
Kompoziti iz materialov na osnovi celuloze in plastomerov (navadno imenovani lesno-polimerni kompoziti (WPC) ali kompoziti iz naravnih vlaken (NFC)) - 5. del: Specifikacije za profile in ploščice stenskih oblog

Composites made from cellulose-based materials and thermoplastics (usually called wood-polymer composites (WPC) or natural fibre composites (NFC)) - Part 5: Specifications for cladding profiles and tiles

Verbundwerkstoffe aus cellulosehaltigen Materialien und Thermoplasten (üblicherweise Holz-Polymer-Werkstoffe (WPC) oder Naturfaserverbundwerkstoffe (NFC) genannt) - Teil 5: Anforderungen an Profile und Formteile für Wandbekleidungen

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Composites à base de matières cellulosiques et de thermoplastiques (communément appelés composites bois-polymères (WPC) ou composites fibres d'origine naturelle (NFC)) - Partie 5: Spécifications relatives aux lames et plaques pour bardage et lambris

Ta slovenski standard je istoveten z: prEN 15534-5

ICS:

79.080	Polizdelki iz lesa	Semi-manufactures of timber
83.140.99	Drugi izdelki iz gume in polimernih materialov	Other rubber and plastics products

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 249.

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prEN 15534-5:2019 (E)

European foreword

This document (prEN 15534-5:2019) has been prepared by Technical Committee CEN/TC 249 “Plastics”, the secretariat of which is held by NBN.

This document is currently submitted to the CEN Enquiry.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association. For relationship with EU Regulation, see informative Annex ZA, which is an integral part of this document.

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1 Scope

This document specifies the characteristics of cladding profiles and tiles made from cellulose-based materials and thermoplastics, usually called wood-polymer composites (WPC) or natural fibre composites (NFC), for external use.

This document is applicable to extruded profiles but also to tiles manufactured by other plastics processing techniques, e.g. injection moulding.

It is not applicable to support rail profiles, cover strip profiles and fastener devices.

This document also specifies assessment methods, provisions for the assessment and verification of constancy of performance (AVCP) of these products and includes requirements for marking.

Reprocessed and/or recycled materials can be used for manufacturing the components which comply with the requirements of this part of EN 15534.

NOTE 1 WPC materials are recyclable materials which can be treated in a material recovery process intended to save resources while minimizing harmful emissions into air, water and soil as well as their impacts on human health.

NOTE 2 A scheme for the characterization of plastics waste is given in EN 15347 and guidelines for the recovery and recycling are given in ISO 15270.

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 15534-1:2014+A1:2017, *Composites made from cellulose-based materials and thermoplastics (usually called wood-polymer composites (WPC) or natural fibre composites (NFC)) - Part 1: Test methods for characterisation of compounds and products* (oSIST prEN 15534-5:2019)

EN 16472, *Plastics - Method for artificial accelerated photoageing using medium pressure mercury vapour lamps*

CEN/TS 16637-2:2014, *Construction products - Assessment of release of dangerous substances - Part 2: Horizontal dynamic surface leaching test*

EN ISO 4892-2, *Plastics - Methods of exposure to laboratory light sources - Part 2: Xenon-arc lamps (ISO 4892-2)*

EN ISO 4892-3:2016, *Plastics - Methods of exposure to laboratory light sources - Part 3: Fluorescent UV lamps (ISO 4892-3:2016)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 15534 1:2014+A1:2017 apply.

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

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

prEN 15534-5:2019 (E)**4 Products characteristics****4.1 Reaction to fire**

When decided to declare the reaction to fire performance of a WPC/NFC cladding profile or tile shall be expressed as the reaction to fire class, as specified in EN 13501-1, based on results of the test(s), relevant for the claimed class, according to 5.1.

NOTE The reaction to fire indicates the degree of contribution of the material to the behaviour of the construction product in the event of fire.

4.2 Mechanical properties**4.2.1 Flexural tensile strength**

When declared, the flexural tensile strength of a WPC/NFC cladding profile or tile shall be evaluated by:

- a) determining the deflection under a load of 250 N according to 5.2.1 and expressed as “compliant” when the mean value of the deflection under a load of 250 N is $\leq 5,0$ mm, and
- b) determining the bending strength according to 5.2.1 and expressed as the value of the bending strength in megapascals.

