

**Products and systems for the  
protection and repair of concrete  
structures - Test methods -  
Determination of creep under sustained  
tensile load for synthetic resin products  
(PC) for the anchoring of reinforcing  
bars**

Products and systems for the protection and repair  
of concrete structures - Test methods -  
Determination of creep under sustained tensile load  
for synthetic resin products (PC) for the anchoring of  
reinforcing bars

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 1544:2006 sisaldab Euroopa standardi EN 1544:2006 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 24.11.2006 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 1544:2006 consists of the English text of the European standard EN 1544:2006.</p> <p>This document is endorsed on 24.11.2006 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p><b>Käsitlusala:</b></p> <p>This European Standard specifies a method for carrying out a sustained tensile load test on a reinforcing steel bar (rebar) anchored in a concrete block. The test is performed to determine the tensile creep under standard conditions, or under maximum service temperature conditions recommended by the manufacturer. The test applies to products based on synthetic resins or hybrid synthetic resin/hydraulic cements. It does not include those products intended to be used as grout around tendons used for the prestressing of concrete.</p>	<p><b>Scope:</b></p> <p>This European Standard specifies a method for carrying out a sustained tensile load test on a reinforcing steel bar (rebar) anchored in a concrete block. The test is performed to determine the tensile creep under standard conditions, or under maximum service temperature conditions recommended by the manufacturer. The test applies to products based on synthetic resins or hybrid synthetic resin/hydraulic cements. It does not include those products intended to be used as grout around tendons used for the prestressing of concrete.</p>
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ICS 91.100.30

Võtmesõnad:

ICS 91.100.30

English Version

**Products and systems for the protection and repair of concrete structures - Test methods - Determination of creep under sustained tensile load for synthetic resin products (PC) for the anchoring of reinforcing bars**

Produits et systèmes pour la protection et la réparation des structures en béton - Méthodes d'essais - Mesure du fluage, sous contrainte maintenue des produits à base de résine de synthèse destinés à l'ancrage d'armature

Produkte und Systeme für den Schutz und die Instandsetzung von Betontragwerken - Prüfverfahren - Bestimmung des Kriechverhaltens von für die Verankerung von Bewehrungsstäben verwendeten Kunstharzprodukten (PC) bei Dauerzuglast

This European Standard was approved by CEN on 7 September 2006.

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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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## Foreword

This document (EN 1544:2006) has been prepared by Technical Committee CEN/TC 104 "Concrete and related products", 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 2007, and conflicting national standards shall be withdrawn at the latest by December 2008.

It has been prepared by Sub-Committee 8 "Protection and repair of concrete structures", the Secretariat of which is held by AFNOR.

This European Standard is one of a series dealing with products and systems for the protection and repair of concrete structures. It describes a method of test for determining the creep of anchoring products under sustained tensile load.

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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

## 1 Scope

This European Standard specifies a method for carrying out a sustained tensile load test on a reinforcing steel bar (rebar) anchored in a concrete block. The test is performed to determine the tensile creep under standard conditions, or under maximum service temperature conditions recommended by the manufacturer.

The test applies to products based on synthetic resins or hybrid synthetic resin/hydraulic cements.

It does not include those products intended to be used as grout around tendons used for the prestressing of concrete.

## 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 1766, *Products and systems for the protection and repair of concrete structures - Test methods - Reference concretes for testing*

EN 10080, *Steel for the reinforcement of concrete - Weldable reinforcing steel - General*

## 3 Principle

The principle is to apply a sustained tensile load to a reinforcing bar anchored into concrete with the product to be tested, and to measure the displacement of the rebar relative to the concrete test piece over different periods of time.

The test is performed using blocks of concrete – type C(0,40) in accordance with EN 1766.

The test is carried out at standard laboratory temperature of  $(21 \pm 2) ^\circ\text{C}$  or such other temperature as specified by the manufacturer.

## 4 Apparatus

The following apparatus is required.

- 4.1 One mixer for concrete.
- 4.2 One mixer for the product to be tested.
- 4.3 Moulds for the preparation of concrete blocks of minimum dimensions 400 mm x 400 mm x 250 mm.
- 4.4 One concrete vibrator, 25 mm diameter
- 4.5 One rotary percussive drill or one diamond drill, or both, as specified by the manufacturer.
- 4.6 Three ribbed steel bars type B500B, diameter 16 mm, with a related rib area of 0,075 to 0,085 in accordance with EN 10080.
- 4.7 Devices for centring and maintaining alignment of the rebars during anchoring.
- 4.8 One thermometer accurate to within  $\pm 1 ^\circ\text{C}$ .