

**Kiudbetoonest profileeritud tava- ja eriplaadid.
Spetsifikatsioon ja katsemeetodid**

**Fibre-cement profiled sheets and fittings - Product
specification and test methods**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 494:2012 sisaldab Euroopa standardi EN 494:2012 ingliskeelset teksti.	This Estonian standard EVS-EN 494:2012 consists of the English text of the European standard EN 494:2012.
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 24.10.2012.	Date of Availability of the European standard is 24.10.2012.
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; 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; www.evs.ee; phone 605 5050; e-mail info@evs.ee

English Version

Fibre-cement profiled sheets and fittings - Product specification and test methods

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

Faserzement-Wellplatten und dazugehörige Formteile -
Produktspezifikation und Prüfverfahren

This European Standard was approved by CEN on 11 August 2012.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword.....	4
1 Scope	5
2 Normative references	5
3 Terms and definitions	6
4 Symbols and abbreviations	7
5 Product requirements	8
5.1 General.....	8
5.1.1 Composition.....	8
5.1.2 Appearance and finish	8
5.2 Dimensions and tolerances	9
5.2.1 General.....	9
5.2.2 Categorisation by height of profile	9
5.2.3 Thickness	9
5.2.4 Tolerances on nominal dimensions.....	10
5.3 Physical requirements and characteristics for fibre-cement profiled sheets	11
5.3.1 General.....	11
5.3.2 Apparent density.....	11
5.3.3 Mechanical characteristics	11
5.3.4 Water impermeability	13
5.4 Durability requirements	13
5.4.1 General.....	13
5.4.2 Freeze-thaw	13
5.4.3 Heat-rain	13
5.4.4 Warm water.....	14
5.4.5 Soak-dry.....	14
5.5 Summary of characteristics and classification	14
5.5.1 Summary of characteristics.....	14
5.5.2 Classification.....	14
5.6 Fire and safety.....	15
5.6.1 External fire performance	15
5.6.2 Reaction to fire.....	15
5.6.3 Release of dangerous substances.....	15
5.7 Product information.....	15
6 Evaluation of conformity.....	16
6.1 General.....	16
6.2 Initial Type testing	16
6.3 Factory Production Control (FPC)	17
6.3.1 General.....	17
6.3.2 Acceptance tests	17
6.3.3 Equipment	18
6.3.4 Raw materials and components.....	19
6.3.5 Product testing and evaluation	19
6.3.6 Non-conforming products	19
6.4 Inspection of a consignment of finished products	19
7 Test methods.....	19
7.1 General.....	19
7.2 Dimensional tests	19
7.2.1 Dimensional tests for sheets	19

7.2.2	Dimensional tests for fittings	22
7.3	Tests for physical performance and characteristics	22
7.3.1	Apparent density	22
7.3.2	Mechanical characteristics	23
7.3.3	Water impermeability	27
7.3.4	Warm water	27
7.3.5	Soak-dry	28
7.4	Tests for climatic performance	30
7.4.1	Freeze-thaw	30
7.4.2	Heat-rain	31
7.4.3	Freeze-thaw test for fittings	32
7.5	Test for fire performance	33
7.5.1	Test for external fire performance	33
7.5.2	Test for reaction to fire	33
8	Marking, labelling and packaging	38
Annex A	(normative) Figures	40
Annex B	(normative) Consignment inspection sampling	52
Annex C	(normative) Statistical method for determining the corresponding wet values or revised dry specifications for the breaking load and/or bending moment when carrying out the dry method of test for quality control purposes	53
C.1	Procedure	53
C.2	Determination of the correlation between the results of testing wet and dry specimens	53
C.3	Determination of the regression line	54
C.4	Determination of a value for wet testing from an obtained value for dry testing	54
C.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}	55
Annex ZA	(informative) Clauses of this European Standard addressing the provisions of the EU Construction Products Directive	57
ZA.1	Scope and relevant characteristics	57
ZA.2	Procedure for the attestation of conformity of fibre cement profiled sheets and fittings	59
ZA.2.1	Systems of attestation of conformity	59
ZA.2.2	EC Declaration of conformity	62
ZA.3	CE marking	64
Bibliography	66

Foreword

This document (EN 494:2012) 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 April 2013, and conflicting national standards shall be withdrawn at the latest by April 2013.

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 supersedes EN 494:2004+A3:2007.

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 EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA which is an integral part of this document.

In comparison to the previous edition, the following paragraphs have been changed or added: 3.10, 3.11, 5.1.1, Table 2, 5.3.3.1, 5.3.3.4, 5.6.3, Table 6, 6.3.2, 7.4.2.1 and Annex ZA.

A distinction has been made between product appraisal (type tests) and routine quality control requirements (acceptance tests).

The performance of a roof or another building part constructed with these products depends not only on the properties of the product as required by this document, but also on the design, construction and installation of the components 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 control and test as well as acceptance conditions for fibre-cement profiled sheets and their fibre-cement fittings for one or more of the following uses:

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

For the purpose of this European Standard, fibre-cement profiled sheets are classified according to their height of corrugation and their mechanical characteristics.

This European Standard covers fibre-cement profiled sheets reinforced with fibres of different type as specified in 5.1.1, with and without factory applied coating.

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

NOTE Some of these requirements can be applied, after agreement, to curved sheets for specific applications.

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*

CEN/TS 1187 *Test methods for external fire exposure to roofs*

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

EN 13501-5, *Fire classification of construction products and building elements — Part 5: Classification using data from external fire exposure to roofs 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 15057, *Fibre cement profiled sheets — Impact resistance test method*

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

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*