

**Products and systems for the
protection and repair of concrete
structures - Definitions, requirements,
quality control and evaluation of
conformity - Part 3: Structural and non-
structural repair**

Products and systems for the protection and repair
of concrete structures - Definitions, requirements,
quality control and evaluation of conformity - Part 3:
Structural and non-structural repair

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 1504-3:2006 sisaldab Euroopa standardi EN 1504-3:2006 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 27.02.2006 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 1504-3:2006 consists of the English text of the European standard EN 1504-3:2006.</p> <p>This document is endorsed on 27.02.2006 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>Käsitlusala: This European Standard specifies requirements for the identification, performance (including durability) and safety of products and systems to be used for the structural and non-structural repair of concrete structures.</p>	<p>Scope: This European Standard specifies requirements for the identification, performance (including durability) and safety of products and systems to be used for the structural and non-structural repair of concrete structures.</p>
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ICS 01.040.91, 91.080.40

Võtmesõnad: construction materials, definition, definitions, evaluations, maintenance, mechanics, preservative treatment, production, products, protection systems, quality control, renewal, repair, specification (approval), specifications, statics, structures, systems

ICS 91.080.40; 01.040.91

English Version

Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 3: Structural and non-structural repair

Produits et systèmes pour la protection et la réparation des structures en béton - Définitions, exigences, maîtrise de la qualité et évaluation de la conformité - Partie 3 : Réparation structurale et réparation non structurale

Produkte und Systeme für den Schutz und die Instandsetzung von Betontragwerken - Definitionen, Anforderungen, Qualitätsüberwachung und Beurteilung der Konformität - Teil 3: Statisch und nicht statisch relevante Instandsetzung

This European Standard was approved by CEN on 29 April 2005.

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 European Standard (EN 1504-3:2005) 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 June 2006, and conflicting national standards shall be withdrawn at the latest by December 2008.

It has been developed by sub-committee 8 "Products and systems for the protection and repair of concrete structures" (Secretariat AFNOR).

This European Standard does not supersede any other European Standard.

European Standard 1504 has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association and supports essential requirements of EU Construction Products Directive (89/106/EC). For the relationship between Part 3 and the EU Directive, see compulsory informative Annex ZA, which is an integral part of this document.

This European Standard includes an informative Annex A, dealing with factory production control, informative Annex B, dealing with special applications and an informative Annex C dealing with the release of dangerous substances.

This document is one part of the European Standard on "*Products and systems for the protection and repair of concrete structures – Definitions, requirements, quality control and evaluation of conformity*". The other parts are listed below:

- *Part 1: Definitions*
- *Part 2: Surface protection systems for concretes*
- *Part 4: Structural bonding*
- *Part 5: Concrete injection*
- *Part 6: Anchoring of reinforcing steel bar¹*
- *Part 7: Reinforcement corrosion protection¹*
- *Part 8: Quality control and evaluation of conformity*
- *Part 9: General principles for use of products and systems²*
- *Part 10: Site application of products and systems and quality control of the works*

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.

¹ To be published.

² ENV 1504-9 will be modified when adopted as EN according to finalisation of this European Standard.

1 Scope

This European Standard specifies requirements for the identification, performance (including durability) and safety of products and systems to be used for the structural and non-structural repair of concrete structures.

This European Standard covers repair mortars and concretes, possibly used in conjunction with other products and systems, to restore and/or to replace defective concrete and to protect reinforcement, necessary to extend the service life of a concrete structure exhibiting deterioration. The fields of application covered are in accordance with ENV 1504-9 as follows:

Principle 3	Concrete restoration	Method 3.1	Applying mortar by hand
		Method 3.2	Recasting with concrete
		Method 3.3	Spraying mortar or concrete
Principle 4	Structural strengthening	Method 4.4	Adding mortar or concrete
Principle 7	Preserving or restoring passivity	Method 7.1	Increasing cover to reinforcement with mortar or concrete
		Method 7.2	Replacing contaminated 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 1015-17, *Methods of test for mortars for masonry – Part 17: Determination of water-soluble chloride content of fresh mortars*

