



Institut luxembourgeois de la normalisation  
de l'accréditation, de la sécurité et qualité  
des produits et services

## ILNAS-EN 13295:2004

### **Products and systems for the protection and repair of concrete structures - Test methods - Determination of resistance to**

Produits et systèmes pour la protection  
et la réparation des structures en béton -  
Méthodes d'essai - Détermination de la  
résistance à la carbonatation

Produkte und Systeme für den Schutz  
und die Instandsetzung von  
Betontragwerken - Prüfverfahren -  
Bestimmung des

05/2004



## National Foreword

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**Products and systems for the protection and repair of concrete  
structures - Test methods - Determination of resistance to  
carbonation**

Produits et systèmes de protection et de réparation des  
structures en béton - Méthodes d'essai - Détermination de  
la résistance à la carbonatation

Produkte und Systeme für den Schutz und die  
Instandsetzung von Betontragwerken - Prüfverfahren -  
Bestimmung des Karbonatisierungswiderstands

This European Standard was approved by CEN on 24 March 2004.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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



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## Foreword

This document (EN 13295:2004) has been prepared by Technical Committee CEN/TC 104 "Concrete and related products", the secretariat of which is held by DIN.

It has been prepared by sub-committee 8 "Protection and repairs of concrete structures" (Secretariat 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 November 2004, and conflicting national standards shall be withdrawn at the latest by November 2004.

Annex A is normative.

This European Standard is one of a series dealing with products and systems for the protection and repair of concrete structures. It describes a method for determining the resistance to carbonation of a test specimen made from a repair product or system, excluding application of a protective coating system.

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

## 1 Scope

This European Standard specifies an accelerated laboratory method for measuring the resistance against carbon dioxide penetration through repair products and systems, as defined in prEN 1504-3. The method is based on measurement of the depth of carbonation of the sample in a concentrated carbon dioxide atmosphere over a fixed time interval. The method is suitable for assessing the performance of repair grouts, mortars and concretes without a protective coating system applied.

The method does not measure the resistance to reduction in pH-value that may occur by absorption of other acidic gases (e.g. SO<sub>2</sub>, HCl ).

## 2 Normative references

This European Standard 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 Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 196-1, *Methods of testing cement — Part 1: Determination of strength*.

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 1015-2, *Methods of test for mortar for masonry — Part 2: Bulk sampling of mortars and preparation of test mortars*.

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

prEN 14630:2003, *Products and systems for the protection and repair of concrete structures — Test methods — Determination of carbonation depth in hardened concrete by the phenolphthalein method*.

## 3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 1504-1:1998 and the following apply.

### 3.1

#### Carbonation

alkaline components (e.g. calcium hydroxide) in the cement paste react with atmospheric carbon dioxide, after which the pH of the mortar or concrete is reduced.

### 3.2

#### Carbonation Depth

carbonation depth ( $d_k$ ) is the average distance, measured in mm, from the surface of the concrete or mortar where the carbon dioxide (CO<sub>2</sub>) has reduced the alkalinity of the hydrated cement to an extent such that an indicator solution based on phenolphthalein remains colourless.