BRITISH STANDARD

BS EN
1504-2:2004

Products and systems for the protection and repair of concrete structures — Definitions, requirements, quality control and evaluation of conformity —

Part 2: Surface protection systems for concrete

The European Standard EN 1504-2:2004 has the status of a British Standard

ICS 01.040.91; 91.080.40

BSI
British Standards

National foreword

This British Standard is the official English language version of EN 1504-2:2004.

EN 1504-2 is a candidate "harmonized" European standard and fully takes into account the requirements of the European Commission mandate M/128, Products related to concrete, mortar and grout, given under the EU Construction Products Directive (89/106/EEC), and is intended to lead to CE marking. The date of applicability of EN 1504-2 as a harmonized European Standard, i.e. the date after which this standard may be used for CE marking purposes, is subject to an announcement in the *Official Journal of the European Communities*.

The Commission in consultation with Member States has agreed a transition period for the co-existence of harmonized European Standards and their corresponding national standard(s). It is intended that this period will comprise a period, usually nine months, after the date of availability of the European Standard, during which any required changes to national regulations are to be made, followed by a further period, usually of 12 months, for the implementation of CE marking. At the end of this co-existence period, the national standard(s) will be withdrawn.

EN 1504-2 is the subject of transitional arrangements agreed under the Commission mandate. In the UK, there are no corresponding national standards of national origin.

The UK participation in its preparation was entrusted by Technical Committee B/517, Concrete, to Subcommittee B/517/8, Protection and repair of concrete structures, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the *BSI Catalogue* under the section entitled "International Standards Correspondence Index", or by using the "Search" facility of the *BSI Electronic Catalogue* or of British Standards Online.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 15 December 2004

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 46, an inside back cover and a back cover.

The BSI copyright notice displayed in this document indicates when the document was last issued.

Amendments issued since publication

Amd. No.	Date	Comments

ISBN 0 580 45057 0

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 1504-2

October 2004

ICS 01.040.91; 91.080.40

English version

Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 2: Surface protection systems for concrete

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 2: Systèmes de protection de surface pour béton

Produkte und Systeme für den Schutz und die Instandsetzung von Betontragwerken - Definitionen, Anforderungen, Qualitätsüberwachung und Beurteilung der Konformität - Teil 2: Oberflächenschutzsysteme für Beton

This European Standard was approved by CEN on 30 July 2004.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Ref. No. EN 1504-2:2004: E

Contents

Foreword

This document (EN 1504-2:2004) has been prepared by Technical Committee CEN/TC 104 “Concrete and related products”, the secretariat of which is held by DIN.

It has been developed by sub-committee 8 “Products and systems for the protection and repair of concrete structures“, the secretariat of which is held by AFNOR.

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 2005, and conflicting national standards shall be withdrawn at the latest by December 2008.

This document 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 Directive (89/106/EC).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

This Part of EN 1504 does not supersede any other European Standard.

This European Standard is one of a series of standards on products and systems for the repair and protection of concrete structures as listed below:

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

prEN 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, *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, *Products and systems for the protection and repair of concrete structures — Definitions, requirements, quality control and evaluation of conformity — Part 5: Concrete injection.*

prEN 1504-6[1)], *Products and systems for the protection and repair of concrete structures — Definitions, requirements, quality control and evaluation of conformity — Part 6: Anchoring of reinforcing steel bar.*

prEN 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 protection.*

EN 1504-8, *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[2)], *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.*

1) To be published.
2) ENV 1504-9 will have to be modified when adopted as EN according to finalisation of this standard.

EN 1504-10, *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.*

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.

Introduction

This document gives specifications for products and systems for the repair and protection of concrete structures. The test methods to which the specifications refer are the subject of separate standards.

Surface protection systems are used as “methods” for the following "principles" presented in ENV 1504-9:

for Principle 1 (PI): Protection against Ingress
- 1.1 hydrophobic impregnation (H)
- 1.2 impregnation (I)
- 1.3 coating (C)

for Principle 2 (MC): Moisture Control
- 2.1 hydrophobic impregnation (H)
- 2.2 coating (C)

for Principle 5 (PR) Physical Resistance/Surface Improvement
- 5.1 coating (C)
- 5.2 impregnation (I)

for Principle 6 (RC): Resistance to Chemicals
- 6.1 coating (C)

for Principle 8 (IR): Increasing Resistivity by Limiting moisture content:
- 8.1 hydrophobic impregnation (H):
- 8.2 coating (C)

1 Scope

This document specifies requirements for the identification, performance (including durability aspects), safety and evaluation of conformity of products and systems to be used for surface protection of concrete, to increase the durability of concrete and reinforced concrete structures, as well as for new concrete and for maintenance and repair work.

The surface protective methods covered by this document are the following:

— hydrophobic impregnation;

— impregnation;

— coating.

Flooring systems in buildings which are not intended to protect or reinstate the integrity of a concrete structure are standardised in EN 13813.

When products and systems complying with this standard are used in flooring applications that involve substantial mechanical loading, they should also satisfy the requirements of EN 13813.

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 206-1, *Concrete — Part 1: Specification, performance, production and conformity.*

EN 1015-3, *Methods of test for mortar for masonry — Part 3: Determination of consistence of fresh mortar (by flow table).*

EN 1015-6, *Methods of test for mortar for masonry — Part 6: Determination of bulk density of fresh mortar.*

EN 1015-7, *Methods of test for mortar for masonry — Part 7: Determination of air content of fresh mortar.*

EN 1062-3, *Paints and varnishes — Coating materials and coating systems for exterior masonry and concrete — Part 3: Determination and classification of liquid-water transmission rate (permeability).*

EN 1062-6, *Paints and varnishes — Coating materials and coating systems for exterior masonry and concrete — Part 6: Determination of carbon dioxide permeability.*

EN 1062-7, *Paints and varnishes — Coating materials and coating systems for exterior masonry and concrete — Part 7: Determination of crack bridging properties.*

EN 1062-11:2002, *Paints and varnishes — Coating materials and coating systems for exterior masonry and concrete — Part 11: Methods of conditioning before testing.*

EN 1081, *Resilient floor coverings — Determination of the electrical resistance.*

EN 1240, *Adhesives — Determination of hydroxyl value and/or hydroxyl content.*

EN 1242, *Adhesives — Determination of isocyanate content.*

EN 1504-1:1998, *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 the 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 12617-1, *Products and systems for the protection and repair of concrete structures — Test methods — Part 1: Determination of linear shrinkage for polymers and surface protection systems (SPS).*

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 13294, *Products and systems for the protection and repair of concrete structures — Test methods — Determination of stiffening time.*

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 13501-1, *Fire classification of construction products and building elements — Part 1: Classification using test data from reaction to fire tests.*

EN 13529, *Products and systems for the protection and repair of concrete structures — Test methods — Resistance to severe chemical attack.*

EN 13578, *Products and systems for the protection and repair of concrete structures — Test method — Compatibility on wet concrete.*

EN 13579, *Products and systems for the protection and repair of concrete structures — Test methods — Drying test for hydrophobic impregnation.*

EN 13580, *Products and systems for the protection and repair of concrete structures — Test methods — Water absorption and resistance to alkali for hydrophobic impregnation.*

EN 13581, *Products and systems for the protection and repair of concrete structures — Test methods — Determination of loss of mass of hydrophobic impregnated concrete after freeze-thaw salt stress.*

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 13687-3, *Products and systems for the protection and repair of concrete structures — Test methods — Determination of thermal compatibility — Part 3: Thermal cycling without de-icing salt impact.*

EN 13687-5, *Products and systems for the protection and repair of concrete structures — Test methods — Determination of thermal compatibility — Part 5: Resistance to temperature shock.*

prEN 14630, *Products and systems for the protection an repair of concrete structures — Test methods — Determination of carbonation depth in hardened concrete by the phenolphthalein method.*

EN ISO 868, *Plastics and ebonite — Determination of indentation hardness by means of a durometer (Shore hardness) (ISO 868:2003).*

EN ISO 1517, *Paints and varnishes — Surface-drying test — Ballotini method (ISO 1517:1973).*

EN ISO 2409, *Paints and varnishes — Cross-cut test (ISO 2409:1992).*

EN ISO 2431, *Paints and varnishes — Determination of flow time by use of flow cups (ISO 2431:1993, including Technical Corrigendum 1:1994).*

EN ISO 2808:1999, *Paints and varnishes — Determination of film thickness (ISO 2808:1997).*

EN ISO 2811-1, *Paints and varnishes — Determination of density — Part 1: Pyknometer method (ISO 2811-1:1997).*

EN ISO 2811-2, *Paints and varnishes — Determination of density — Part 2: Immersed body (plummet) method (ISO 2811-2:1997).*

EN ISO 2812-1, *Paints and varnishes — Determination of resistance to liquids — Part 1: General methods (ISO 2812-1:1993).*

EN ISO 2815, *Paints and varnishes — Buchholz indentation test (ISO 2815:2003).*

EN ISO 3219, *Plastics — Polymers/resins in the liquid state or as emulsions or dispersions — Determination of viscosity using a rotational viscometer with defined shear rate (ISO 3219:1993).*

