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Fibre cement products - Determination of pull through and shear resistance and bending strength calculations - Part 1: Flat sheets

EESTI STANDARDIMIS- JA AKREDITEERIMISKESKUS
ESTONIAN CENTRE FOR STANDARDISATION AND ACCREDITATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 17468-1:2022 sisaldab Euroopa standardi EN 17468-1:2022 ingliskeelset teksti.	This Estonian standard EVS-EN 17468-1:2022 consists of the English text of the European standard EN 17468-1:2022.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 27.04.2022.	Date of Availability of the European standard is 27.04.2022.
Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

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English Version

Fibre cement products - Determination of pull through and shear resistance and bending strength calculations - Part 1: Flat sheets

Produits en fibres-ciment - Détermination des calculs de résistance au déboutonnage, au cisaillement et à la flexion - Partie 1 : Plaques planes

Faserzementprodukte - Bestimmung des Durchzugs- und Querkraftwiderstandes und der Biegefestigkeit - Teil 1: Tafeln

This European Standard was approved by CEN on 13 March 2022.

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

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European foreword

This document (EN 17468-1:2022) has been prepared by Technical Committee CEN/TC 128 “Roof covering products for discontinuous laying and products for wall cladding”, the secretariat of which is held by NBN.

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of an identical text or by endorsement, at the latest by October 2022, and conflicting national standards shall be withdrawn at the latest by October 2022.

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 also proposes rules and equations to calculate characteristic bending strength to fit into the safety concept of the Eurocode.

This document is Part 1, dealing with flat sheets, whereas Part 2 deals with profiled sheets.

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.

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

Introduction

Different fibre-cement flat sheets on the market are assessed for pull through resistance.

Fibre-cement flat sheets have been evaluated, for pull through resistance, by a number of test methods designed to simulate conditions of use.

The results from the different existing methods are not directly comparable.

This document establishes an agreed method for evaluation of the pull through resistance and shear resistance of fibre-cement flat sheet products, based on the experiences obtained over the last number of years in different countries.

This is a testing standard with no classifications, but this test procedure may be used by national regulators to set classifications for roof and wall assemblies.

The performance of an assembly constructed with these products depends not only on the properties of product as required by this document, but also on the design, construction and performance of the assembly.

1 Scope

The document establishes an agreed method for evaluation of pull through resistance (tension/compression for fasteners through the sheets), shear resistance, bending strength and bending modulus of elasticity and suggests an approved safety concept of fibre-cement flat sheets for internal and external wall and ceiling finishes based on the experiences obtained over the last number of years in different countries. The results are only applicable to the fibre-cement product and not to the complete fixing assembly.

NOTE 1 For design purposes of fibre-cement flat sheets in the final application, the failure modes pull-out and breaking of the fixing or substructure are not in the scope of this standard. They might become decisive and need to be tested or calculated according to the relevant design standards for fixings (e.g. EN 14592) or ETA and substructure (e.g. Eurocode 3 for steel, Eurocode 5 for wood and Eurocode 9 for aluminium substructures) and compared with the results for pull-through and shear resistance.

The results are also applicable for:

— Coated or uncoated sheets manufactured at the same production facility as the tested sheets provided that the sheets are of the same type, have at least the same declared class according to EN 12467:2012+A2:2018, Table 6 and at least the same nominal thickness.

— The test method can be applied to textured or non-textured fibre-cement flat sheets. The results of non-textured sheets are only applicable for textured sheets if the nominal minimum thickness of the textured sheet is at least the nominal thickness of the non-textured sheet.

— The same type of fixing head or washer assembly where applicable if the diameter of the fixing head or washer is 0 mm to 2 mm larger than in the test.

— The Shore A hardness of the sealing washer, where applicable, is ± 5 that of the washer used in the test, given that the washer thickness is at least as thick, the washer material at least as strong and the shape (dome or flat) of the washer equal to what has been tested.

NOTE 2

A) For pull-through resistance, if the diameter of the drilled hole through the fibre-cement sheet is 0 mm to 2 mm smaller or equal than in the test up to the diameter of the shank of the fastener, providing, during the test there is the required clearance hole around the shank of the fastener.

B) For shear resistance, if the diameter of the drilled hole is equal to what has been tested.

It applies only to products as delivered.

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 12467:2012+A2:2018, *Fibre-cement flat sheets - Product specification and test methods*

EN 1990, *Eurocode - Basis of structural design*

EN ISO 7500-1, *Metallic materials - Calibration and verification of static uniaxial testing machines - Part 1: Tension/compression testing machines - Calibration and verification of the force-measuring system (ISO 7500-1)*