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MAKSIMAALNE TUGEVUS JA JÄÄKTUGEVUS)

Testing sprayed concrete - Part 3: Flexural strengths
(first peak, ultimate and residual) of fibre reinforced
beam specimens

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>See Eesti standard EVS-EN 14488-3:2023 sisaldab Euroopa standardi EN 14488-3:2023 ingliskeelset teksti.</p> <p>Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas</p> <p>Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 01.11.2023.</p> <p>Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.</p>	<p>This Estonian standard EVS-EN 14488-3:2023 consists of the English text of the European standard EN 14488-3:2023.</p> <p>This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.</p> <p>Date of Availability of the European standard is 01.11.2023.</p> <p>The standard is available from the Estonian Centre for Standardisation and Accreditation.</p>
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EUROPEAN STANDARD

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English Version

Testing sprayed concrete - Part 3: Flexural strengths (first peak, ultimate and residual) of fibre reinforced beam specimens

Essais pour béton projeté - Partie 3 : Résistances à la flexion (au premier pic, ultime et résiduelle) d'éprouvettes parallélépipédiques en béton renforcé par des fibres

Prüfung von Spritzbeton - Teil 3: Biegefestigkeiten (Erstriss-, Biegezug- und Restfestigkeit) von faserverstärkten balkenförmigen Betonprüfkörpern

This European Standard was approved by CEN on 30 July 2023.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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European foreword

This document (EN 14488-3:2023) has been prepared by Technical Committee CEN/TC 104 “Concrete and related products”, the secretariat of which is held by SN.

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of an identical text or by endorsement, at the latest by May 2024 and conflicting national standards shall be withdrawn at the latest by May 2024.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 14488-3:2006.

EN 14488-3:2023 includes the following significant change in comparison with EN 14488-3:2006:

- Introduction of testing Method B, the three point bending test on spray square panel with notch to determine the flexural residual strength. The residual strength method can be prescribed when the concrete characteristics are used in a structural design model. This is especially useful for permanent sprayed concrete linings.

This document is part of a series concerned with testing sprayed concrete.

The EN 14488 series, *Testing sprayed concrete*, includes the following parts:

- *Part 1: Sampling fresh and hardened concrete*
- *Part 2: Compressive strength of young sprayed concrete*
- *Part 3: Flexural strengths (first peak, ultimate and residual) of fibre reinforced beam specimens*
- *Part 4: Bond strength of cores by direct tension*
- *Part 5: Determination of energy absorption capacity of fibre reinforced slab specimens*
- *Part 6: Thickness of concrete on a substrate*
- *Part 7: Fibre content of fibre reinforced concrete*

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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Introduction

Classification of residual flexural strength of fibre reinforced sprayed concrete is made by specification of a strength level at a certain deformation range.

This could be done using the four point bending test described in Method A or using the three point bending test on square notched panel described in Method B of this document.

Methods A and B can be used for metallic fibres, synthetic or other fibres, or a combination of fibre types.

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1 Scope

This document specifies methods (Methods A and B) for the determination of the first peak, ultimate and residual strength of specimens of hardened sprayed concrete.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 12390-1, *Testing hardened concrete — Part 1: Shape, dimensions and other requirements for specimens and moulds*

EN 12390-2, *Testing hardened concrete — Part 2: Making and curing specimens for strength tests*

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

EN 14487-1, *Sprayed concrete — Part 1: Definitions, specifications and conformity*

EN 14488-1, *Testing sprayed concrete — Sampling fresh and hardened concrete*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp/>

3.1

crack mouth opening displacement

linear displacement measured by a transducer installed on a specimen subjected to a central line load F

3.2

deflection

linear displacement measured by a transducer installed on a specimen subjected to a central line load F

3.3

limit of proportionality

stress at the tip of the notch which is assumed to be exerted, in the case of a linear stress distribution, in an uncracked section at mid-span of a prism subjected to a centred load F_L (Method A) or F_{LS} (Method B)

3.4

residual flexural tensile strength according to Method A

residual strength on the beam calculated from the minimum load on the flexural stress/deflection curve between 0,5 mm and 1 mm, 2 mm and 4 mm

3.5

residual flexural tensile strength according to Method B

fictitious stress at the tip of the notch which is assumed to act in an uncracked mid-span section, with linear stress distribution, of a plate subjected to the central line load F_j corresponding to $CMOD_j$ where $CMOD_j > CMOD_{F_L}$ or to δ_j where $\delta_j > \delta_{F_L}$ ($j = 1,2,3,4$)