EN ISO 3251, *Paints, varnishes and plastics — Determination of non-volatile-matter content (ISO 3251:2003).*

EN ISO 3451-1, *Plastics — Determination of ash — Part 1: General methods (ISO 3451-1:1997).*

EN ISO 4628-2, *Paints and varnishes — Evaluation of degradation of coatings — Designation of quantity and size of defects, and of intensity of uniform changes in appearance — Part 2: Assessment of degree of blistering (ISO 4628-2:2003).*

EN ISO 4628-4, *Paints and varnishes — Evaluation of degradation of coatings — Designation of quantity and size of defects, and of intensity of uniform changes in appearance — Part 4: Assessment of degree of cracking (ISO 4628-4:2003).*

EN ISO 4628-5, *Paints and varnishes — Evaluation of degradation of coatings — Designation of quantity and size of defects, and of intensity of uniform changes in appearance — Part 5: Assessment of degree of flaking (ISO 4628-5:2003).*

EN ISO 5470-1, *Rubber- or plastics-coated fabrics — Determination of abrasion resistance — Part 1: Taber abrader (ISO 5470-1:1999).*

EN ISO 6272-1, *Paints and varnishes - Rapid-deformation (impact resistance) tests - Part 1: Falling-weight test, large-area indenter (ISO 6272-1:2002).*

EN ISO 7783-1, *Paints and varnishes — Determination of water-vapour transmission rate — Part 1: Dish method for free films (ISO 7783-1:1996, including Technical Corrigendum 1:1998).*

EN ISO 7783-2, *Paints and varnishes — Coating materials and coating systems for exterior masonry and concrete — Part 2: Determination and classification of water-vapour transmission rate (permeability) (ISO 7783-2:1999).*

EN ISO 9514, *Paints and varnishes — Determination of the pot-life of liquid systems — Preparation and conditioning of samples and guidelines for testing (ISO 9514:1992).*

EN ISO 11358, *Plastics — Thermogravimetry (TG) of polymers — General principles (ISO 11358:1997).*

3 Terms and definitions

For the purposes of this document, the following terms and definitions given in EN 1504-1:1998, EN 1504-8:2004, ENV 1504-9:1997 and the following apply.

3.1
hydrophobic impregnation
treatment of concrete to produce a water-repellent surface. The pores and capillaries are internally coated, but they are not filled. There is no film on the surface of the concrete and there is little or no change in its appearance

NOTE Active compounds may be, for example, silanes or siloxanes.

Figure 1 — Schematic drawing of a typical hydrophobic impregnation

3.2
impregnation
treatment of concrete to reduce the surface porosity and to strengthen the surface. The pores and capillaries are partially or totally filled

NOTE 1 This treatment usually leads to a discontinuous, thin film on the concrete surface.

NOTE 2 Binders may be, for example, organic polymers.

Figure 2 — Schematic drawing of a typical impregnation

3.3
coating
treatment to produce a continuous protective layer on the surface of concrete

NOTE 1 Thickness is typically of 0,1 mm to 5,0 mm. Particular applications may require a thickness greater than 5 mm.

NOTE 2 Binders may be, for example, organic polymers, organic polymers with cement as a filler or hydraulic cement modified with polymer dispersion.

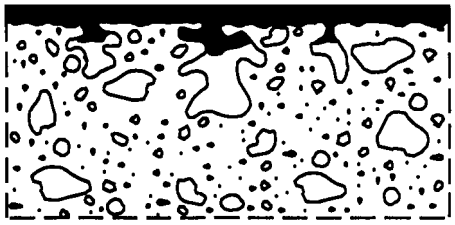

Figure 3 — Schematic drawing of a typical coating

3.4
layer thickness
dry film thickness defined in EN ISO 2808:1999, Clause 4. It should be determined according to EN ISO 2808.

For the purposes of this standard:

— the mean dry film thickness is defined in EN ISO 2808:1999, 4.8;

— the minimum dry film thickness ($d_{\min}$) is to be taken as the lower 5 % fractile of the gaussian distribution of the thickness measurements;

— the absolute minimum dry film thickness that may be achieved on application is at least 0,7 $d_{\min}$

4 Performance characteristics for intended uses

4.1 General

Table 1 lists the performance characteristics of surface protection products and systems which are required for “all intended uses” or “certain intended uses” according to the “principles” and “methods” defined in ENV 1504-9. Performance characteristics which are required for “all intended uses” are marked with ■. All other performance characteristics which are marked with □ may be required for “certain intended uses”.

Performance characteristics and requirements for each method are given in 5.2.

4.2 Selection of appropriate products or systems

The surface protection system shall be selected based on an assessment of the actual or potential causes of deterioration and consideration of the appropriate principles and methods for protection and repair specified in ENV 1504-9. The process leading to the choice of products and systems can be described briefly as follows:

a) Assessment of stresses, defects and damages, their classification and determination of their causes.

b) On the basis of the assessment the “principle(s)” for protection and repair of the concrete structure should be chosen.

c) When the “principle(s)” is(are) defined the appropriate “method” (Hydrophobic impregnation, impregnation and coating) to fulfil one or several principle(s) has to be chosen. The corresponding squares ■ represent in every case basic compulsory characteristics (see Table 1).

d) Based on the diagnosis further characteristics for the products and systems to be used may be selected, if they are necessary for certain intended use.

   The “requirements” for the set of characteristics of the products and systems for the intended use are given in 5.2 (see Tables 3, 4 and 5).

Table 1 — Performance characteristics for surface protection products and systems related to the "principles" and "methods" defined in ENV 1504-9

No.	Test methods defined in	Principles	1. Ingress protection			2. Moisture control		5. Physical Resistance		6. Chemical Resistance	8. Increasing resistivity	
		Performance Characteristics **Methods**	**1.1 (H)**	**1.2 (I)**	**1.3 (C)**	**2.1 (H)**	**2.2 (C)**	**5.1(C)**	**5.2(I)**	**6.1 (C)**	**8.1 (H)**	**8.2 (C)**
1	2	3	4	5	6	7	8	9	10	11	12	13
1	EN 12617-1	Linear shrinkage			☐		☐	☐		☐		☐
2	EN 12190	Compressive strength						☐		☐		
3	EN 1770	Coefficient of thermal expansion			☐		☐	☐		☐		☐
4	EN ISO 5470-1	Abrasion resistance						■	■			
5	EN ISO 2409	Adhesion by cross-cut test [a]			☐		☐	☐		☐		☐
6	EN 1062-6	Permeability to CO_2			■							
7	EN ISO 7783-1 EN ISO 7783-2	Permeability to water vapour		☐	■		■					■
8	EN 1062-3	Capillary absorption and permeability to water		■	■		■	■	■	☐		■
9		Adhesion after thermal compatibility										
	EN 13687-1	Freeze-thaw cycling with de-icing salt immersion		☐	☐		☐	☐	☐	☐		☐
	EN 13687-2	Thunder-shower cycling (thermal shock)		☐	☐		☐	☐	☐	☐		☐
	EN 13687-3	Thermal cycling without de-icing salt impact		☐	☐		☐	☐	☐	☐		☐
	EN 1062-11:2002	4.1: Aging: 7 days at 70 °C		☐	☐		☐	☐	☐	☐		☐
10	EN 13687-5	Resistance to thermal shock			☐			☐		☐		
11	EN ISO 2812-1	Chemical resistance		☐	☐							
12	EN 13529	Resistance to severe chemical attack								■		
13	EN 1062-7	Crack bridging ability			☐		☐	☐		☐		☐
14	EN ISO 6272-1	Impact resistance						■	■			
15	EN 1542	Adhesion strength by pull-off test		☐	■		■	■	■	■		■
16	EN 13501-1	Fire classification of construction products and building elements — Part 1: Classification using test data from reaction to fire test		☐	☐		☐	☐	☐	☐		☐
17	EN 13581	Resistance against freeze-thaw salt stress of impregnated hydrophobic concrete (Determination of loss of mass)	☐			☐					☐	
18	EN 13036-4	Slip/skid resistance		☐	☐		☐	☐	☐	☐		☐
19	see Table 3	Depth of penetration	■	■		■			■		■	
20	EN 1062-11:2002	4.2: Behaviour after artificial weathering			☐		☐	☐		☐		☐
21	EN 1081	Antistatic behaviour			☐		☐	☐		☐		☐

Table 1 *(concluded)*

No.	Test methods defined in	Principles	1. Ingress protection			2. Moisture control		5. Physical Resistance		6. Chemical Resistance	8. Increasing resistivity	
		Performance Characteristics **Methods**	**1.1 (H)**	**1.2 (I)**	**1.3 (C)**	**2.1 (H)**	**2.2 (C)**	**5.1(C)**	**5.2(I)**	**6.1 (C)**	**8.1 (H)**	**8.2 (C)**
1	2	3	4	5	6	7	8	9	10	11	12	13
22	EN 13578	Adhesion on wet concrete			☐		☐	☐		☐		
23	EN 13580	Water absorption and resistance to alkali test for hydrophobic impregnation	■			■					■	
24	EN 13579	Drying rate for hydrophobic impregnation	■			■					■	
25	subject to national standards and national regulations	Diffusion of chloride ions	☐	☐	☐							

H Hydrophobic impregnation

I Impregnation

C Coating

■ characteristic for all intended uses

☐ characteristic for certain intended uses within the scope of ENV 1504-9:1997 (see also Tables 3, 4, 5)

[a] This test is for comparison to the pull-off test see note to item 5 in Table 5

5 Requirements

5.1 Identification requirements

The manufacturer shall undertake selected representative initial identification tests for the product or system as specified in Table 2 and Annex A. These tests may be used to confirm the composition of the product at any time. Acceptable tolerances are given in Table 2. The manufacturer shall hold the test records.