4.2.2 Modulus of elasticity in bending

When declared, the modulus of elasticity in bending of a WPC/NFC cladding profile or tile shall be evaluated according to 5.2.2 and expressed as value in megapascals.

4.2.3 Resistance to fixings

When declared, the resistance to fixings of a WPC/NFC cladding profile or WPC/NFC tile shall be evaluated by:

- a) determining the withdrawal capacity of nails and screws in accordance with 5.2.3.1, and expressed as the value of the withdrawal parameter, in newtons per square millimetre, and
- b) determining the pull through resistance in accordance with 5.2.3.2 and expressed as the value of the pull through parameter, in newtons per square millimetre.

4.2.4 Impact resistance

When declared, the impact resistance of a WPC/NFC cladding profile or a WPC/NFC tile shall be evaluated by determining the falling mass impact resistance in accordance with 5.2.4 and expressed as “compliant” when no more than one test specimen out of 10 test specimens shows a failure.

4.2.5 Peel strength (profiles with laminated foil)

When declared, the peel strength of a WPC/NFC cladding profile or WPC/NFC tile shall be evaluated according to 5.2.5 and expressed in Newtons per millimetre (N/mm) or if the foil breaks, the tensile strength at break of the foil in Newtons (N) or as the peeled length in millimetres (mm).

4.3 Durability**4.3.1 Resistance to artificial weathering**

When declared, the resistance of a WPC/NFC cladding profile or a WPC/NFC tile to artificial weathering shall be evaluated in accordance with 5.3.1, and expressed as the value of ΔL^* , Δa^* , Δb^* and the appearance criteria.

4.3.2 Moisture resistance

When declared, the moisture resistance of a WPC/NFC cladding profile or a WPC/NFC tile shall be evaluated by determining the moisture resistance under cyclic conditions in accordance with 5.3.2, and expressed as “compliant” when the mean value of the deflection under a load of 250 N is ≤ 6 mm.

4.3.3 Swelling and water absorption

When declared, the swelling and water absorption of a WPC/NFC cladding profile or a WPC/NFC tile shall be evaluated in accordance with 5.3.3 and expressed as “compliant” when:

- 1) the mean values of swelling are:
 - i) ≤ 10 % in thickness direction,
 - ii) $\leq 1,5$ % in the width direction,
 - iii) $\leq 0,6$ % in the length direction;
- 2) the individual values of swelling are:
 - i) ≤ 12 % in thickness direction,
 - ii) ≤ 2 % in the width direction,
 - iii) $\leq 1,2$ % in the length direction;
- 3) the mean value of the water absorption is ≤ 8 % in weight, and
- 4) the individual values of the water absorption is ≤ 9 % in weight.

4.4 Thermal properties

4.4.1 Linear thermal expansion

When declared, the linear thermal expansion of a WPC/NFC cladding profile or a WPC/NFC tile shall be evaluated in accordance with 5.4.1 and expressed as “compliant” when the linear thermal coefficient is $\leq 50 \cdot 10^{-6} \text{ K}^{-1}$.

4.4.2 Heat reversion (applicable to profiles)

When declared, the heat reversion of a WPC/NFC cladding profile or a WPC/NFC tile shall be evaluated in accordance with 5.4.2 and expressed as a percentage (%).

4.4.3 Heat build up

When declared, the heat build-up of a WPC/NFC cladding profile or a WPC/NFC tile shall be evaluated in accordance with 5.4.3 and expressed in centigrade ($^{\circ}\text{C}$).

4.5 General characteristics

The general characteristics of a WPC/NFC cladding profile or a WPC/NFC tile shall be evaluated in accordance with Annex A

4.6 Release of dangerous substances (leaching)

When declared, the leaching of dangerous substances of a WPC/NFC cladding profile or a WPC/NFC tile shall be evaluated in accordance with 5.5 and expressed as a percentage (%).

prEN 15534-5:2019 (E)**5 Testing, assessment and sampling methods****5.1 Reaction to fire**

The WPC/NFC cladding profile or tile shall be tested in accordance with the test method(s) given in EN 13501-1 and EN 15534-1:2014+A1:2017, 9.6, for the referred class of the reaction to fire performance.

