

Dfc[nj cX]`]b`g]ghYa]`nUnUy]rc`]b`dcdfUj]c`VYrcbg_]`_cbgfi _VY^E`8 YZ]b]WYŽ
nU hYj Yž`cbfrc`U`U`cj cgh]`]b`cj fYXbc]hYb`Y`g`UXbcgh]`E`- "XY. Gd`cýbU`bU`Y`U`nU
i dcfUvc`dfc[nj cXcj]`b`g]ghYa cj

Products and systems for the protection and repair of concrete structures - Definitions, Requirements, Quality control and evaluation of conformity - Part 9: General principles for the use of products and systems

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Produkte und Systeme für den Schutz und die Instandhaltung von Betontragwerken - Definitionen, Anforderungen, Qualitätsüberwachung und Beurteilung der Konformität - Teil 9: Allgemeine Prinzipien für die Anwendung von Produkten und Systemen

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Produits et systemes pour la protection et la réparation de structures en béton - Définitions, prescriptions, maîtrise de la qualité et évaluation de la conformité - Partie 9: Principes généraux d'utilisation des produits et systemes

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EUROPÄISCHE VORNORM

July 1997

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

Produits et systèmes pour la protection et la réparation de structures en béton - Définitions, prescriptions, maîtrise de la qualité et évaluation de la conformité - Partie 9: Principes généraux d'utilisation des produits et systèmes

Produkte und Systeme für den Schutz und die Instandsetzung von Betontragwerken - Definitionen, Anforderungen, Qualitätsüberwachung und Beurteilung der Konformität - Teil 9: Allgemeine Grundsätze für die Anwendung von Produkten und Systemen

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This European Prestandard (ENV) was approved by CEN on 1996-11-22 as a prospective standard for provisional application. The period of validity of this ENV is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the ENV can be converted into an European Standard (EN).

CEN members are required to announce the existence of this ENV in the same way as for an EN and to make the ENV available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the ENV) until the final decision about the possible conversion of the ENV into an EN is reached.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Contents

Foreword.....	4
Introduction	6
1 Scope	7
2 Normative references	8
3 Definitions	9
3.1 active coatings for concrete.....	9
3.2 active coatings for reinforcement	9
3.3 barrier coatings for concrete.....	9
3.4 barrier coatings for reinforcement.....	9
3.5 defect	10
3.6 design life	10
3.7 maintenance.....	10
3.8 passive/passivity	10
3.9 protection	10
3.10 repair	10
3.11 service life	10
3.12 substrate	10
4 Minimum requirements before protection and repair	10
4.1 General	10
4.2 Safety	11
4.3 Assessment of defects and their causes	11
5 Objectives of protection and repair.....	12
5.1 General.....	12
5.2 Options	12
5.3 Factors to be considered when choosing options	13
5.4 Choice of appropriate action	14
6 Basis for the choice of products and systems	15
6.1 General	15
6.2 Principles of protection and repair.....	15
7 Properties of products and systems required for compliance with the principles of protection and repair.....	19
7.1 General	19
7.2 Application conditions are specified in pr EN 1504-10	20
7.3 Required properties of products and systems	20
7.4 Methods which do not make use of specific products and systems	20
8 Maintenance following completion of protection or repair.....	21
9 Health, safety and the environment.....	21

Annex B (Informative)	25
Foreword	25
Introduction	25
B.1 Scope	25
B.2 Normative references	26
B.3 Definitions	26
B.4 Minimum requirements before protection or repair	26
B.5 Objectives of protection and repair	29
B.6 Procedures leading to the choice of products and systems	30
B.7 Properties of products and systems required for compliance with the principles of protection and repair	36
B.8 Maintenance following the completion of protection or repair	36
B.9 Health, safety and the environment	37

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST ENV 1504-9:1998

<https://standards.iteh.ai/catalog/standards/sist/7c9e30d6-c6a2-4430-9352-4d06e1f45382/sist-env-1504-9-1998>

Foreword

This European Prestandard has been prepared by Technical Committee CEN/TC 104 "Concrete - Performance, production, placing and compliance criteria", the secretariat of which is held by DIN.

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

This European Prestandard is a part of a series of Standards dealing with products and systems for the repair and the protection of concrete structures. The other parts of this Standard are :

- EN 1504-1 ¹⁾ Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 1 : General scope and definitions
- EN 1504-2 ¹⁾ Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 2 : Surface protection systems
- EN 1504-3 ¹⁾ 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
- EN 1504-4 ¹⁾ Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 4 : Structural bonding
- EN 1504-5 ¹⁾ Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 5 : Concrete injection
- EN 1504-6 ¹⁾ Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 6 : Grouting to anchor reinforcement or to fill external voids
- EN 1504-7 ¹⁾ Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 7 : Reinforcement corrosion prevention
- EN 1504-8 ¹⁾ 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
- EN 1504-10 ¹⁾ Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 10 : Site application of products and systems and quality control of the works

The content of this Prestandard may be subject to modification in details depending on finalisation of EN 1504 Parts 2-7. This is the reason for publishing it as an ENV.

