

**TASAPINNALISED TSEMENTKIUDPLAADID.
SPETSIFIKATSIOON JA KATSEMEETODID**

Fibre-cement flat sheets - Product specification and test methods

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 12467:2012+A1:2016 sisaldab Euroopa standardi EN 12467:2012+A1:2016 ingliskeelset teksti.	This Estonian standard EVS-EN 12467:2012+A1:2016 consists of the English text of the European standard EN 12467:2012+A1:2016.
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.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 06.07.2016.	Date of Availability of the European standard is 06.07.2016.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

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

ICS 91.100.40

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega: Aru 10, 10317 Tallinn, Eesti; koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Aru 10, 10317 Tallinn, Estonia; homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

English Version

Fibre-cement flat sheets - Product specification and test methods

Plaques planes en fibres-ciment - Spécifications du produit et méthodes d'essai

Faserzement-Tafeln - Produktspezifikation und Prüfverfahren

This European Standard was approved by CEN on 4 August 2012 and includes Amendment 1 approved by CEN on 24 November 2015.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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



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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

European foreword.....	5
1 Scope.....	6
2 Normative references.....	6
3 Terms and definitions.....	6
4 Symbols and abbreviations.....	8
5 Requirements.....	9
5.1 General.....	9
5.1.1 Composition.....	9
5.1.2 Appearance and finish.....	9
5.2 Classification.....	9
5.2.1 General.....	9
5.2.2 Category A.....	9
5.2.3 Category B.....	10
5.2.4 Category C.....	10
5.2.5 Category D.....	10
5.2.6 Groups of sizes.....	10
5.3 Dimensions and tolerances.....	10
5.3.1 General.....	10
5.3.2 Nominal length and width.....	10
5.3.3 Thickness.....	10
5.3.4 Tolerances on nominal dimensions.....	11
5.3.5 Tolerances on shape.....	12
5.4 Physical requirements and characteristics.....	12
5.4.1 General.....	12
5.4.2 Apparent density.....	12
5.4.3 Moisture movement.....	12
5.4.4 Mechanical characteristics – Bending strength (<i>MOR</i>) – Modulus of elasticity (<i>MOE</i>).....	13
5.4.5 Water impermeability for Categories A, B and D.....	13
5.4.6 Water vapour permeability for Category D.....	13
5.5 Durability requirements.....	14
5.5.1 General.....	14
5.5.2 Freeze-thaw for Categories A, B and D.....	14
5.5.3 Heat-rain for Categories A and B.....	14
5.5.4 Warm water for Categories A, B, C and D.....	14
5.5.5 Soak-dry for Categories A, B, C and D.....	14
5.6 Fire and safety.....	14
5.6.1 Reaction to fire.....	14
5.6.2 Release of dangerous substances.....	14
5.7 Product information.....	15
6  Assessment and verification of constancy of performance — AVCP.....	15
6.1 General.....	15
6.2 Type testing.....	15
6.2.1 General.....	15
6.2.2 Test samples, testing and compliance criteria.....	17
6.2.3 Test reports.....	17

6.3	Factory production control (FPC)	17
6.3.1	General	17
6.3.2	Requirements	17
6.3.3	Product specific requirements	20
6.3.4	Initial inspection of factory and of FPC	20
6.3.5	Continuous surveillance of FPC	21
6.3.6	Procedure for modifications	21
6.4	Inspection of a consignment of finished products A_1	21
7	Test methods	21
7.1	General	21
7.2	Dimensional and geometrical tests	21
7.2.1	Preparation of specimen	21
7.2.2	Apparatus	22
7.2.3	Procedure	22
7.2.4	Expression and interpretation of results	24
7.3	Tests for physical performance and characteristics	25
7.3.1	Apparent density	25
7.3.2	Mechanical characteristics - Bending strength - Modulus of elasticity (Bending modulus)	25
7.3.3	Water impermeability	30
7.3.4	Water vapour permeability	31
7.3.5	Warm water	31
7.3.6	Soak-dry	32
7.3.7	Moisture movement test	33
7.4	Tests for climatic performance	33
7.4.1	Freeze-thaw	33
7.4.2	Heat-rain	35
7.5	Test for reaction to fire performance	36
7.5.1	Sheets satisfying the requirements for the fire reaction Class A1 without the need for testing	36
7.5.2	Other sheets	36
8	Marking, labelling and packaging	44
Annex A	(normative) Consignment inspection sampling	45
Annex B	(normative) Statistical method for determining the corresponding wet values or revised dry specifications for the <i>MOR</i> when carrying out the dry method of test or when tested prior to coating for quality control purposes	46
B.1	Procedure	46
B.2	Determination of the correlation between the results of testing wet and dry specimens	46
B.3	Determination of the regression line	47
B.4	Determination of a value for wet testing from an obtained value for dry testing	47
B.5	Determination of the minimum value specified for dry testing x_{std} corresponding to the minimum value specified for wet testing in this document y_{std}	48
Annex C	(normative) Test method for the determination of moisture movement characteristic of fibre-cement sheets	49
C.1	General	49
C.2	Principle	49
C.3	Apparatus	49
C.4	Specimen preparation	49
C.5	Test procedure	49
C.6	Calculation of results	50
C.7	Test report	50

