

BS EN 14978:2016



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Laminate floor coverings — Elements with acrylic based surface layer, electron beam cured — Specifications, requirements and test methods

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee PRI/60, Resilient and Laminate Floor Coverings.

A list of organizations represented on this committee can be obtained on request to its secretary.

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English Version

Laminate floor coverings - Elements with acrylic based surface layer, electron beam cured - Specifications, requirements and test methods

Revêtements de sol stratifiés - Éléments à parement à base acrylique traités par des faisceaux d'électrons -
Spécifications, exigences et méthodes d'essai

Laminatböden - Elemente mit einer elektronenstrahlgehärteten Deckschicht auf Acryl-Basis - Spezifikationen, Anforderungen und Prüfverfahren

This European Standard was approved by CEN on 27 November 2015.

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European foreword

This document (EN 14978:2016) has been prepared by Technical Committee CEN/TC 134 "Resilient, textile and laminate floor coverings", 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of an identical text or by endorsement, at the latest by September 2016, and conflicting national standards shall be withdrawn at the latest by September 2016.

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 supersedes EN 14978:2006.

Compared to EN 14978:2006 the following changes have been made:

- a) general definition for laminate floor coverings included;
- b) defined underlay for impact resistance test with the large diameter ball added;
- c) requirements for castor chair test changed;
- d) requirements for level of use 32 and 33 for floor coverings with a high gloss level added;
- e) test method and requirements for abrasion resistance for floor coverings with a high gloss level changed;
- f) requirements for cigarette resistance deleted;
- g) technical characteristic micro-scratch resistance added.

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1 Scope

This European Standard specifies characteristics, requirements and test methods for laminate floor coverings with acrylic based surface layer, electron beam cured as defined in 3.1 and 3.2.

It includes a classification system based on EN ISO 10874, giving practical requirements for areas of use and levels of use, to indicate where laminate floor coverings will give satisfactory service and to encourage the consumer to make an informed choice. It also specifies requirements for marking and packaging.

Laminate floor coverings are considered for domestic and commercial levels of use, e.g. for use in domestic kitchens. This standard does not specify requirements related to areas that are subject to frequent wetting, such as bathrooms, laundry rooms or saunas.

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 322, *Wood-based panels - Determination of moisture content*

EN 424, *Resilient floor coverings - Determination of the effect of simulated movement of a furniture leg*

EN 425:2002, *Resilient and laminate floor coverings - Castor chair test*

EN 438 (all parts), *High-pressure decorative laminates (HPL) — Sheets based on thermosetting resins (Usually called Laminates)*

EN 13329:2016, *Laminate floor coverings — Elements with a surface layer based on aminoplastic thermosetting resins — Specifications, requirements and test methods*

EN 15468:2016, *Laminate floor coverings — Elements with directly applied printing and resin surface layer — Specifications, requirements and test methods*

EN 16094, *Laminate floor coverings - Test method for the determination of micro-scratch resistance*

CEN/TS 16354, *Laminate floor coverings - Underlays - Specification, requirements and test methods*

EN ISO 2813, *Paints and varnishes - Determination of gloss value at 20°, 60° and 85° (ISO 2813)*

EN ISO 10874, *Resilient, textile and laminate floor coverings - Classification (ISO 10874)*

ISO 24334, *Laminate floor coverings -- Determination of locking strength for mechanically assembled panels*

ISO 24336, *Laminate floor coverings — Determination of thickness swelling after partial immersion in water*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13329:2016 and the following apply.

3.1

laminated floor covering

rigid floor covering, typically in a plank or tile format, with a multiple layer structure: e.g. backer, substrate and décor

Note 1 to entry: The planks/tiles have worked edges that allow the product to be joined together to form a larger integral unit. The product may vary in surface texture and gloss level.

Note 2 to entry: Laminated flooring does not include products having a resilient, stone, textile, wood, leather or metal top surfacing material(s).

3.2

acrylic based surface layer

upper decorative layer intended to be the visible side when the floor is installed consisting of resins which are hardened using beams (normally acrylate, methacrylate or similar) and impregnated and surfaced decorative materials (normally paper), which all together are hardened through the application of a sufficient dose of electron beams and constant pressure

Note 1 to entry: The surface layer produced with this technique is called 'electron-beam pressed laminate (EPL)'. The surface layer is bonded to a substrate (usually a wood-based panel).

3.3

substrate

core material of the laminated floor covering

Note 1 to entry: It is generally a particleboard, as defined in EN 309, or a dry process fibreboard (MDF) as defined in EN 316 or a so called High Density Fibreboard (HDF) which is a MDF-board with a density $\geq 800 \text{ kg/m}^3$.

3.4

backer

layer opposite to the surface layer used to balance and stabilize the product

Note 1 to entry: The backer is generally made of impregnated papers.

3.5

underlay

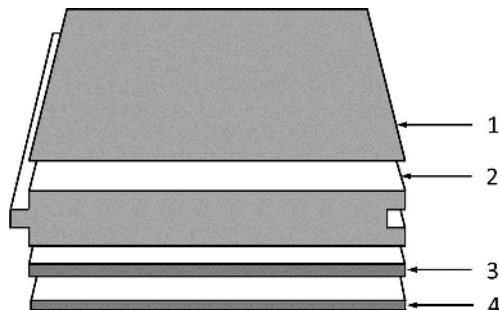
layer placed between the laminated floor covering and the subfloor to impart specific properties

Note 1 to entry: Some laminated floor covering products have the underlay pre-attached directly to the backer.