¹⁾ This document is in preparation.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this European Prestandard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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Introduction

Protection and repair of concrete structures require complex design work. This Prestandard defines the principles for protection and repair of concrete structures which have suffered or may suffer damage or deterioration and gives guidance on the selection of products and systems which are appropriate for the intended use.

This Prestandard identifies key stages in the repair process :

- assessment of the condition of the structure ;
- identification of the causes of deterioration ;
- deciding the objectives of protection and repair ;
- selection of the appropriate principle(s) of protection and repair ;
- selection of methods ;
- definition of properties of products and systems ;
- specification of maintenance requirements following protection and repair.

This Prestandard includes an annex A (Informative) which will be subject to modification on the finalisation of other parts and may become normative when this Prestandard is converted into an EN.

This Prestandard contains an annex B (Informative) which provides guidance and background information on the normative text. The contents of this annex are numbered in the same way as the normative text to facilitate reference, but prefixed with "B".

1 Scope

This Prestandard sets out basic considerations for specification of protection and repair of plain and reinforced concrete structures with products and systems, which are specified in the EN 1504 series of Standards or any other relevant EN or European Technical Approval.

This Prestandard includes :

- a) the need for inspection, testing and assessment before, during and after repair ;
- b) protection from, and repair of defects caused by, the influence of the environments defined in EN 206 or other chemical substances ;
- c) the repair of defects from such causes as mechanical damage, differential settlement, loading (including seismic and impact loading), biological attack, inadequate construction or use of unsuitable construction materials ;
- d) protection and repair in order to decrease the progress of alkali-silica reaction ;
- e) meeting the required structural capacity in repair by :
 - 1) replacement or addition of embedded or external reinforcement ;
 - 2) filling of external voids between elements to ensure structural continuity ;
- f) meeting the required structural capacity by replacement or addition of concrete ;
- g) waterproofing as an integral part of protection and repair ;
- h) protection and repair of pavements, runways, hard standings and floors, as an integral part of protection and repair;
- i) methods of protection and repair including :
 - 1) treating cracks ;
 - 2) restoring passivity to reinforcement ;
 - 3) reducing the rate of corrosion of reinforcement by limiting moisture content ;
 - 4) reducing the rate of corrosion of reinforcement by electrochemical methods ;
 - 5) controlling corrosion of reinforcement with coatings ;
 - 6) protection and repair of pavements, runways, hard standings and floors, as an integral part of protection and repair.

This Prestandard does not cover special applications which include but are not limited to the examples listed below :

- j) repair of concrete structures damaged by fire ;

k) products and systems applied for any purpose other than the protection or repair of concrete structures ;

l) repair of defects of existing post-tensioned systems ;

The general principles, however, can be applied to such applications.

Site application such as :

m) the preparation of the concrete or reinforcement before application of products and systems ;

n) the minimum requirements as to environmental conditions for storage and application of products and systems ;

o) controlling the quality of the repair work,

are not covered by this Prestandard but by 1504-10.

2 Normative references

This European Prestandard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Prestandard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- [SIST ENV 1504-9:1998](https://standards.iteh.ai/catalog/standards/sist/7c9e30d6-c6a2-4430-9352-4d06c1455823/sist-env-1504-9-1998)
- EN 206 1) Concrete - Performance, production and conformity
- EN 1504-1 1) Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 1 General scope and definitions
- EN 1504-2 1) Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 2 Surface protection systems
- EN 1504-3 1) 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
- EN 1504-4 1) Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 4 Structural bonding

1) This document is in preparation.

- EN 1504-5 ¹⁾ Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 5 : Concrete injection
- EN 1504-6 ¹⁾ Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 6 : Grouting to anchor reinforcement or to fill external voids
- EN 1504-7 ¹⁾ Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 7 : Reinforcement corrosion prevention
- EN 1504-8 ¹⁾ 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
- EN 1504-10 ¹⁾ Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 10 : Application of products and systems and quality control of the works.

3 Definitions

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In addition to definitions in EN 1504-1, the following definitions apply :

3.1 active coatings for concrete

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Coatings applied to the concrete surface, which contain chemically active species which react with the hydrated cement paste in the concrete to reduce the size of the near-surface pores by deposition of crystalline products.

3.2 active coatings for reinforcement

Coatings applied to the reinforcement, which contain electrochemically active pigments which may function as inhibitors, or which by sacrificial galvanic reaction may provide localised cathodic protection.

3.3 barrier coatings for concrete

Coatings applied to the concrete surface to form a surface film to reduce the penetration of H₂O, CO₂, Cl etc into the concrete.

¹⁾ This document is in preparation.

3.4 barrier coatings for reinforcement

Coatings applied to reinforcement with the aim of isolating it from the pore water in the surrounding mortar and concrete.

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