Annex ZA (informative)  Clauses of this European Standard addressing the provisions of the EU Construction Products Regulation 51

ZA.1 Scope and relevant characteristics..... 51

ZA.2 Procedure for AVCP of fibre cement flat sheets 52

ZA.2.1 Systems of AVCP..... 52

ZA.2.2 Declaration of performance (DoP) 56

ZA.3 CE marking and labelling  60

Bibliography..... 63

European foreword

This document (EN 12467:2012+A1:2016) 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 January 2017, and conflicting national standards shall be withdrawn at the latest by April 2018.

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

This document includes Amendment 1 approved by CEN on 24 November 2015.

This document supersedes A1 EN 12467:2012 A1.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

A1 In comparison with EN 12467:2004, the following sections in EN 12467:2012 had been changed or added: A1 3.9, 3.10, 4, 5.1.1, 5.4.3, 5.4.4, Table 7, Table 8, 7.3.2, 7.3.2.4.2, 7.3.3.3, 7.3.3.4, 7.3.7, 7.5.2.2 and Annex C. Annex ZB concerning the EC Directive 76/769/EEC A1 had been deleted A1.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of A1 EU Regulation No 305/2011 A1.

For relationship with A1 EU Regulation No 305/2011 A1, see informative Annex ZA, which is an integral part of this document.

A distinction A1 had been made A1 between product appraisal (type tests) and factory production control requirements (acceptance tests).

The performance of a building part constructed with these sheets depends not only on the properties of the product as required by this document, but also on the design, construction and installation of the component as a whole in relation to the environment and conditions of use.

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

1 Scope

This European Standard specifies the technical requirements and establishes methods of inspection and test as well as acceptance conditions for fibre-cement flat sheets, siding shingles and planks (referred to as sheets later in this document) for one or more of the following uses:

- internal wall and ceiling finishes;
- external wall and ceiling finishes.

Products covered by this European Standard can be used for other purposes provided they comply with the relevant application standard, e.g. rigid underlays.

This European Standard covers sheets reinforced with fibres of different types as specified in 5.1.1.

This European Standard does not cover sheets for fire protection purposes.

This European Standard does not include calculations with regard to works, design requirements, installation techniques, wind uplift or rain proofing of the installed sheets.

2 Normative references

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

EN 197-1, *Cement — Part 1: Composition, specifications and conformity criteria for common cements*

EN 13501-1, *Fire classification of construction products and building elements — Part 1: Classification using test data from reaction to fire tests*

EN 13823, *Reaction to fire tests for building products — Building products excluding floorings exposed to the thermal attack by a single burning item*

EN ISO 1716, *Reaction to fire tests for building products — Determination of the gross heat of combustion (calorific value) (ISO 1716)*

EN ISO 12572, *Hygrothermal performance of building materials and products — Determination of water vapour transmission properties (ISO 12572)*

ISO 2602, *Statistical interpretation of test results — Estimation of the mean — Confidence interval*

ISO 2859-1, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

ISO 3951-1, *Sampling procedures for inspection by variables — Part 1: Specification for single sampling plans indexed by acceptance quality limit (AQL) for lot-by-lot inspection for a single quality characteristic and a single AQL*

3 Terms and definitions

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