SLOVENSKI STANDARD
SIST EN 12467:2013/kFprA1:2015

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Vlaknato-cementne ravne plošče - Specifikacija za izdelek in preskusne metode

Fibre-cement flat sheets - Product specification and test methods

Faserzement-Tafeln - Produktspezifikation und Prüfverfahren

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

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ICS:

91.100.40	Cementni izdelki, ojačani z vlakni	Products in fibre-reinforced cement

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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 draft amendment is submitted to CEN members for unique acceptance procedure. It has been drawn up by the Technical Committee CEN/TC 128.

This draft amendment A1, if approved, will modify the European Standard EN 12467:2012. If this draft becomes an amendment, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant national standard without any alteration.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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Foreword

This document (EN 12467:2012/FprA1:2015) 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 document is currently submitted to the Unique Acceptance procedure.

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.

This amendment has been prepared taking into account the adoption of the Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 and replaces Council Directive 89/106/EEC.

1 Modification to 5.6.2

Replace the existing text with the following one accepted by the Commission:

“National regulations on dangerous substances may require verification and declaration on release, and sometimes content, when construction products covered by this standard are placed on those markets.
In the absence of European harmonized test methods, verification and declaration on release/content should be done taking into account national provisions in the place of use.

NOTE An informative database covering European and national provisions on dangerous substances is available at the Construction web site on EUROPA accessed through:

http://ec.europa.eu/enterprise/construction/cpd-ds/ “

2 Modification to Clause 6

Replace the existing text in Clause 6 with the following:

"6 Assessment and verification of constancy of performance – AVCP

6.1 General

The compliance of fibre-cement flat sheets with the requirements of this standard and with the performances declared by the manufacturer in the DoP shall be demonstrated by:

- determination of the product type;
- factory production control by the manufacturer, including product assessment.

The manufacturer shall always retain the overall control and shall have the necessary means to take responsibility for the conformity of the product with its declared performance(s).

6.2 Type testing

6.2.1 General

Type tests shall be carried out on products as delivered. If several formats or sizes of the same category and class are being produced from the same composition and by the same production method, type tests only need to be carried out on maximum and minimum thickness. If the ratio of the maximum to minimum thickness is greater than three then an additional intermediate thickness shall be tested.

All characteristics listed in Table 8 shall be subject to product type determination, except reaction to fire Class A1 without testing. The type tests relevant for each category are listed in Table 7.

Product type determination shall be performed to demonstrate conformity to this standard. Tests previously performed in accordance with the provisions of this standard (same product, same characteristic(s), test method, sampling procedure, same attestation of conformity, etc.) may be taken into account. In addition, product type determination shall be performed for the approval of a new product, or a fundamental change in formulation or method of manufacture, the effects of which cannot be predicted on the basis of previous experience.

Whenever a change occurs in the fibre-cement flat sheets design, the raw material or supplier of components or the production process, which would change significantly one or more of the characteristics, the type test shall be performed for the appropriate characteristic(s).

Table 7 — Type tests relevant to each category of sheet

	Category			
	A	B	C	D
Water impermeability	yes	yes	n.a. [a]	yes
Warm water	yes	yes	yes	yes
Soak-dry	50 cycles	25 cycles	25 cycles	25 cycles
Freeze-thaw	100 cycles	25 cycles	n.a. [a]	25 cycles
Heat-rain	50 cycles	25 cycles	n.a. [a]	n.a. [a]
Water vapour permeability	n.a. [a]	n.a. [a]	n.a [a]	yes
Reaction to fire	yes	yes	yes	yes
Release of dangerous substances	yes	yes	yes	yes

[a] Not applicable.

Table 8 — Number of samples and compliance criteria

Characteristic	Requirement	Assessment method	Number of samples	Compliance criteria
Mechanical resistance	5.4.4	7.3.2	at least 10 samples	5.4.4 Table 6 apply 4 % AQL
Density	5.4.2	7.3.1	Inspection by variable; method σ or s	5.4.2
Reaction to fire	5.6.1	7.5.2	7.5.2	7.5
Water impermeability	5.4.5	7.3.3	3 test sheets	5.4.5
Water vapour permeability	5.4.6	7.3.4	3 test sheets	5.4.6
Dimensional variations	5.3	7.2	at least 10 samples	5.3.4 and 5.3.5
Release of dangerous substances	5.6.2	5.6.2		5.6.2
Warm water	5.5.4	7.3.5	10 samples	5.5.4 and 7.3.5.4
Soak-dry	5.5.5	7.3.6	10 samples	5.5.5 and 7.3.6.4
Freeze-thaw	5.5.2	7.4.1	10 samples	5.5.2 and 7.4.1.4
Heat rain	5.5.3	7.4.2	7.4.2.4	5.5.3 and 7.4.2.5

6.2.2 Test samples, testing and compliance criteria

The number of samples of fibre-cement flat sheets to be tested / assessed shall be in accordance with Table 8 of this standard.

