SLOVENSKI STANDARD
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Metode za preskušanje vlaken v betonu - 2. del: Vpliv na beton

Test methods for fibres in concrete - Part 2: Effect on concrete

Prüfverfahren für Fasern in Beton - Teil 2: Einfluss auf den Beton

Méthodes d'essai des fibres du béton - Partie 2: Effets sur le béton

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Test methods for fibres in concrete - Part 2: Effect on concrete

Méthodes d'essai des fibres du béton - Partie 2: Influence sur la résistance

Prüfverfahren für Fasern in Beton - Teil 2: Einfluss auf den Beton

This European Standard was approved by CEN on 26 June 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.

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

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

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Foreword

This document (EN 14845-2:2006) 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of an identical text or by endorsement, at the latest by February 2007, and conflicting national standards shall be withdrawn at the latest by May 2008.

This document has been drafted by working group 11 “Fibres for concrete”, the Secretariat of which is held by BSI.

This European Standard is one of a series dealing with test methods for assessing the performance of Fibres, either steel or polymer, in concrete.

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.

1 Scope

This European Standard specifies a method for determining the effect of fibres, steel or polymer, on the residual flexural strength of a reference concrete.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 14651, *Test method for metallic fibered concrete — Measuring the flexural tensile strength (limit of proportionality (LOP), residual)*

prEN 14845-1, *Test methods for fibres in concrete — Part 1: Reference concretes*

EN 14889-1, *Fibres for concrete — Part 1: Steel fibres — Definitions, specifications and conformity*

EN 14889-2, *Fibres for concrete — Part 2: Polymer fibres — Definitions, specifications and conformity*

ISO 5725-2:1994, *Accuracy (trueness and precision) of measurement methods and results — Part 2: Basic method for the determination of repeatability and reproducibility of a standard measurement method*

3 Principle

Fibres are tested in one or more reference concretes (as specified in prEN 14845-1) to determine the fibre content required to meet specified values of residual flexural strength at particular deformation levels.

4 Test method

Twelve notched 550 mm x 150 mm x 150 mm beams, made from a reference concrete according to prEN14845-1 and incorporating fibres, shall be tested at 28 days in centre-point loading on a 500 mm span in accordance with the test method for metallic fibre concrete of EN 14651.

A series of concrete mixes shall be made and tested with different fibre contents until the strength performance specified in clause **5** is achieved.

5 Procedure

The content of fibres shall be determined that achieves an average residual flexural strength of at least 1,5 MPa at 0,5 mm CMOD (equivalent to 0,47 mm central deflection) and an average residual flexural strength of at least 1 MPa at 3,5 mm CMOD (equivalent to 3,02 mm central deflection).

When calculating the average performance of the twelve beams, the effect of any outlier (unrepresentative) results should be excluded. Outliers should be identified by the Grubb test according to ISO 5725-2:1994 for a probability of 5 %.

NOTE Statistically with an assumed variation of 25%, the mean value of a test series of twelve beams will not deviate more than 10% from the real mean value with a confidence level of 90%.

6 Report

The following information shall be recorded for each set of reference concrete specimens:

a) fibre type (including material, length, diameter and tensile strength) described according to EN 14889-1 or EN 14889-2;

b) fibre content in kg/m^3, corresponding to the minimum performance levels of 1,5 MPa at a CMOD of 0,5 mm and 1,0 MPa at a CMOD of 3,5 mm;

c) details of compliance of reference concrete with prEN14845-1, including mix composition and origin of aggregates;

d) identification of the test specimens;

e) date of manufacture of the test specimens;

f) date of notching;

g) date of testing;

h) curing history and moisture condition of specimens at test;

i) average width of each specimen to the nearest 0,1 mm;

j) average distance between the tip of the notch and the top of each specimen to the nearest 0,1 mm;

k) dimensions of the notch to the nearest 0,01 mm;

l) span length to the nearest mm;

m) rate of increase of CMOD or deflection and any deviation from the specified rates;

n) load-CMOD curve or load-deflection curve;

o) limit of proportionality strength to the nearest 0,01 MPa for individual values and 0,1 MPa for the average value;

p) residual flexural tensile strength to the nearest 0,01 MPa for individual values and 0, 1 MPa for the average value;

q) reference to this European Standard;

r) any deviation from this standard.