



National Standards Authority of Ireland

IRISH STANDARD

I.S. EN 13412:2006

ICS 91.080.40

**PRODUCTS AND SYSTEMS FOR THE
PROTECTION AND REPAIR OF CONCRETE
STRUCTURES - TEST METHODS -
DETERMINATION OF MODULUS OF
ELASTICITY IN COMPRESSION**

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Supersedes EN 13412:2002

English Version

**Products and systems for the protection and repair of concrete
structures - Test methods - Determination of modulus of
elasticity in compression**

Produits et systèmes pour la protection et la réparation des
structures en béton - Méthodes d'essai - Détermination du
module d'élasticité en compression

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

This European Standard was approved by CEN on 26 July 2006.

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

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

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



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Contents	Page
Foreword.....	3
1 Scope	4
2 Normative references	4
3 Terms and definitions	4
4 Principle.....	5
5 Equipment	5
6 Preparation of test specimens	5
7 Procedure	6
8 Calculation.....	7
9 Report	7
Annex A (normative) Summary of temperatures and humidities for the curing, conditioning and testing of repair products and systems	8
Bibliography	9

Foreword

This document (EN 13412:2006) has been prepared by Technical Committee CEN/TC 104 "Concrete and related products", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2007, and conflicting national standards shall be withdrawn at the latest by February 2007.

This document supersedes EN 13412:2002

It has been drafted by CEN/TC 104/SC 8 "Products and systems for the protection and repair of concrete structures", the secretariat of which is held by AFNOR.

This European Standard is one of a series dealing with products and systems for the protection and repair of concrete structures.

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

EN 13412:2006 (E)

1 Scope

This European Standard specifies two methods for determining the modulus of elasticity in compression for repair products and systems.

Method 1 is for products and systems with high creep characteristics typically those containing polymer binders (PC).

Method 2 is for products and systems with low creep characteristics typically those containing polymer modified (PCC) and cementitious (CC) binders.

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

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

EN 1504-3:2005, *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 12190, *Products and systems for the protection and repair of concrete structures — Test methods — Determination of compressive strength of repair mortar*

EN 12390-3, *Testing hardened concrete — Part 3: Compressive strength of test specimens*

EN 12390-4, *Testing hardened concrete — Part 4: Compressive strength — Specification for testing machines*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1504-1:2005 and EN 1504-3:2005 and the following apply.

3.1

compressive stress

compressive force carried at any time by the test specimen per unit of the original cross-section

3.2

compressive strain

ratio of the change in the distance between two reference points along the axis of the test specimen per unit length of the original distance

3.3

secant modulus

ratio of stress to a corresponding strain, measured relative to a level of pre-stress applied to firmly bed the specimen, platens and ball seating

NOTE The secant modulus is also known as the static modulus of elasticity in compression as defined in ISO 6784.

3.4

creep

additional time-dependent strain that occurs in a test specimen under a constant applied stress

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