Table 2 — Identification tests

Identification characteristics/Property	Test method	Tolerances[a]
1	2	3
Identification of the components		
General appearance and colour	Visual	Uniform and similar to the description provided by the manufacturer
Density — Pyknometer method or — Immersed body method	 EN ISO 2811-1 EN ISO 2811-2	 ±3 % ±3%
Infrared spectrum	EN 1767	The positions and relative intensities of the main absorption bands shall match those of the reference spectrum
Epoxy equivalent	EN 1877-1	±5 %
Amine functions	EN 1877-2	±6 %
Hydroxyl value	EN 1240	±10 %
Isocyanate content	EN 1242	±10 %
Volatile and non-volatile matter	EN ISO 3251	±5 %
Ash content	EN ISO 3451-1	±5 %
Thermogravimetry	EN ISO 11358	Confirmed by comparison and: ±5 % with respect to loss of mass at 600 °C
Flow time	EN ISO 2431	±15 %
Viscosity	EN ISO 3219	±20 %
Particle size distribution of dry components	EN 12192-1	>2 mm: ±6 % abs. 0,063 mm – 2 mm: ±4 % abs. <0,063 mm: ±2 % abs.
Identification of the fresh mixture		
Surface- dry – glass beads method	EN ISO 1517	±10 %
Pot-life	EN ISO 9514	±15 %
Progress in shore A or D hardness after 1, 3 and 7 days	EN ISO 868	±3 units shore A or D after 7 days
Consistence Air content Bulk density Workability — flow of mortar Stiffening time	EN 1015-3 EN 1015-7 EN 12190 and EN 1015-6 EN 13395-2 EN 13294	±15 % or 20 mm ±2 % (abs.) ±5 % ±15 % ±20 %

[a] Deviation from the manufacturer's documented value.

5.2 Performance requirements

The performance requirements of surface protection systems are summarized in Tables 3 to 5.

The manufacturer shall undertake initial performance tests on surface protection products and systems in accordance with Tables 3 to 5 and the product shall comply with the requirements.

All abbreviations, units and symbols used in these Tables under the heading “Requirements“ are described in the relevant test methods.

Test samples shall be prepared according to the manufacturers instructions and in a horizontal or vertical orientation that is similar to that in which they are intended to be used.

5.3 Release of dangerous substances

Hardened surface protection systems shall not release substances dangerous to health, hygiene and the environment. See Annex C (informative).

5.4 Reaction to fire

For surface protection systems to be used in elements subject to fire the manufacturer shall declare the reaction to fire classification of the hardened surface protection system.

Hardened surface protection systems containing 1 % or less by mass or volume (whichever is the most onerous) of homogeneously distributed organic materials, the declaration may be fire Class A1 without the need to test.

Hardened surface protection products containing more than 1 % by mass or volume (whichever is the most onerous) of homogeneously distributed organic materials, shall be classified in accordance with EN 13501-1 and the appropriate reaction to fire class declared.

6 Sampling

General requirements for sampling procedures are set out in EN 1504-8.

7 Evaluation of conformity

7.1 General

General requirements for procedures for evaluation of conformity are set out in EN 1504-8.

7.2 Initial type testing

General requirements for initial type testing are set out in EN 1504-8.

7.3 Factory production control

The manufacturer shall operate a factory production control (fpc) system to ensure that production continues to meet the identification and performance requirements set out in 5.1 and 5.2 of this document.

For fpc the manufacturer can select representative identification or performance tests or may select other test methods. Such other fpc test methods shall be correlated to the initial identification and performance test methods to ensure conformity of the product to the requirements of this standard. Such correlation shall be clearly documented in the fpc system.

The fpc shall be undertaken in accordance with EN 1504-8.

Guidance on the frequency of identification and performance tests for fpc is given in Annex A (informative). Frequencies may need to be increased during initial production or following an incident of non-conformity.

Any deviation from this guidance shall be justified by documented evidence which demonstrates equivalence.

7.4 Assessment, surveillance and certification of factory production control

Provisions for assessment, surveillance and certification of fpc are given in EN 1504-8:2004, Annex A (informative).

8 Marking and labelling

Requirements for marking and labelling are set out in Clause 6 of EN 1504-8:2004.

NOTE For CE marking and labelling Clause ZA.3 applies.

Table 3 — Performance requirements for hydrophobic impregnation

No. of Table 1	Performance Characteristics	Test method	Requirements
1	2	3	4
17	Loss of mass after freeze-thaw-salt stress This test is only necessary for structures which may come in contact with de-icing salts.	EN 13581	The loss of mass of the surface of the impregnated specimen must occur at least 20 cycles later than that of the not impregnated specimen.
19	Depth of penetration measured on 100 mm concrete test cubes C (0,70) according to EN 1766 (not C (0,45) as given in EN 13579). After 28 days of curing according to EN 1766, the samples shall be stored according to the dry procedure given in EN 1766. The treatment with hydrophobic agent shall be in accordance to EN 13579.	The depth of penetration is measured with an accuracy of 0,5 mm by breaking open the treated specimen and spraying the fracture surface with water (using the phenolphthalein test method with water instead of phenolphthalein) according to prEN 14630. The depth of the dry zone is taken as the effective depth of hydrophobic impregnation.	class I: < 10 mm class II: ≥ 10 mm
23	Water absorption and resistance to alkali	EN 13580	Absorption ratio <7,5 %, compared with the untreated specimen Absorption ratio (after immersion in alkali solution) <10 %.
24	Drying rate coefficient	EN 13579	class I: > 30 % class II: > 10 %
25	Diffusion of chloride ions [a]	subject to national standards and national regulations	

[a] When the capillary absorption to water is < 0,01 $kg/m^2 \cdot h^{0,5}$ the diffusion of chloride ions is not to be expected.

Table 4 — Performance Requirements for Impregnation

No. of Table 1	Performance Characteristics	Test method	Requirements
1	2	3	4
4	Abrasion resistance (Taber test) measured on a 10 mm slice taken from 100 mm impregnated concrete test cubes C (0,70) according to EN 1766 NOTE Relevant test methods according to EN 13813 are also acceptable for flooring systems.	EN ISO 5470-1	abrading wheel H22 / rotation 1 000 cycles/load 1 000 g at least 30 % improvement in abrasion resistance in comparison with a non impregnated sample
7	Permeability to water vapour	EN ISO 7783-1 EN ISO 7783-2	class I s_D < 5 m (permeable to water vapour) class II 5 m ≤ s_D ≤ 50 m (not dense against water vapour and not permeable to water vapour, e.g. in-door paintings) class III s_D > 50 m (dense against water vapour)
8	Capillary absorption and permeability to water	EN 1062-3	w < 0,1 kg/m² · $h^{0,5}$
9	Adhesion after thermal compatibility Reference substrate: C (0,70) according to EN 1766 For outside application with de-icing salt influence: Freeze-thaw cycling with de-icing salt immersion (20 ×) and Thunder shower cycling (thermal shock) (10 ×) For outside application without de-icing salt influence: Thermal cycling without de-icing salt impact (20 ×)	 EN 13687-1 EN 13687-2 EN 13687-3	Thermal cycling acc. to EN 13687-1 and EN 13687-2 is carried out on the same sample, starting with the thunder shower cycling. After thermal cycling a) no bubbles, cracks and delamination b) Pull-off-test Application/Load — Average [N/mm²] vertical — ≥0,8 (0,5)[b] horizontal without mechanical load — ≥1,0 (0,7)[b] horizontal with mechanical load — ≥1,5 (1,0)[b]
11	Chemical resistance (absorbent media method)	EN ISO 2812-1	Resistance against influence of the relevant environments shall be as defined in EN 206-1 after 30 days exposure; no visual defects
14	Impact resistance measured on coated concrete samples MC (0,40) according to EN 1766 NOTE The thickness and expected impact load influence the choice of the class.	EN ISO 6272-1	After loading no cracks and delamination Class I: ≥4 Nm Class II: ≥10 Nm Class III: ≥20 Nm

Table 4 (*concluded*)

No. of Table 1	Performance Characteristics	Test method	Requirements
1	2	3	4
15	Pull-off on reference substrate: C (0,70) acc. to EN 1766 curing 7 days at normal climate and ageing 7 days at 70 °C in comparison with the non impregnated specimen	EN 1542	Application/Load — Average [N/mm²] vertical — ≥0,8 (0,5)[b] horizontal without trafficking — ≥1,0 (0,7)[b] horizontal with trafficking — ≥1,5 (1,0)[b]
16	Reaction to Fire after application	EN 13501-1	Euroclasses
18	Slip/Skid resistance	EN 13036-4	Class I: ≥40 units wet tested (inside wet surfaces), Class II: ≥40 units dry tested (inside dry surfaces), Class III: ≥55 units wet tested (outside) Or acc. to national regulations
19	Depth of penetration measured on 100 mm impregnated concrete test cubes C (0,70) according to EN 1766 (not C (0,45) as given in EN 13579). After 28 days of curing according to EN 1766, the samples shall be stored according to the dry procedure given in EN 1766. The treatment with impregnation shall be in accordance to the manufacturer's instruction	The depth of penetration is defined with an exactness of 0,5 mm by breaking open the treated specimen and spraying the fracture surface with water (using the phenolphthalein test method with water instead of phenolphthalein) according to prEN 14630. The depth of the dry zone is taken as the effective depth of impregnation.	≥5 mm.
25	Diffusion of chloride ions [a]	subject to national standards and national regulations	

[a] When the capillary absorption to water is <0,01 kg/m$^2 \cdot h^{0,5}$ the diffusion of chloride ions is not to be expected.

