Road and airfield surface characteristics - Test methods - Part 1:
Measurement of pavement surface macrotexture depth using a
volumetric patch technique**

Caractéristiques de surface des routes et aérodromes -
Méthodes d'essai - Partie 1: Mesurage de la profondeur de
macrotexture de la surface d'un revêtement à l'aide d'une
technique volumétrique à la tache

Oberflächeneigenschaften von Straßen und Flugplätzen -
Prüfverfahren - Teil 1: Messung der Makrotexturtiefe der
Fahrbahnoberfläche mit Hilfe eines volumetrischen
Verfahrens

This European Standard was approved by CEN on 25 March 2010.

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



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

	Page
Foreword.....	3
Introduction	4
1 Scope	5
2 Normative references	5
3 Test method.....	5
4 Material and apparatus.....	5
5 Procedure	7
5.1 Test surface	7
5.2 Material sample	7
5.3 Determination.....	7
5.4 Number of test measurements	8
6 Calculation of surface mean texture depth	8
7 Safety considerations.....	8
8 Test report	8
9 Precision of the method.....	9
Annex A (informative)	10
Bibliography.....	11

ITeH STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 13036-1:2010](https://standards.iteh.ai/catalog/standards/sist/28501364-c313-4c37-a5d6-0d9c72f76a3d/sist-en-13036-1-2010)

<https://standards.iteh.ai/catalog/standards/sist/28501364-c313-4c37-a5d6-0d9c72f76a3d/sist-en-13036-1-2010>

Foreword

This document (EN 13036-1:2010) has been prepared by Technical Committee CEN/TC 227 “Road materials”, 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 November 2010, and conflicting national standards shall be withdrawn at the latest by November 2010.

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 13036-1:2001.

This European Standard has been prepared by Technical Committee CEN/TC 227 “Road materials”, the secretariat of which is held by DIN.

This European Standard is one of a series of standards as listed below:

EN 13036-1, *Road and airfield surface characteristics — Test methods — Part 1: Measurement of pavement surface macrotexture depth using a volumetric patch technique*

EN 13036-3, *Road and airfield surface characteristics — Test methods — Part 3: Measurement of pavement surface horizontal drainability*

EN 13036-4, *Road and airfield surface characteristics — Test methods — Part 4: Method of measurement of skid resistance of a surface — The pendulum test*

EN 13036-6, *Road and airfield surface characteristics — Test methods — Part 6: Measurement of transverse and longitudinal profiles in the evenness and megatexture wavelength ranges*

EN 13036-7, *Road and airfield surface characteristics — Test methods — Part 7: Irregularity measurement of pavement courses : the straightedge test*

EN 13036-8, *Road and airfield surface characteristics — Test methods — Part 8: Determination of transverse unevenness indices*

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 the United Kingdom.

Introduction

This document has been written in accordance with Annex A of ISO 10844:1994. (see [12] of the Bibliography)

The so-called “sand-patch method” has been used worldwide for many years to measure the road surface texture.

It relies on a given volume of sand which is spread out on a road surface. The sand is distributed to form a circular patch, the diameter of which is measured. By dividing the volume of sand with the area covered, a value is obtained which represents the average depth of the sand layer, i. e. an average “texture depth”. The method is described in [2] of the Bibliography, but the procedure has been described and used even earlier.

However, a development of the sand-patch method, replacing sand with glass spheres, has been described in ASTM E 965-87 (see [1] of the Bibliography).

The method in this document is largely based on ASTM E 965-87. However, a number of changes have been made, for example the use of only metric units and the avoidance of making references to other ASTM standards. Also, the layout has been adapted to the normal layout for European Standards.

The selection of the ASTM standard rather than the procedure described in BS 812-114 (see [3] of the Bibliography) is based on the fact the ASTM standard uses a material with closer specifications and that the ASTM standard is far more precise in its description of the test method.