6.2.3 Test reports

The results of the determination of the product type shall be documented in the test reports. All test reports shall be retained by the manufacturer for at least 10 years after the last date of production of the fibre-cement flat sheets to which they relate.

6.3 Factory production control (FPC)

6.3.1 General

The manufacturer shall establish, document and maintain a FPC system to ensure that the products placed on the market comply with the declared performance of the essential characteristics.
The FPC system shall consist of procedures, regular inspections and tests and/or assessments and the use of the results to control raw and other incoming materials or components, equipment, the production process and the product.

All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures.

This factory production control system documentation shall ensure a common understanding of the evaluation of the constancy of performance and enable the achievement of the required product performances and the effective operation of the production control system to be checked. Factory production control therefore brings together operational techniques and all measures allowing maintenance and control of the compliance of the product with the declared performances of the essential characteristics.

6.3.2 Requirements

6.3.2.1 General

The manufacturer is responsible for organizing the effective implementation of the FPC system in line with the content of this product standard. Tasks and responsibilities in the production control organization shall be documented and this documentation shall be kept up-to-date.

The responsibility, authority and the relationship between personnel that manages, performs or verifies work affecting product constancy, shall be defined. This applies in particular to personnel that need to initiate actions preventing product non-constancies from occurring, actions in case of non-constancies and to identify and register product constancy problems.

Personnel performing work affecting the constancy of performance of the product shall be competent on the basis of appropriate education, training, skills and experience for which records shall be maintained.

In each factory the manufacturer may delegate the action to a person having the necessary authority to:

- identify procedures to demonstrate constancy of performance of the product at appropriate stages;
- identify and record any instance of non-constancy;
- identify procedures to correct instances of non-constancy.

The manufacturer shall draw up and keep up-to-date documents defining the factory production control. The manufacturer's documentation and procedures should be appropriate to the product and manufacturing process. The FPC system should achieve an appropriate level of confidence in the constancy of performance of the product. This involves:

a) the preparation of documented procedures and instructions relating to factory production control operations, in accordance with the requirements of the technical specification to which reference is made;

b) the effective implementation of these procedures and instructions;

c) the recording of these operations and their results;

d) the use of these results to correct any deviations, repair the effects of such deviations, treat any resulting instances of non-conformity and, if necessary, revise the FPC to rectify the cause of non-constancy of performance.

NOTE Manufacturers having an FPC system, which complies with EN ISO 9001 and which addresses the provisions of the present European Standard are considered as satisfying the FPC requirements of the Regulation (EU) No 305/2011.

6.3.2.2 Equipment

6.3.2.2.1 Testing

All weighing, measuring and testing equipment shall be calibrated and regularly inspected according to documented procedures, frequencies and criteria.

6.3.2.2.2 Manufacturing

All equipment used in the manufacturing process shall be regularly inspected and maintained to ensure use, wear or failure does not cause inconsistency in the manufacturing process. Inspections and maintenance shall be carried out and recorded in accordance with the manufacturer's written procedures and the records retained for the period defined in the manufacturer's FPC procedures.

6.3.2.3 Raw materials and components

The specifications of all incoming raw materials and components shall be documented, as shall the inspection scheme for ensuring their compliance. In case supplied kit components are used, the constancy of performance system of the component shall be that given in the appropriate harmonized technical specification for that component.

6.3.2.4 Traceability and marking

Fibre-cement flat sheets shall be identifiable and traceable with regard to their production origin. The manufacturer shall have written procedures ensuring that processes related to affixing traceability codes and/or markings are inspected regularly.

6.3.2.5 Controls during manufacturing process

The manufacturer shall plan and carry out production under controlled conditions.

6.3.2.6 Product testing and evaluation

The manufacturer shall establish procedures to ensure that the stated values of the characteristics he declares are maintained. The characteristics, and the means of control, for fibre-cement flat sheets are detailed in Table 9.

Table 9 — Minimum sampling schemes

Length and width Thickness Straightness of edges Squareness of edges	ISO 2859-1 Inspection by attribute Double sampling AQL 4 % Level S_1
Apparent density Bending strength	ISO 3951-1 Inspection by variable; method σ or s AQL 4 % Level S_3

The specification of acceptance tests apply to the product as delivered, but may be carried out at an earlier stage of maturity.