When tested in accordance with EN 13823, the mounting and fixing of the WPC/NFC cladding profile or tile shall conform to EN 15534-1:2014+A1:2017, 9.6.2 and the indication on this method, as given therein, shall also be declared.

5.2 Mechanical properties**5.2.1 Flexural tensile strength**

The deflection under a load of 250 N and the bending strength shall be determined according to EN 15534-1:2014+A1:2017, Annex A, using 4 test specimens per side.

5.2.2 Modulus of elasticity in bending

The modulus of elasticity in bending shall be determined according to the EN 15534-1:2014+A1:2017, Annex A, using 8 specimens and on both faces of the profile/tile if relevant.

5.2.3 Resistance to fixings**5.2.3.1 Withdrawal capacity of nails and screws**

The withdrawal capacity of nails and screws shall be determined according to EN 15534-1:2014+A1:2014, 7.6 using 10 test specimens.

5.2.3.2 Pull through resistance

The pull through resistance shall be determined according to EN 15534-1:2014+A1:2017, 7.7 using 10 test specimens.

5.2.4 Falling mass impact resistance

The falling mass impact resistance of a WPC/NFC cladding profile or tile made from non-cellular material shall be determined according to EN 15534-1:2014+A1:2017, 7.1.2.2.1, on 10 test specimens using the following parameters:

- $H = (1\ 000 \pm 5)$ mm;
- $M_s = (500 \pm 2)$ g.

The falling mass impact resistance of a WPC/NFC cladding profile or tile made from cellular material shall be determined according to EN 15534-1:2014+A1:2017, 7.1.2.2.2, on 10 test specimens using the following parameters:

- $H = (1\ 000 \pm 5)$ mm;
- $M_s = (500 \pm 2)$ g.

5.2.5 Peel strength (profiles with laminated foil)

The peel strength shall be determined according to EN 15534-1:2014+A1:2017, 10.3 using 4 test specimens.

5.3 Durability

5.3.1 Resistance to artificial weathering

The resistance to artificial weathering shall be determined after an exposure of the WPC/NFC cladding profile or tile according to EN 15534-1:2014+A1:2017, 8.1, using one specimen per colour, during:

- 300 h for an exposure to xenon-lamps (EN ISO 4892-2); or
- 2 016 h for an exposure to fluorescent UV (EN ISO 4892-3:2016, Method A, Cycle 1); or
- 750 h for an exposure to medium pressure mercury lamps (EN 16472).

Five measurements shall be performed on each specimen.

The difference of colour, ΔL^* , Δa^* , Δb^* , ΔE^* shall be determined according to EN 15534-1:2014+A1:2017, 8.1.3.

The appearance criteria shall be defined by the manufacturer.

5.3.2 Moisture resistance under cyclic conditions

The moisture resistance under cyclic conditions shall be determined according to EN 15534-1:2014+A1:2017, 8.3.2.

The deflection under a load of 250 N shall be determined according to EN 15534-1:2014+A1:2017, Annex A, using 3 test specimens mounted to the test apparatus in the same way as for the bending test according to EN 15534-1:2014+A1:2017, 4.5.2, giving the lower mean value for the maximum force; the test shall be performed on both faces of the profile/tile, if relevant.

5.3.3 Swelling and water absorption

The swelling and water absorption shall be determined according to EN 15534-1:2014+A1:2017, 8.3.1, using 5 test specimens.

5.4 Thermal properties

5.4.1 Linear thermal expansion

The linear thermal expansion (use class 3, only) shall be determined according to EN 15534-1:2014+A1:2017, 9.2, using 3 test specimens.

5.4.2 Heat reversion (applicable to profiles)

The linear heat reversion shall be determined according to EN 15534-1:2014+A1:2017, 9.3, using 3 test specimens.

5.4.3 Heat build up

The heat build-up shall be determined according to EN 15534-1:2014+A1:2017, 9.4, using 3 test specimens.

5.5 Release of dangerous substances (leaching)

The leaching of dangerous substances shall be determined according to CEN/TS 16637-2:2014,