[b] The value in brackets is the lowest accepted value of any reading.

Table 5 — Performance requirements for coatings

No. of Table 1	Performance Characteristics	Test method	Requirements
1	2	3	4
1	Linear shrinkage appropriate only for rigid systems [b] with application thickness ≥3 mm	EN 12617-1	≤0,3 %
2	Compressive strength	EN 12190	Class I: ≥35 N/mm² (for traffic with polyamide wheels) Class II: ≥50 N/mm² (for traffic with steel wheels)
3	Coefficient of thermal expansion Only for coatings with a thickness ≥1 mm	EN 1770	Rigid systems [b] for outside application: $\alpha_T \leq 30 \times 10^{-6}\ K^{-1}$
4	Abrasion resistance (Taber test) NOTE Relevant test methods acc. to EN 13813 are also acceptable for flooring systems.	EN ISO 5470-1	weight loss less than 3 000 mg abrading wheel H22/rotation 1 000 cycles/load 1 000 g
5	Cross cut test measured on coated concrete samples MC (0,40) according to EN 1766. This test is only for thin smooth films up to 0,5 mm total dry thickness. NOTE The test is carried out in the basic test additionally to the pull-off test. Therefore, onsite the cross cut performance test may replace the pull-off test.	EN ISO 2409 width of cut: 4 mm	cross cut value: ≤ GT 2
6	Permeability to CO_2	EN 1062-6 (Conditioning of the samples before testing should be in accordance with prEN 1062-11:2002,4.3)	Permeability to CO_2 s_D > 50 m
7	Permeability to water vapour	EN ISO 7783-1 EN ISO 7783-2	class I s_D < 5 m (permeable to water vapour) class II 5 m ≤ s_D ≤ 50 m class III s_D >50 m (not permeable to water vapour)
8	Capillary absorption and permeability to water	EN 1062-3	w < 0,1 kg/m² · $h^{0,5}$

Table 5 (*continued*)

No. of Table 1	Performance Characteristics	Test method	Requirements
1	2	3	4
9	Adhesion after thermal compatibility Reference substrate: CC (0,40) according to EN 1766 For outside application with de-icing salt influence: Freeze salt cycling with de-icing salt immersion (50 ×) and Thunder shower cycling (thermal shock) (10 ×) For outside application without de-icing salt influence: Thermal cycling without de-icing salt impact (20 ×) For inside application Ageing: 7 days at 70 °C	 EN 13687-1 EN 13687-2 EN 13687-3 EN 1062-11	Thermal cycling acc. to EN 13687-1 and EN 13687-2 is carried out on the same sample, starting with the thunder shower cycling. After thermal cycling a) no bubbles, cracks and delamination b) Pull-off-test Average [N/mm^2] Crack-bridging or flexible systems / Rigid systems [c] without trafficking: ≥ 0,8 (0,5)[b] / ≥1,0 (0,7)[b] with trafficking: ≥ 1,5 (1,0)[b] / ≥2,0 (1,5)[b]
10	Resistance to thermal shock (1 ×)	EN 13687-5	
11	Chemical resistance (absorbent media method)	EN ISO 2812-1	Resistance against influence of the relevant environments shall be as defined in EN 206-1 after 30 days exposure; no visual defects
12	Resistance to severe chemical attack Class I: 3 d without pressure Class II: 28 d without pressure Class III: 28 d with pressure It is recommended to use testing liquids from the 20 classes given in EN 13529 covering all types of common chemicals. Other testing liquids can be agreed between the interested parties.	EN 13529	Reduction in hardness of less than 50% when measured according to Buchholz method, EN ISO 2815, or Shore method EN ISO 868 24 h after the coating is removed from immersion in the test liquid.
13	Crack bridging ability After conditioning in according to EN 1062-11:2002, 4.1 – 7 days at 70 °C for reactive resin systems 4.2 – UV radiation and humidity for dispersion systems	EN 1062-7	The required classes and the test conditions are given in Tables 6 and 7. The required crack bridging ability shall be selected by the designer with respect to local conditions (climate, crack widths and crack movement). After testing the required class no failures may occur.
14	Impact resistance measured on coated concrete samples MC (0,40) according to EN 1766 NOTE The thickness and expected impact load influence the choice of the class.	EN ISO 6272-1	After loading no cracks and delamination Class I: ≥4 Nm Class II: ≥10 Nm Class III: ≥20 Nm

Table 5 (*continued*)

No. of Table 1	Performance Characteristics	Test method	Requirements
1	2	3	4
15	Pull-off test Reference substrate: MC (0,40) as specified in EN 1766 curing — 28 days for one component systems, cement containing and PCC-systems — 7 days for reactive resin systems.	EN 1542	Average [N/mm²] Crack-bridging or/ flexible systems / Rigid systems[c] without trafficking: ≥0,8 (0,5)[b] / ≥1,0 (0,7)[b] with trafficking: ≥1,5 (1,0)[b] / ≥2,0 (1,5)[b]
16	Reaction to fire after application	EN 13501-1	Euroclasses
18	Slip/skid resistance	EN 13036-4	Class I: >40 units wet tested (inside wet surfaces), Class II: >40 units dry tested (inside dry surfaces), Class III: >55 units wet tested (outside) Or acc. to national regulations
20	Artificial weathering according to EN 1062-11:2002, 4.2 (UV-radiation and humidity) only for outside application It shall be tested only white and RAL 7030.	EN 1062-11	After 2 000 h of artificial weathering: no blistering according to EN ISO 4628-2 no cracking according to EN ISO 4628-4 no flaking according to EN ISO 4628-5 Slight colour change, loss of gloss and chalking may be accept Table, but shall be described.
21	Antistatic behaviour	EN 1081	Class I: $>10^4$ and $<10^6$ Ω (Explosives) Class II: $>10^6$ and $<10^8$ Ω (Explosion hazardous substances)
22	Adhesion on wet concrete (Substrate: MC (0,40)	EN 13578	After loading: a) no blistering according to EN ISO 4628-2 no cracking according to EN ISO 4628-4 no flaking according to EN ISO 4628-5 b) Pull-off-strength ≥1,5 N/mm², the failure shall occur >50 % as concrete rupture This test is relevant for coatings intended to be applied on fresh concrete or concretes with a high moisture content

Table 5 *(concluded)*

No. of Table 1	Performance Characteristics	Test method	Requirements
1	2	3	4
25	Diffusion of chloride ions [a]	subject to national standards and national regulations	

[a] When the capillary absorption to water is <0,01 kg/m^2 · h^{0,5} the diffusion of chloride ions is not to be expected.

[b] The value in brackets is the lowest accepted value of any reading.

[c] Rigid coatings are coatings with shore D ≥ 60 according to EN ISO 868.

Table 6 — Test conditions in accordance with EN 1062-7 (Method A, continuous opening of the crack)

Class	Width of the bridged crack mm	Crack opening speed mm/min
A 1	>0,100	—
A 2	>0,250	0,05
A 3	>0,500	0,05
A 4	>1,250	0,5
A 5	>2,500	0,5

NOTE 1 As test temperature for the classes A 2 to A 5: –10 °C is recommended (A1: 21 °C).

Other test temperatures can be agreed between the interested parties

e.g.: 10 °C, 0 °C, –20 °C, –30 °C, –40 °C

The test temperature has to be included in brackets after the class (e.g. A4 (–20 °C)).

Table 7 — Test conditions in accordance with EN 1062-7 (Method B, cyclic opening of the crack)

Class	Test conditions
B 1	w_o = 0,15 mm w_u = 0,10 mm trapezoid n = 100 f = 0,03 Hz w = 0,05 mm
B 2	w_o = 0,15 mm w_u = 0,10 mm trapezoid n = 1 000 f = 0,03 Hz w = 0,05 mm
B 3.1	w_o = 0,30 mm w_u = 0,10 mm trapezoid n = 1 000 f = 0,03 Hz w = 0,20 mm
B 3.2	as in B 3.1, and w_L = ±0,05 sinus n = 20 000 f = 1 Hz
B 4.1	w_o = 0,50 mm w_u = 0,20 mm trapezoid n = 1 000 f = 0,03 Hz w = 0,30 mm
B 4.2	as in B 4.1, and w_L = ±0,05 sinus n = 20 000 f = 1 Hz
Explanation of symbols: f = frequence n = number of crack cycles w = change in crack width	w_L = load-dependent crack movement w_o = maximum crack width w_u = minimum crack width

NOTE 2 As test temperature for the classes B 1 to B 4.2: –10 °C is recommended.