Sampling from continuous production testing

- on the base sheet prior to coating,
- in conditions other than in Table 10,

is acceptable provided that it has been statistically established (see Annex B) that compliance with the requirements given in Table 6 is ensured.

Acceptance tests can also be used to confirm that a batch of flat sheets conforms with the standard, e.g. in conjunction with type tests or for receiving inspection.

The tests include the:

- measurement of dimensions – length, width and thickness – (methods specified in 7.2);

- measurement of apparent density (method specified in 7.3.1);

- measurement of mechanical characteristics–bending strength and bending modulus– (method specified in 7.3.2).

Each limit of specification, for the characteristics in Table 7, shall be subject to an AQL of 4 %. The sampling schemes provided in ISO 2859-1 and ISO 3951-1, with an AQL of 4 % and inspection levels S1 and S_3 respectively, ensure that for large batches approximately 95 % of the items fulfill the requirements.

6.3.2.7 Non-complying products

The manufacturer shall have written procedures which specify how non-complying products shall be dealt with. Any such events shall be recorded as they occur and these records shall be kept for the period defined in the manufacturer's written procedures.

Where the product fails to satisfy the acceptance criteria, the provisions for non-complying products shall apply, the necessary corrective action(s) shall immediately be taken and the products or batches not complying shall be isolated and properly identified.
Once the fault has been corrected, the test or verification in question shall be repeated.

The results of controls and tests shall be properly recorded. The product description, date of manufacture, test method adopted, test results and acceptance criteria shall be entered in the records under the signature of the person responsible for the control/test.
With regard to any control result not meeting the requirements of this European Standard, the corrective measures taken to rectify the situation (e.g. a further test carried out, modification of manufacturing process, disposal, recycle or correction of product) shall be indicated in the records.

6.3.2.8 Corrective action

The manufacturer shall have documented procedures that instigate action to eliminate the cause of non-conformities in order to prevent recurrence.

6.3.2.9 Handling, storage and packaging

The manufacturer shall have procedures providing methods of product handling and shall provide suitable storage areas preventing damage or deterioration.

6.3.3 Product specific requirements

The FPC system shall address this European Standard and ensure that the products placed on the market comply with the declaration of performance.

The FPC system shall include a product specific FPC, which identifies procedures to demonstrate compliance of the product at appropriate stages, i.e.:

a) the controls and tests to be carried out prior to and/or during manufacture according to a frequency laid down in the FPC test plan,

and/or

b) the verifications and tests to be carried out on finished products according to a frequency laid down in the FPC test plan

The manufacturer shall establish and maintain records that provide evidence that the production has been sampled and tested. These records shall show clearly whether the production has satisfied the defined acceptance criteria and shall be available for at least three years.

6.3.4 Initial inspection of factory and of FPC

Initial inspection of factory and of FPC shall be carried out when the production process has been finalised and in operation. The factory and FPC documentation shall be assessed to verify that the requirements of 6.3.2 and 6.3.3 are fulfilled.

During the inspection it shall be verified:

a) that all resources necessary for the achievement of the product characteristics included in this European Standard are in place and correctly implemented,

and

b) that the FPC-procedures in accordance with the FPC documentation are followed in practice,

and

c) that the product complies with the product type samples, for which compliance of the product performance to the DoP has been verified.

All locations where final assembly or at least final testing of the relevant product is performed, shall be assessed to verify that the above conditions a) to c) are in place and implemented. If the FPC system covers more than one product production line or production process, and it is verified that the general requirements are fulfilled when assessing one product, production line or production process, then the assessment of the general requirements does not need to be repeated when assessing the FPC for another product, production line or production process.

All assessments and their results shall be documented in the initial inspection report.

6.3.5 Continuous surveillance of FPC

Surveillance of the FPC shall be undertaken once per year. The surveillance of the FPC shall include a review of the FPC test plan(s) and production process(s) for each product to determine if any changes have been made since the last assessment or surveillance.

Checks shall be made to ensure that the test plans are still correctly implemented and that the production equipment is still correctly maintained and calibrated at appropriate time intervals.

The records of tests and measurements made during the production process and to finished products shall be reviewed to ensure that the values obtained still correspond with those values for the samples submitted to the determination of the product type and that the correct actions have been taken for non-compliant products.

6.3.6 Procedure for modifications

If modifications are made to the product, production process or FPC system that could affect any of the product characteristics declared according to this standard, then all the characteristics for which the manufacturer declares performance, which may be affected by the modification, shall be subject to the determination of the product type, as described in 6.2.1.