



SLOVENSKI STANDARD
SIST EN 13653:2005

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Flexible sheets for waterproofing - Waterproofing of concrete bridge decks and other concrete surfaces trafficable by vehicles - Determination of shear strength

Abdichtungsbahnen - Abdichtungssysteme auf Beton für Brücken und andere Verkehrsflächen - Bestimmung der Schubfestigkeit

Feuilles souples d'étanchéité - Étanchéité des ponts en béton et autres surfaces en béton circulaires par les véhicules - Détermination de la résistance au cisaillement

<https://standards.iteh.ai/catalog/standards/sist/74c222b0-1005-416f-bd5b-a23f30f0dd5f/sist-en-13653-2005>

Ta slovenski standard je istoveten z: EN 13653:2004

ICS:

91.100.50 Veziva. Tesnilni materiali Binders. Sealing materials

SIST EN 13653:2005 en

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EUROPEAN STANDARD

EN 13653

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 2004

ICS 91.100.50

English version

Flexible sheets for waterproofing - Waterproofing of concrete
bridge decks and other concrete surfaces trafficable by vehicles
- Determination of shear strength

Systèmes d'étanchéité pour tabliers de ponts en béton et
autres surfaces en béton circulables par les véhicules -
Méthode d'essai - Détermination de la résistance au
cisaillement

Abdichtungsbahnen - Abdichtungssysteme auf Beton für
Brücken und andere Verkehrsflächen - Bestimmung der
Schubfestigkeit

This European Standard was approved by CEN on 22 July 2004.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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Foreword

This document (EN 13653:2004) has been prepared by Technical Committee CEN /TC 254, "Flexible sheets for waterproofing", the secretariat of which is held by BSI.

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 March 2005, and conflicting national standards shall be withdrawn at the latest by June 2006.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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EN 13653:2004 (E)

Introduction

The purpose of the test is to determine the shear strength properties of the waterproofing system. This test simulates action of dynamic forces (e. g. braking).

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1 Scope

This document is one of a series of standards applicable to flexible sheets for waterproofing of concrete bridge decks and other concrete surfaces trafficable by vehicles.

This document specifies a test method for the evaluation of the shear strength properties of the waterproofing sheet system applied to a concrete surface and with an asphalt layer.

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.

EN 13375:2004, *Flexible sheets for waterproofing – Waterproofing of concrete bridge decks and other concrete surfaces trafficable by vehicles – Specimen preparation*

EN 13416, *Flexible sheets for waterproofing - Bitumen, plastic and rubber sheets for roof waterproofing - Rules for sampling*

prEN 14695:2003, *Flexible sheets for waterproofing – Reinforced bitumen sheets for waterproofing of concrete bridge decks and other concrete surfaces trafficable by vehicles – Definitions and characteristics*

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3 Terms and definitions standards.iteh.ai

For the purposes of this document, the terms and definitions given in EN 13375:2004, prEN 14695:2003 and the following apply.

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shear strength

shear stress at maximum force, when testing the shear resistance in a waterproofing system

4 Test methods

4.1 Principle

A force is induced in the waterproofing system laid between base specimen and asphalt layer to determine the shear strength of the waterproofing. Testing is carried out in compression at constant displacement rate. The force is applied at an angle of 15° to the plane of shearing.

4.2 Apparatus and materials

- A loading device capable of producing a maximum load of 10 kN at a displacement rate relative to the supports of (10 ± 1) mm/min (Figure 1). The loading shall be applied through the center of the waterproofing. The recording device shall be capable of measuring the force to an accuracy of 1% and displacement to 0,1 mm. The device on which the test specimen is supported shall be at an angle of inclination of $(15 \pm 1)^\circ$ with regard to the direction of load at the start of the test.
- Load application without any resulting momentum shall be ensured by the chosen manner of support (for example by a gimbal mounting).
- Conditioning device, giving a temperature of $(23 \pm 2)^\circ\text{C}$.
- Device for measuring test temperature with an accuracy of at least $\pm 0,5^\circ\text{C}$.

EN 13653:2004 (E)**4.3 Preparation of test specimens**

Samples and test pieces shall be taken in accordance with EN 13416.

Specimen preparation is described and asphalt layer mixes are given in EN 13375. The size of the test specimens shall be 220 mm x 110 mm (see Figure 1).

The longer dimension of the test specimen shall be in the longitudinal direction of the flexible sheet.

Four test specimens shall be used for the test.

4.4 Procedure

Prior to testing the test specimens shall be conditioned at a test temperature of $(23 \pm 2) ^\circ\text{C}$ for at least 24 hours.

NOTE 1 Additionally other temperatures can be used if required.

The test specimen shall be placed in the test equipment at an angle of $(15 \pm 1) ^\circ$ to the shear plane.

A constant displacement shall be applied at a rate of (10 ± 1) mm/min. The force and displacement shall be recorded during the test. The test temperature shall be measured and recorded.

NOTE 2 The results of the test depend significantly on the test temperature.

The failure location shall be visually inspected and details of the failure shall be recorded.

NOTE 3 In shear testing, sliding may occur at the base specimen surface (primer) or between the sheets or at the asphalt layer interface with the sheet.

4.5 Expression of results

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4.5.1 Method of calculation

The shear strength in N/mm^2 shall be calculated using the equation (1) below:

$$\tau_{\max} = (F_{\max} / A) \times \cos 15^\circ \quad (1)$$

If shear strength at a certain, or specific, displacement (s_ε) is required, the value of the corresponding shear stress shall be calculated using the equation (2).

$$\tau (s_\varepsilon) = (F / A) \times \cos 15^\circ \quad (2)$$

where:

τ_{\max}	is the shear strength, in N/mm^2
τ	is the shear stress at a certain displacement (s_ε), in N/mm^2
F_{\max}	is the recorded maximum force, in N
F	is the recorded force, in N
A	is the test area of the test specimen, in mm^2
s_ε	is the displacement, in mm

The arithmetic mean value(s) of shear strength and shear stress at a certain displacement, if required, shall be calculated.

4.5.2 Precision of the test method

The precision of the test method is not specified.