Other test temperatures can be agreed between the interested parties

e.g.: 10 °C, 0 °C, –20 °C, –30 °C, –40 °C.

The test temperature has to be included in brackets after the class (e.g. B 3.1 (–20 °C)).

Annex A
(informative)

Minimum frequency of testing for factory production control

Table A.1 – Minimum frequencies

Characteristics/Property	Silane/Siloxane	Polymer-Solution Polymer-Dispersion	Epoxy resin	Polyurethane resin	Acrylic resin	Polymer modified cement composition
Tests on the components						
General appearance and colour	A	A	A	A	A	A
Density — Pyknometer method or — Immersed body method	A	A	A	A	A	A [a]
Infrared spectrum [d]	D	D	D	D	D	D [a]
Epoxy equivalent [d]	—	—	D	—	—	—
Amine functions [d]	—	—	D	—	—	—
Hydroxyl value [d]	—	—	—	D	—	—
Isocyanate content [d]	—	—	—	D	—	—
Volatile and non volatile matter	—	B	—	—	—	B [a]
Ash content	—	B	—	—	—	—
Thermogravimetry	—	D	D	D	D	D
Viscosity/flow time	A [b]	A	A	A	A	A [a]
Particle size distribution of dry components	—	—	C	C	C	C
Tests on the fresh mixture or the hardened samples						
Surface – dry – glass beads method	—	B	—	—	—	—
Pot-life	—	—	A	A	A	—
Progress in shore A or D hardness after 1, 3 and 7 days	—	—	B [c]	B [c]	B [c]	—
Volatile and non volatile matter	—	—	B [a]	B [a]	B [a]	—
Ash content	—	—	C	C	C	C
Consistence or workability or flow of mortar Bulk density Stiffening time	— — —	— — —	— — —	— — —	— — —	B B B

Table A.1 (*concluded*)

Characteristics/Property	Silane/Siloxane	Polymer-Solution Polymer-Dispersion	Epoxy resin	Polyurethane resin	Acrylic resin	Polymer modified cement composition
Performance characteristics						
Adhesion by Pull-off test	—	D	D	D	D	D
Depth of penetration	D	—	—	—	—	—

A every batch (as defined in EN 1504-8)

B every 10 batches, every two weeks, or every 1 000 tonnes, whichever is the sooner (that is, whichever requires the most frequent testing)

C twice per year

D once per year

[a] only for solvents or water containing products.

[b] alternative methods (e.g. refractive index) may be more appropriate if a correlation with viscosity can be demonstrated.

[c] only for flexible resins and products, where the pot-life can not be measured.

[d] documentation provided by a raw material supplier will be deemed to satisfy.

Annex B
(informative)

Examples of the application of the classification system in three individual cases

The list of requirements specified in thisstandard document is extensive. For each intended use a distinction is drawn between requirements that shall be met at all times and those that are subject to a decision taken by the designer on a case-to-case basis. This presupposes a very sound knowledge of the subject. The following Table lists, by way of example, the basic requirements that designers need to specify, depending on the structural analysis. The example given here is based on the options given in the materials standard EN 1504-2 on surface protection systems.

For three typical cases, the relevant performance characteristics are listed, combining those designated for all intended uses with those from the list for certain intended uses that are relevant to the specific application.

Table B.1 - Examples

No. according to Table 1	Test methods defined in	Performance characteristics	Example 1 1.3/2.2	Example 2 1.3/5.1/6.1	Example 3 1.3/5.1
1	EN 12617-1	Linear shrinkage		☒	
2	EN 12190	Compressive strength		☒	
4	EN ISO 5470-1	Abrasion resistance		☒	☒
6	EN 1062-6	Permeability to CO_2	☒	☒	☒
7	EN ISO 7783-2	Permeability to water vapour	☒	☒	☒
8	EN 1062-3	Capillary absorption and permeability to water	☒	☒	☒
9	EN 13687-1	Adhesion after thermal compatibility			
		Freeze-thaw cycling with de-icing salt immersion			☒
	EN 13687-2	Thunder shower cycling (thermal shock)	☒		☒
	EN 1062-11:2002	4.1: Aging 7 days at 70 °C		☒	
12	EN 13529	Resistance to severe chemical attack		☒	
13	EN 1062-7	Crack bridging ability			☒
14	EN ISO 6272-1	Impact resistance		☒	☒
15	EN 1542	Adhesion by Pull-off test	☒	☒	☒
18	EN 13036-4	Slip/Skid resistance		☒	☒
20	EN 1062-11:2002	4.2: Behaviour after artificial weathering	☒		☒

EXAMPLE 1 Coating system for exposed surfaces, not mechanically or chemically loaded, without de-icing salt influence acc. to the principles 1 (IP) and 2 (MC), see Table 1, 1.3 (C) and 2.2 (C).

EXAMPLE 2 Coating system for interior surfaces, mechanically and chemically loaded, in acc. to the principles 1 (IP), 5 (PR) and 6 (RC), see Table 1, 1.3 (C), 5.1 (C) and 6.1 (C).

EXAMPLE 3 Crack bridging coating system for exposed surfaces mechanically and low chemically loaded with de--icing salt influence in acc. to the principles 1 (IP) and 5 (PR), Table 1, 1.3 (C) and 5.1 (C).

Annex C
(informative)

Release of dangerous substances

In the absence of specific requirements relating to substances dangerous to health, hygiene and the environment in this standard; Annex ZA.1, paragraph “Warning” applies.

Annex ZA
(informative)

Clauses addressing the provisions of EU Construction Products Directive

ZA.1 Scope and relevant characteristics

This European Standard and this Annex ZA have been prepared under a mandate M/128 “Products related to concrete, mortar and grout” given to CEN by the European Commission and the European Free Trade Association.

The clauses of this and other European Standards shown in this annex meet the requirements of this Mandate given under the EU Construction Products Directive (89/106/EEC).

Compliance with these clauses confers a presumption of fitness of the surface protection products and systems covered by this annex for the intended uses indicated herein: reference shall be made to the information accompanying the CE marking.

WARNING — Other requirements and other EU Directives, not affecting the fitness for intended uses, can be applicable to the construction product falling within the scope of this annex.

NOTE 1 There may be other requirements relating to dangerous substances applicable to the products falling within the scope of this standard (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the EU Construction Products Directive, these requirements need also to be complied with, when and where they apply.

NOTE 2 An informative database of European and national provisions on dangerous substances is available at the Construction website on EUROPA (accessed through http://europa.eu.int/comm/enterprise/construction/internal/dangsub/dangmain.htm).

This annex establishes the conditions for the CE marking of the surface protection products and systems intended for the uses indicated in Tables ZA.1a to ZA.1g and shows the relevant clauses applicable.

The scope of this annex is defined in Tables ZA.1a to ZA.1g

NOTE 3 The qualification in Tables ZA.1a to ZA.1g “(where relevant)” applies to characteristics which are marked as being required” for certain intended” uses in Table 1.

Table ZA.1a — Scope and relevant clauses

Construction products:	**surface protection products — hydrophobic impregnation**		
Intended uses:	**— ingress protection (1.1)** **— moisture control (2.1)** **— increasing resistivity (8.1)**		
Essential characteristics	**Requirement clauses in this standard**	**level(s) or class(es)**	**Notes: (expression of results)**
Depth of penetration	5.2 Performance requirements Table 3 (19)	None	complying with the threshold value in mm
Water absorption and resistance to alkali	5.2 Performance requirements Table 3 (23)	None	complying with the threshold values in %
Drying rate for hydrophobic impregnation	5.2 Performance requirements Table 3 (24)	None	complying with the threshold value in %
Loss of mass after freeze-thaw salt stress (where relevant)	5.2 Performance requirements Table 3 (17)	None	20 cycles later in comparison with the not impregnated specimen
Dangerous substances	5.4 Dangerous substances	None	See NOTE 1 in ZA.1 and NOTE after Figure ZA.1. Manufacturer's declaration

Table ZA.1b — Scope and relevant clauses

Construction products: **surface protection products — impregnation** **Intended uses:** **— ingress protection (1.2)**			
Essential characteristics	**Requirement clauses in this standard**	**level(s) or class(es)**	**Notes: (expression of results)**
Water vapour permeability (where relevant)	5.2 Performance requirements Table 4 (7)	None	declared class
Capillary absorption and permeability to water	5.2 Performance requirements Table 4 (8)	None	complying with the threshold value in $kg/m^2 \times h^{0,5}$
Chemical resistance (where relevant)	5.2 Performance requirements Table 4 (11)	None	no visual defects
Thermal compatibility (where relevant)	5.2 Performance requirements Table 4 (9)	None	declared value subject to threshold
Adhesion strength by pull off test (where relevant)	5.2 Performance requirements Table 4 (15)	None	complying with the threshold value in N/mm^2
Reaction to fire	5.2 Performance requirements Table 4 (16)	Euroclasses	declared class
Skid resistance (where relevant)	5.2 Performance requirements Table 4 (18)	None	declared class
Depth of penetration	5.2 Performance requirements Table 4 (19)	None	complying with the threshold value in mm
Dangerous substances	5.4 Dangerous substances	None	See NOTE 1 in ZA.1 and NOTE after Figure ZA.1. Manufacturer's declaration