SIST EN 13036-1:2010
<https://standards.iteh.ai/catalog/standards/sist/28501364-c313-4c37-a5d6-0d9c72f76a3d/sist-en-13036-1-2010>

1 Scope

This European Standard specifies a method for determining the average depth of pavement surface macrotexture by careful application of a known volume of material on the surface and subsequent measurement of the total area covered. The technique is designed to provide an average depth value of only the pavement macrotexture and is considered insensitive to pavement microtexture characteristics.

This test method is suitable for field tests to determine the average macrotexture depth of a pavement surface. When used in conjunction with other physical tests, the macrotexture depth values derived from this test method can be used to determine the pavement skid resistance capability, noise characteristics and the suitability of paving materials or finishing techniques. When used with other tests, care should be taken that all tests are applied at the same location.

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.

ISO 565, *Test sieves — Metal wire cloth, perforated metal plate and electroformed sheet — Nominal sizes of openings*

iTeh STANDARD PREVIEW
(standards.iteh.ai)

3 Test method

The standard materials and test apparatus consist of a quantity of uniform material, a container of known volume, a suitable wind screen or shield, brushes for cleaning the surface, a flat disc for spreading the material on the surface, and a ruler or other measuring device for determining the area covered by the material. A laboratory balance is also recommended to ensure consistent amounts for each measurement sample.

The test method involves spreading a known volume of material on a clean and dry pavement surface, measuring the area covered, and subsequently calculating the average depth between the bottom of the pavement surface voids and the tops of surface aggregate particles.

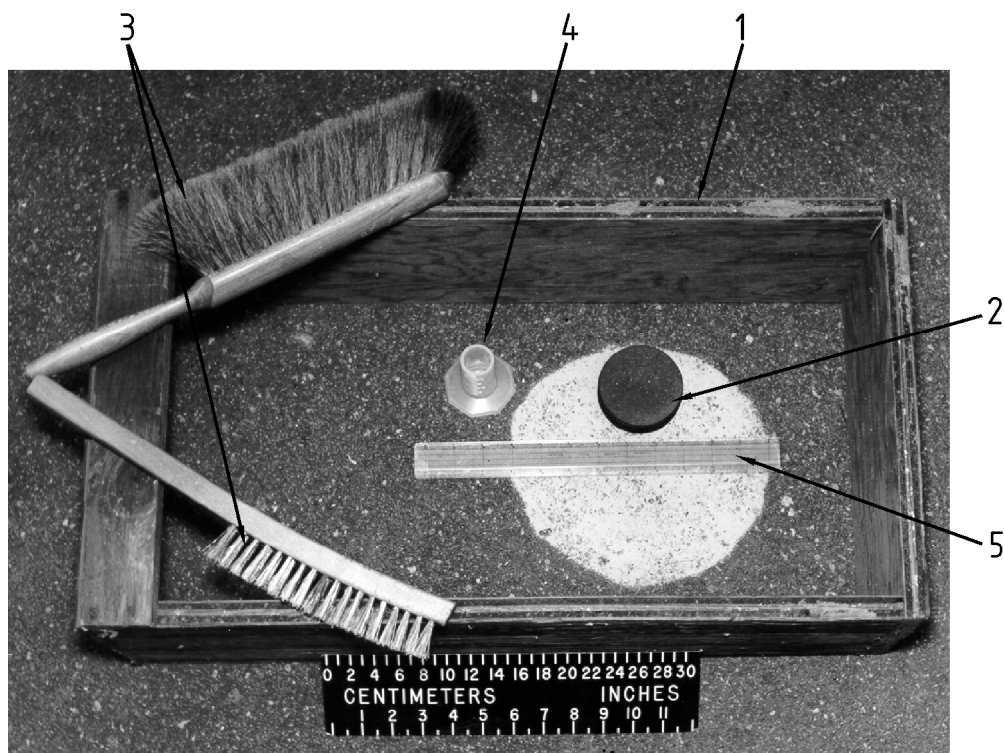
In spreading the material specified in this test method, the surface voids are completely filled flush to the tips of the surrounding aggregate particles.