EN 1504-1:2005, *Products and systems for the protection and repair of concrete structures – Definitions requirements, quality control and evaluation of conformity – Part 1: Definitions*

EN 1504-8:2004, *Products and systems for the protection and repair of concrete structures – Definitions, requirements, quality control and evaluation of conformity – Part 8: Quality control and evaluation of conformity*

ENV 1504-9:1997, *Products and systems for the protection and repair of concrete structures – Definitions, requirements, quality control and evaluation of conformity – Part 9: General principles for use of products and systems*

EN 1542, *Products and systems for the protection and repair of concrete structures – Test methods – Measurement of bond strength by pull-off*

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

EN 1767, *Products and systems for the protection and repair of concrete structures – Test methods – Infrared analysis*

EN 1770, *Products and systems for the protection and repair of concrete structures – Test methods – Determination of the coefficient of thermal expansion*

EN 1877-1, *Products and systems for the protection and repair of concrete structures – Test methods – Reactive functions related to epoxy resins – Part 1: Determination of epoxy equivalent*

- EN 1877-2, *Products and systems for the protection and repair of concrete structures – Test methods – Reactive functions related to epoxy resins – Part 2: Determination of amine functions using the total basicity number*
- EN 12190, *Products and systems for the protection and repair of concrete structures – Test methods – Determination of compressive strength of repair mortar*
- EN 12192-1, *Products and systems for the protection and repair of concrete structures – Granulometry analysis - Part 1: Test method for dry components of premixed mortar*
- EN 12617-4, *Products and systems for the protection and repair of concrete structures – Test methods – Part 4: Determination of shrinkage and expansion*
- EN 13036-4, *Road and airfield surface characteristics – Test methods – Part 4: Method for measurement of slip/skid resistance of a surface – The pendulum test*
- EN 13057, *Products and systems for the protection and repair of concrete structures – Test methods – Determination of resistance of capillary absorption*
- EN 13294, *Products and systems for the protection and repair of concrete structures – Test methods – Determination of stiffening time*
- EN 13295, *Products and systems for the protection and repair of concrete structures – Test methods – Determination of resistance to carbonation*
- EN 13395-1, *Products and systems for the protection and repair of concrete structures – Test methods – Determination of workability – Part 1: Test for flow of thixotropic mortars*
- EN 13395-2, *Products and systems for the protection and repair of concrete structures – Test methods – Determination of workability – Part 2: Test for flow of grout or mortar*
- EN 13395-3, *Products and systems for the protection and repair of concrete structures – Test methods – Determination of workability – Part 3: Test for flow of repair concrete*
- EN 13412, *Products and systems for the protection and repair of concrete structures – Test methods – Determination of modulus of elasticity in compression*
- EN 13501-1, *Fire classification of construction products and building elements – Part 1: Classification using test data from reaction to fire tests*
- EN 13687-1, *Products and systems for the protection and repair of concrete structures – Test methods – Determination of thermal compatibility – Part 1: Freeze-thaw cycling with de-icing salt immersion*
- EN 13687-2, *Products and systems for the protection and repair of concrete structures – Test methods – Determination of thermal compatibility – Part 2: Thunder-shower cycling (thermal shock)*
- EN 13687-4, *Products and systems for the protection and repair of concrete structures – Test methods – Determination of thermal compatibility – Part 4: Dry thermal cycling*
- EN ISO 3251, *Paints, varnishes and plastics – Determination of non-volatile matter content (ISO 3251:2003)*
- EN ISO 9514, *Paints and varnishes – Determination of the pot life of multicomponent coating systems – Preparation and conditioning of samples and guidelines for testing (ISO 9514:2005)*
- EN ISO 11358, *Plastics – Thermogravimetry (TG) of polymers – General principles (ISO 11358:1997)*