Table ZA.1c — Scope and relevant clauses

Construction products: surface protection products — impregnation **Intended uses:** — physical resistance (5.2)			
Essential characteristics	**Requirement clauses in this standard**	**level(s) or class(es)**	**Notes: (expression of results)**
Abrasion resistance	5.2 Performance requirements Table 4 (4)	None	complying with the threshold value in mg
Capillary absorption and permeability to water	5.2 Performance requirements Table 4 (8)	None	complying with the threshold value in $kg/m^2 \times h^{0,5}$
Thermal compatibility (where relevant)	5.2 Performance requirements Table 4 (9)	None	complying with the threshold value in N/mm^2
Impact resistance	5.2 Performance requirements Table 4 (14)	None	class 1, 2 or 3
Adhesion strength by pull off test	5.2 Performance requirements Table 4 (15)	None	complying with the threshold value in N/mm^2
Reaction to fire	5.2 Performance requirements Table 4 (16)	Euroclasses	declared class
Skid resistance (where relevant)	5.2 Performance requirements Table 4 (18)	None	declared class
Depth of penetration	5.2 Performance requirements Table 4 (19)	None	complying with the threshold value in mm
Dangerous substances	5.4 Dangerous substances	None	See NOTE 1 in ZA.1 and NOTE after Figure ZA.1. Manufacturer's declaration

Table ZA.1d — Scope and relevant clauses

Construction products: surface protection products — coating **Intended uses:** — ingress protection (1.3)			
Essential characteristics	**Requirement clauses in this standard**	**level(s) or class(es)**	**Notes: (expression of results)**
Linear shrinkage (where relevant)	5.2 Performance requirements Table 5 (1)	None	complying with the threshold value in %
Coefficient of thermal expansion (where relevant)	5.2 Performance requirements Table 5 (3)	None	complying with the threshold value in K^{-1}
Cross cut (where relevant)	5.2 Performance requirements Table 5 (5)	None	complying with the threshold value ≤ GT 2
Permeability to CO_2	5.2 Performance requirements Table 5 (6)	None	complying with the threshold value in m
Water vapour permeability	5.2 Performance requirements Table 5 (7)	None	declared class
Capillary absorption and permeability to water	5.2 Performance requirements Table 5 (8)	None	complying with the threshold value in $kg/m^2 \times h^{0,5}$
Thermal compatibility (where relevant)	5.2 Performance requirements Table 5 (9)	None	complying with the threshold value in N/mm^2
Resistance to thermal shock (where relevant)	5.2 Performance requirements Table 5 (10)	None	complying with the threshold value in N/mm^2
Chemical resistance (where relevant)	5.2 Performance requirements Table 5 (11)	None	no visual defects
Crack bridging ability (where relevant)	5.2 Performance requirements Table 5 (13)	None	declared class
Adhesion strength by pull off test	5.2 Performance requirements Table 5 (15)	None	complying with the threshold value in N/mm^2
Reaction to fire	5.2 Performance requirements Table 5 (16)	Euroclasses	declared class
Skid resistance (where relevant)	5.2 Performance requirements Table 5 (18)	None	declared class
Artificial weathering (where relevant)	5.2 Performance requirements Table 5 (20)	None	no visual defects
Antistatic behaviour (where relevant)	5.2 Performance requirements Table 5 (21)	None	declared class
Adhesion on wet concrete (where relevant)	5.2 Performance requirements Table 5 (22)	None	no visual defects
Dangerous substances	5.4 Dangerous Substances	None	See NOTE 1 in ZA.1 and NOTE after Figure ZA.1. Manufacturer's declaration

Table ZA.1e — Scope and relevant clauses

Construction products:	**surface protection products — coating**		
Intended uses:	**— moisture control (2.2) and** **— increasing resistivity (8.2)**		
Essential characteristics	**Requirement clauses in this standard**	**level(s) or class(es)**	**Notes: (expression of results)**
Linear shrinkage (where relevant)	5.2 Performance requirements Table 5 (1)	None	complying with the threshold value in %
Coefficient of thermal expansion (where relevant)	5.2. Performance requirements Table 5 (3)	None	complying with the threshold value pro K^{-1}
Cross cut (where relevant)	5.2 Performance requirements Table 5 (5)	None	complying with the threshold value ≤ GT 2
Water vapour permeability	5.2 Performance requirements Table 5 (7)	None	declared class
Capillary absorption and permeability to water	5.2 Performance requirements Table 5 (8)	None	complying with the threshold value in $kg/m^2 \times h^{0,5}$
Thermal compatibility (where relevant)	5.2 Performance requirements Table 5 (9)	None	complying with the threshold value in N/mm^2
Crack bridging ability (where relevant)	5.2 Performance requirements Table 5 (13)	None	declared class
Adhesion strength by pull off test	5.2 Performance requirements Table 5 (15)	None	complying with the threshold value in N/mm^2
Reaction to fire	5.2 Performance requirements Table 5 (16)	Euroclasses	declared class
Skid resistance (where relevant)	5.2 Performance requirements Table 5 (18)	None	declared class
Artificial weathering (where relevant)	5.2 Performance requirements Table 5 (20)	None	no visual defects
Antistatic behaviour (where relevant)	5.2 Performance requirements Table 5 (21)	None	declared class
Adhesion on wet concrete (where relevant)	5.2 Performance requirements Table 5 (22)	None	no visual defects
Dangerous substances	5.4 Dangerous Substances	None	See NOTE 1 in ZA.1 and NOTE after Figure ZA.1. Manufacturer's declaration

Table ZA.1f — Scope and relevant clauses

Construction products: surface protection products — coating **Intended uses:** — physical resistance (5.1)			
Essential characteristics	**Requirement clauses in this standard**	**level(s) or class(es)**	**Notes: (expression of results)**
Linear shrinkage (where relevant)	5.2 Performance requirements Table 5 (1)	None	complying with the threshold value in %
Compressive strength (where relevant)	5.2 Performance requirements Table 5 (2)	None	complying with the declared class
Coefficient of thermal expansion (where relevant)	5.2 Performance requirements Table 5 (3)	None	complying with the threshold value in K^{-1}
Abrasion resistance	5.2 Performance requirements Table 5 (4)	None	complying with the threshold value in mg
Cross cut (where relevant)	5.2 Performance requirements Table 5 (5)	None	complying with the threshold value ≤ GT 2
Capillary absorption and permeability to water	5.2 Performance requirements Table 5 (8)	None	complying with the threshold value in $kg/m^2 \times h^{0,5}$
Thermal compatibility (where relevant)	5.2 Performance requirements Table 5 (9)	None	complying with the threshold value in N/mm^2
Resistance to thermal shock	5.2 Performance requirements Table 5 (10)	None	complying with the threshold value in N/mm^2
Crack bridging ability (where relevant)	5.2 Performance requirements Table 5 (13)	None	declared class
Impact resistance	5.2 Performance requirements Table 5 (14)	None	class 1, 2 or 3
Adhesion strength by pull off test	5.2 Performance requirements Table 5 (15)	None	complying with the threshold value in N/mm^2
Reaction to fire	5.2 Performance requirements Table 5 (16)	Euroclasses	declared class
Skid resistance (where relevant)	5.2 Performance requirements Table 5 (18)	None	declared class
Artificial weathering (where relevant)	5.2 Performance requirements Table 5 (20)	None	no visual defects
Antistatic behaviour (where relevant)	5.2 Performance requirements Table 5 (21)	None	declared class
Adhesion on wet concrete (where relevant)	5.2 Performance requirements Table 5 (22)	None	no visual defects
Dangerous substances	5.4 Dangerous substances	None	See NOTE 1 in ZA.1 and NOTE after Figure ZA.1. Manufacturer's declaration