Pavement aggregate particle shape, size and distribution are surface texture features not addressed in this method. The method is not meant to provide a complete assessment of pavement surface texture characteristics. In particular, care should be exercised in interpreting the result if the method is applied to porous surfaces and to deeply grooved surfaces.

The method can be applied to a wide range of surfaces. Its validity range is 0,25 mm to 5 mm, expressed in Mean Profile Depth, MPD (see Annex A).

4 Material and apparatus

The essential elements of the apparatus, shown in Figure 1, consist of the following:

**Key**

- 1 portable wind screen
- 2 spreading tool
- 3 surface cleaning brushes
- 4 sample cylinder
- 5 ruler

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 13036-1:2010

<https://standards.iteh.ai/catalog/standards/sist/28501364-c313-4c37-a5d6-0d9c72f76a3d/sist-en-13036-1-2010>

Figure 1 — Apparatus for measuring surface macrotexture depth

4.1 Material.

Solid glass spheres being essentially round shall be used.

Refer, for example, to reference [4] of the Bibliography. The spheres shall be graded to have a minimum of 90 % by weight passing a 0,25 mm sieve and retained on a 0,18 mm sieve complying with ISO 565.

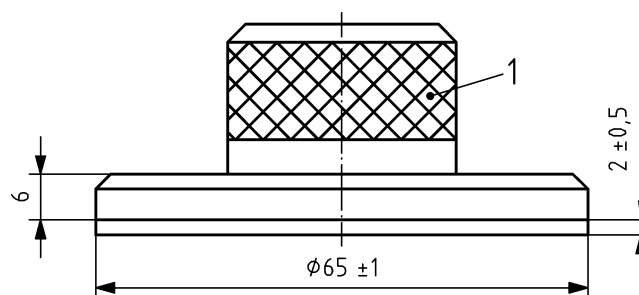
NOTE For availability of material, see for example references [1] and [5] of the Bibliography.

4.2 Sample container.

A calibrated metal or plastic container with a predetermined internal volume of at least $25\,000\,(25\text{ ml}) \pm 150\text{ mm}^3$ shall be used to determine the volume of glass spheres spread.

4.3 Spreader tool.

A flat, hard disc approximately (65 ± 1) mm in diameter and covered on one face with a hard rubber plate $(2 \pm 0,5)$ mm thick, with a (305 ± 10) g mass according to Figure 2.



Key

1 knurled handle

Figure 2 — Flat hard disc and rubber plate stucked on its base

4.4 Brushes.

A soft bristle brush shall be used to clean the pavement surface thoroughly prior to application of the material sample.

4.5 Windshield.

A suitable screen or shield can be placed on the pavement surface to protect the material sample from the wind and turbulence created by traffic. An example is shown in Figure 1.

4.6 Scale and balance.

A standard scale 500 mm in length and having 1 mm divisions should be used.

Use of a laboratory balance, sensitive to 0,1 g, is recommended with this test method to provide additional control of the mass of material used for the surface macrotexture depth measurement.

5 Procedure

5.1 Test surface

Inspect the pavement surface to be measured and select a dry, homogeneous area that contains no unique, localized features such as cracks and joints. Thoroughly clean the surface using the soft bristle brush to remove any residue, debris or loosely bonded aggregate particles from the surface. Position the portable windshield around the surface test area.

5.2 Material sample

Fill the cylinder of known volume with dry material and gently tap the base of the cylinder several times on a rigid surface. Add more material to fill the container to the top, and level with a straightedge. If a laboratory balance is available, determine the mass of material in the container and use this mass of material sample for each measurement.

5.3 Determination

Pour the measured volume or mass of material on to the dry and cleaned test surface. Carefully spread the material into a circular patch, with the disc tool, rubber-covered side down, filling the surface voids flush with the aggregate particle tips. Use a slight pressure on the hand, just enough to ensure that the disc will spread out the material so that the disc touches the surface aggregate particle tips.