Table ZA.1g — Scope and relevant clauses

Construction products: **surface protection products — coating** **Intended uses:** **— chemical resistance (6.1)**			
Essential characteristics	**Requirement clauses in this standard**	**level(s) or class(es)**	**Notes: (expression of results)**
Linear shrinkage (where relevant)	5.2 Performance requirements Table 5 (1)	None	complying with the threshold value in %
Compressive strength (where relevant)	5.2 Performance requirements Table 5 (2)	None	complying with the threshold value in N/mm^2
Coefficient of thermal expansion (where relevant)	5.2 Performance requirements Table 5 (3)	None	complying with the threshold value in K^{-1}
Cross cut (where relevant)	5.2 Performance requirements Table 5 (5)	None	complying with the threshold value $\leq$ GT 2
Capillary absorption and permeability to water (where relevant)	5.2 Performance requirements Table 5 (8)	None	complying with the threshold value in $kg/m^2 \times h^{0,5}$
Thermal compatibility (where relevant)	5.2 Performance requirements Table 5 (9)	None	complying with the threshold value in N/mm^2
Resistance to thermal shock (where relevant)	5.2 Performance requirements Table 5 (10)	None	complying with the threshold value in N/mm^2
Resistance to severe chemical attack	5.2 Performance requirements Table 5 (12)	None	complying with the threshold value in %
Crack bridging ability (where relevant)	5.2 Performance requirements Table 5 (13)	None	declared class
Adhesion strength by pull off test	5.2 Performance requirements Table 5 (15)	None	complying with the threshold value in N/mm^2
Reaction to fire	5.2 Performance requirements Table 5 (16)	Euroclasses	declared class
Skid resistance (where relevant)	5.2 Performance requirements Table 5 (18)	None	declared class
Artificial weathering (where relevant)	5.2 Performance requirements Table 5 (20)	None	no visual defects
Antistatic behaviour (where relevant)	5.2 Performance requirements Table 5 (21)	None	declared class
Adhesion on wet concrete (where relevant)	5.2 Performance requirements Table 5 (22)	None	no visual defects
Dangerous substances	5.4 Dangerous substances	None	See NOTE 1 in ZA.1 and NOTE after Figure ZA.1. Manufacturer's declaration

The requirements on a certain essential characteristic is not of application in those Member States where there are no regulations for such characteristic. In this case, manufacturers willing to place their products in the market of these Member States are not obliged to determine nor to declare the performance of their products with regard to this characteristic and the option “no performance determined” in the information accompanying the CE mark may be used.

ZA.2 Attestation of conformity

ZA.2.1 System(s) of attestation of conformity

The system of attestation of conformity for the products indicated in Tables ZA.1a, to ZA.1g, in accordance with the decision of the Commission 1999/469/EC as amended, as given for this product family in Annex III of the Mandate M/128 “Products related to concrete, mortar and grout”, is shown in Table ZA.2 for the indicated intended use:

Table ZA.2 — System of attestation of conformity

Product(s) [6]	Intended use(s)	Level(s) or class(es)	Attestation of conformity system(s)
Concrete protection and repair products	For uses with low performance requirements in buildings and civil engineering works	—	4
	For uses in buildings and civil engineering works	—	2+
Concrete protection and repair products	For uses subject to reaction to fire regulations	A1*, A2*, B*, C*	1
		A1**, A2*, B**, C**, D, E	3
		(A1 to E)***, F	4
System 1: See CPD, Annex III.2.(i), without audit-testing of samples System 2+ : See CPD Annex III.2.(ii) (First possibility, including certification of the factory production control by an approved body on the basis of initial inspection of factory and of factory production control as well as of continuous surveillance, assessment and approval of factory production control. System 3: See CPD, Annex III.2.(ii), Second possibility System 4: See CPD Annex III.2.(ii), Third possibility			
* Products/materials for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material) ** Products/materials not covered by footnote (*) *** Products/materials that do not require to be tested for reaction to fire (e.g. Products/materials of class A1 according to the Decision 96/603/EC, as amended by Decision 2000/605/EC).			

The attestation of conformity of the surface protection products in Tables ZA.1a, to ZA.1g shall be based on the evaluation of conformity procedures indicated in Table(s) ZA.3a to ZA.3f resulting from the application of those clauses of this or other European Standards indicated therein.

Table ZA.3a — Assignment of evaluation of conformity tasks for surface protection products of Euroclasses A1*, A2*, B* or C*, intended for uses other than those with low performance subject to reaction to fire regulations (systems 2+ plus 1)

Tasks		Content of the task	Evaluation of conformity clauses to apply
Tasks for the manufacturer	Factory production control (F.P.C)	Parameters related to all characteristics in relevant Table ZA.1a to ZA.1g	EN 1504-8:2004, 5.3, 5.5 and 7.3 of this standard
	Further testing of samples taken at the factory	All relevant characteristics of relevant Table ZA.1a to ZA.1g	EN 1504-8:2004, 5.4
	Initial type testing	All relevant characteristics of relevant Table ZA.1a to ZA.1g except: Reaction to fire	EN 1504-8:2004, 5.2 and 5.3
Tasks for the notified body	Initial type testing	Reaction to fire	EN 1504-8:2004, 5.2 and 5.3
	Initial inspection of factory and of F.P.C.	Parameters related to all characteristics of relevant Table ZA.1a to ZA.1g	EN 1504-8:2004 5.3, 5.5 and 7.3 of this standard
	Continuous surveillance, assessments and approval of F.P.C.	Parameters related to all characteristics of relevant Table ZA.1a to ZA.1g, in particular: Reaction to fire	EN 1504-8:2004 5.3, 5.5, Clause 7 and 7.3 of this standard

Table ZA.3b — Assignment of evaluation of conformity tasks for surface protection products of Euroclasses A1*, A2*, B* or C*, intended for uses with low performance subject to reaction to fire regulations (systems 4 plus 1)

Tasks		Content of the task	Evaluation of conformity clauses to apply
Tasks for the manufacturer	Factory production control (F.P.C)	Parameters related to all characteristics in relevant Table ZA.1a to g	EN 1504-8:2004, 5.3, 5.5 and 7.3 of this standard
	Further testing of samples taken at the factory	All relevant characteristics of relevant Table ZA.1a to ZA.1g	EN 1504-8:2004, 5.4
	Initial type testing	All relevant characteristics of relevant Table ZA.1a to ZA.1g except: Reaction to fire	EN 1504-8:2004, 5.2 and 5.3
Tasks for the notified body	Initial type testing	Reaction to fire	EN 1504-8:2004, 5.2 and 5.3
	Initial inspection of factory and of F.P.C.	Parameters related to all characteristics of relevant Table ZA.1a to ZA.1g	EN 1504-8:2004, 5.3, 5.5 and 7.3 of this standard
	Continuous surveillance, assessments and approval of F.P.C.	Parameters related to all characteristics of relevant Table ZA.1a to ZA.1g, in particular: Reaction to fire	EN 1504-8:2004, 5.3, 5.5, Clause 7 and 7.3 of this standard

Table ZA.3c — Assignment of evaluation of conformity tasks for surface protection products of Euroclasses A1, A2**, B**, C**, D or E intended for uses other than those with low performance subject to reaction to fire regulations (systems 2+ plus 3)**

Tasks			Content of the task	Evaluation of conformity clauses to apply
Tasks for the manufacturer	Factory production control (F.P.C)		Parameters related to all characteristics in relevant Table ZA.1a to g	EN 1504-8:2004, 5.3, 5.5 and 7.3 of this standard
	Further testing of samples taken at the factory		All relevant characteristics of relevant Table ZA.1a to ZA.1g	EN 1504-8:2004, 5.4
	Initial type testing		All relevant characteristics of relevant Table ZA.1a to ZA.1g except: Reaction to fire	EN 1504-8:2004, 5.2 and 5.3
Tasks for the notified body	Initial type testing		Reaction to fire	EN 1504-8:2004, 5.2 and 5.3
	Certification of F.P.C. on the basis of	Initial inspection of factory and of F.P.C.	Parameters related to all characteristics of relevant Table ZA.1a to ZA.1g.	EN 1504-8:2004, 5.3, 5.5 and 7.3 of this standard
		Continuous surveillance, assessment and approval of F.P.C.	Parameters related to all characteristics of relevant Table ZA.1a to ZA.1g, in particular: Reaction to fire	EN 1504-8:2004, 5.3, 5,5, Clause 7 and 7.3 of this standard

Table ZA.3d — Assignment of evaluation of conformity tasks for surface protection products of Euroclasses A1, A2**, B**, C**, D or E intended for uses with low performance subject to reaction to fire regulations (systems 4 plus 3)**

Tasks		Content of the task	Evaluation of conformity clauses to apply
Tasks for the manufacturer	Factory production control (F.P.C)	Parameters related to all characteristics in relevant Table ZA.1a to ZA.1g.	EN 1504-8:2004, 5.3, 5.5 and 7.3 of this standard
	Initial type testing	All relevant characteristics of relevant Table ZA.1a to ZA.1g except: Reaction to fire	EN 1504-8:2004, 5.2 and 5.3
Tasks for the notified body	Initial type testing	Reaction to fire	EN 1504-8:2004, 5.2 and 5.3

Table ZA.3e — Assignment of evaluation of conformity tasks for surface protection products of any intended for uses other than those with low performance not subject to reaction to fire regulations or of Euroclasses (A1 to E)* or F intended for uses other than those with low performance subject to reaction to fire regulations (systems 2+ plus 4)**

Tasks			Content of the task	Evaluation of conformity clauses to apply
Tasks for the manufacturer	Factory production control (F.P.C)		Parameters related to all characteristics in relevant Table ZA.1a to ZA.1g.	EN 1504-8:2004, 5.3, 5,5 and 7.3 of this standard
	Further testing of samples taken at the factory		All relevant characteristics of relevant Table ZA.1a to ZA.1g.	EN 1504-8:2004, 5.4
	Initial type testing		All relevant characteristics of relevant Table ZA.1a to ZA.1g.	EN 1504-8:2004, 5.2 and 5.3
Tasks for the notified body	Certification of F.P.C. on the basis of	Initial inspection of factory and of F.P.C.	Parameters related to all characteristics of relevant Table ZA.1a to ZA.1g.	EN 1504-8:2004, 5.3, 5.5 and 7.3 of this standard
		Continuous surveillance, assessment and approval of F.P.C.	Parameters related to all characteristics of relevant Table ZA.1a to ZA.1g, in particular: Reaction to fire	EN 1504-8:2004, 5.3, 5.5, Clause 7 and 7.3 of this standard

Table ZA.3f — Assignment of evaluation of conformity tasks for surface protection products intended for uses with low performance not subject to reaction to fire regulations or of Euroclasses (A1 to E)* or F intended for uses with low performance subject to reaction to fire regulations (system 4)**

Tasks		Content of the task	Evaluation of conformity clauses to apply
Tasks for the manufacturer	Factory production control (F.P.C)	Parameters related to all characteristics in relevant Table ZA.1a to ZA.1g	EN 1504-8:2004, 5.3, 5.5 and 7.3 of this standard
	Initial type testing	All relevant characteristics of relevant Table ZA.1a to ZA.1g	EN 1504-8:2004, 5.2 and 5.3

ZA 2.2 EC Certificate and Declaration of conformity

Surface protection products under system 2+ plus 1 or under system 4 plus 1: When compliance with the conditions of this annex is achieved, the certification body shall draw up a certificate of conformity (EC Certificate of conformity), which entitles the manufacturer to affix the CE marking. The certificate shall include:

— name, address and identification number of the certification body;

— name and address of the manufacturer, or his authorised representative established in the EEA, and place of production;

— description of the product (type, identification, use .....);

— provisions to which the product conforms (Annex ZA of EN 1504-2);

— particular conditions applicable to the use of the product (e.g. provisions for use under certain conditions, etc);

— the number of the certificate;

— conditions and period of validity of the certificate, where applicable;

— name of, and positions held by, the person empowered to sign the certificate.

In addition, the manufacturer shall draw up a declaration of conformity (EC Declaration of conformity) including the following:

— name and address of the manufacturer, or his authorised representative established in the EEA;

— name and address of the certification body;

— description of the product (type, identification, use, ...) and a copy of the information accompanying the CE marking;

— provisions to which the product conforms (Annex ZA of EN 1504-2);

— particular conditions applicable to the use of the product (e.g. provisions for use under certain conditions, etc);

— number of the accompanying EC Certificate of conformity;

— name of, and position held by, the person empowered to sign the declaration on behalf of the manufacturer or of his authorised representative.

Surface protection products under system 2+ plus 3 or under system 4 plus 3: When compliance with the conditions of this annex is achieved, and once the notified body has drawn up the certificate mentioned below, the manufacturer or his agent established in the EEA shall prepare and retain a declaration of conformity, which entitles the manufacturer to affix the CE marking. This declaration shall include:

— name and address of the manufacturer, or his authorised representative established in the EEA, and the place of production;

— description of the product (type, identification, use, ...), and copy of the information accompanying the CE marking;

— provisions to which the product conforms (Annex ZA of 1504-2);

— particular conditions applicable to the use of the product (e.g. provisions for use under certain conditions, etc);

— the number of the accompanying factory production control certificate;

— name of, and position held by, the person empowered to sign the declaration on behalf of the manufacturer or of his authorised representative.

The declaration shall be accompanied by a factory production control certificate, drawn up by the notified body, which shall contain, in addition to the information above, the following:

— name and address of the notified body;

— the number of the factory production control certificate;

— conditions and period of validity of the certificate, where applicable;

— name of, and position held by, the person empowered to sign the certificate.

Surface protection products under system 2+ plus 4 or under system 4: When compliance with this annex is achieved, the manufacturer of his agent established in the EEA shall prepare and retain a declaration of conformity (EC Declaration of conformity), which entitles the manufacturer to affix the CE marking. This declaration shall include:

— name and address of the manufacturer, or his authorised representative established in the EEA, and the place of production;

— description of the product (type, identification, use, ...), and copy of the information accompanying the CE marking;

— provisions to which the product conforms (Annex ZA of EN 1504-2);

— particular conditions applicable to the use of the product (e.g. provisions for use under certain conditions, etc);

— the number of the accompanying factory production control certificate;

— name of, and position held by, the person empowered to sign the declaration on behalf of the manufacturer or of his authorised representative.

The declaration shall be accompanied by a factory production control certificate, drawn up by the notified body, which shall contain, in addition to the information above, the following:

— name and address of the notified body;

— the number of the factory production control certificate;

— conditions and period of validity of the certificate, where applicable;

— name of, and position held by, the person empowered to sign the certificate.

The above mentioned EC Declarations and EC Certificate shall be presented in the official language or languages of the Member State in which the product is to be used.

ZA.3 CE marking and labelling

The affixing of the CE marking and the relevant information will be done preferably on the packaging (when not possible it shall be done on the accompanying label or on the accompanying documents e.g. delivery note)

NOTE 1 The manufacturer or his authorised representative established within the EU or EFTA is responsible for the affixing of the CE marking.

The CE conformity symbol to affix shall be in accordance with Directive 93/68/EC and must be accompanied by the following information:

a) Identification number of the certification body (only for products under system 1 or 2+)

b) Name or identifying mark of the producer

c) Registered address of the producer

d) The last two digits of the year in which the marking is affixed

e) Number of the EC Certificate (for products under system 1) or Certificate of factory production control (for products under system 2+)

f) Reference to this European Standard

g) Information on those relevant essential characteristics listed in Tables ZA.1a to ZA.1g which are to be declared presented as:

— declared values and, where relevant, level or class (including “pass” for pass/fail requirements, where necessary) to declare for each essential characteristic as indicated in “Notes” in Tables ZA.1a to ZA.1g, and;

— “No performance determined” option for characteristics where this is relevant.

Figure ZA.1 gives an example for a “surface protection product (hydrophobic impregnation)” of the information accompanying the CE marking.

CE 01234	CE conformity marking consisting of the CE symbol given in directive 93/68/EEC Identification number of the notified body (for system 2+)
AnyCo Ltd, PO Bx 21, B-1050 00	Name or identifying mark and registered address of the producer Last two digits of the year in which the marking was affixed
0123-CPD-0456 EN 1504-2 surface protection products hydrophobic impregnation	Number of the FPC certificate (for system 2+) No of European standard **Description** and information on product and on regulated characteristics
Depth of penetration Class II: ≥10 mm	
Water absorption and resistance to alkali as: absorption ratio <7,5 % compared with the untreated specimen absorption ratio <10 % after immersion in alkali solution	
Drying rate for hydrophobic impregnation: class II: > 10 %	
Dangerous substances comply with 5.4	

Figure ZA.1 — CE marking information

In addition to any specific information relating to dangerous substances shown above, the product should also be accompanied, when and where required and in the appropriate form, by documentation listing any other legislation on dangerous substances for which compliance is claimed, together with any information required by that legislation.

NOTE 2 European legislation without national derogations need not be mentioned.

Bibliography

[1] EN 13813, *Screed material and floor screeds — Screed materials — Properties and requirements.*

blank

BSI — British Standards Institution

BSI is the independent national body responsible for preparing British Standards. It presents the UK view on standards in Europe and at the international level. It is incorporated by Royal Charter.

Revisions

British Standards are updated by amendment or revision. Users of British Standards should make sure that they possess the latest amendments or editions.

It is the constant aim of BSI to improve the quality of our products and services. We would be grateful if anyone finding an inaccuracy or ambiguity while using this British Standard would inform the Secretary of the technical committee responsible, the identity of which can be found on the inside front cover. Tel: +44 (0)20 8996 9000. Fax: +44 (0)20 8996 7400.

BSI offers members an individual updating service called PLUS which ensures that subscribers automatically receive the latest editions of standards.

Buying standards

Orders for all BSI, international and foreign standards publications should be addressed to Customer Services. Tel: +44 (0)20 8996 9001. Fax: +44 (0)20 8996 7001. Email: orders@bsi-global.com. Standards are also available from the BSI website at http://www.bsi-global.com.

In response to orders for international standards, it is BSI policy to supply the BSI implementation of those that have been published as British Standards, unless otherwise requested.

Information on standards

BSI provides a wide range of information on national, European and international standards through its Library and its Technical Help to Exporters Service. Various BSI electronic information services are also available which give details on all its products and services. Contact the Information Centre. Tel: +44 (0)20 8996 7111. Fax: +44 (0)20 8996 7048. Email: info@bsi-global.com.

Subscribing members of BSI are kept up to date with standards developments and receive substantial discounts on the purchase price of standards. For details of these and other benefits contact Membership Administration. Tel: +44 (0)20 8996 7002. Fax: +44 (0)20 8996 7001. Email: membership@bsi-global.com.

Information regarding online access to British Standards via British Standards Online can be found at http://www.bsi-global.com/bsonline.

Further information about BSI is available on the BSI website at http://www.bsi-global.com.

Copyright

BSI
389 Chiswick High Road
London
W4 4AL