3.6 lamine floor covering element

piece of the floor covering with profiled edges to facilitate assembly at installation

Note 1 to entry: See Figure 1



Key

- 1 surface layer
- 2 substrate
- 3 backer
- 4 underlay (optional)

Figure 1 — Construction of a laminate floor-covering element

4 Characteristics

Laminate floor coverings according to this standard shall conform to the general requirements given in EN 13329:2016, Table 1, with the following modifications:

- For special applications, such as decorative pattern effects, tighter tolerances shall be permitted if necessary.
- Tolerances of the tongue and groove shall be such that when, for the purposes of testing, the elements are assembled without glue, the maximum permissible opening and height difference values are not exceeded.
- To determine the capability of laminate floor coverings to withstand ambient humidity variations, a laboratory test in controlled conditions shall be made.

5 Classification

5.1 General

Prior to classification testing, the specular gloss level of the laminate floor covering shall be determined in accordance with EN ISO 2813, with a detection angle of 60°. A distinction shall be made between two specular gloss levels of the surface layer:

- common gloss level: specular gloss level < 85 units;
- high gloss level: specular gloss level ≥ 85 units.

5.2 Floor coverings with a common gloss level

Laminate floor coverings conforming to this standard with a common gloss level shall be classified as being suitable for different levels of use according to the requirements specified in EN 13329:2016, Table 2, when tested by the methods given therein. Classification shall conform to the scheme specified in EN ISO 10874.

5.3 Floor coverings with a high gloss level

Laminate floor coverings conforming to this standard with a high gloss level shall be classified as being suitable for different levels of use according to the requirements specified in Table 1, when tested by the methods given therein. Classification shall conform to the scheme specified in EN ISO 10874.

For the large ball impact test a standard EPS foam of $(1,8 \pm 0,2)$ mm thickness, with a CS value of (60 ± 10) kPa and with PC-value of $(0,9 \pm 0,1)$ mm shall be used. The three parameters of the foam shall be determined according to CEN/TS 16354.¹⁾

Table 1 — Classification requirements and levels of use for floor coverings with a high gloss level

	Level of use						Test method
	Domestic			Commercial			
	Moderate	General	Heavy	Moderate	General	Heavy	
Class	21	22	23	31	32	33	
Abrasion resistance	$\geq 1\,000$ revolutions		$\geq 2\,000$ revolutions		$\geq 4\,000$ rev.	$\geq 6\,000$ rev.	EN 15468:2016, Annex A
Impact resistance	≥ 8 N ≥ 500 mm						EN 13329:2016, Annex H
Small ball							
Big ball	≥ 750 mm		≥ 1000 mm				
Resistance to staining	4, (groups 1 and 2) 3, (group 3)	5, (groups 1 and 2) 4, (group 3)					EN 438-2
Effect of a furniture leg	-		No damage shall be visible, when tested with foot type 0			EN 424	
Effect of a castor chair	-		25 000 cycles, No damage ^a			EN 425:2002 ^b	
Thickness swelling	≤ 20 %		≤ 18 %		≤ 15 %	ISO 24336	
Locking strength	-				$f_{0,2} \geq 1$ kN/m (length) $f_{s0,2} \geq 2$ kN/m (width)		ISO 24334
Surface soundness	$\geq 1,0$ N/mm ²				$\geq 1,25$ N/mm ²		EN 13329:2016, Annex D
^a No visible damage on the surface of the assembled test area caused by detachment of layers, opening of joints, or crazing. Ignore any flattening or change in appearance, e.g. change in gloss.							
^b Using soft castor wheels W PU (95 ± 5) Shore A" dropping "except for class 34 wheels H PA (95 ± 5) Shore A.							

1) The product "Selitflex 1,6 mm" made by Selit Dämmtechnik GmbH is an example of a suitable product available commercially. This information is given for the convenience of users of this European Standard and does not constitute an endorsement by CEN of this product. Equivalent products may be used if they can be shown to lead to the same results.

6 Additional characteristics and requirements

When any of the characteristics given in Table 2 are requested for specific applications, the laminate floor coverings shall be tested by the methods given therein. The properties stated in Table 2 are considered important for some specific products or applications.

Table 2 — Additional characteristics and requirements

Characteristic	Requirement/comments	Test method
Humidity (at dispatch from the manufacturer)	The elements shall have a moisture content of 4 % to 10 %. Any single batch shall be homogeneous with $H_{max.} - H_{min.} \leq 3$ %.	EN 322
Appearance, surface defects	Minor surface defects as defined in the EN 438 series shall be permitted.	EN 438-2
Resistance to scratching	The elements shall have a minimum resistance to scratching of rating 3.	EN 438-2
Micro-scratch resistance	Can be declared as micro-scratch resistance classes according to procedure A and/or B.	EN 16094

7 Marking, designation and packaging


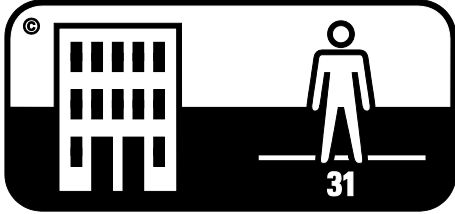

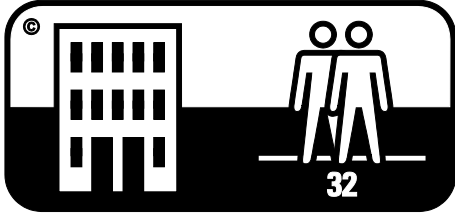

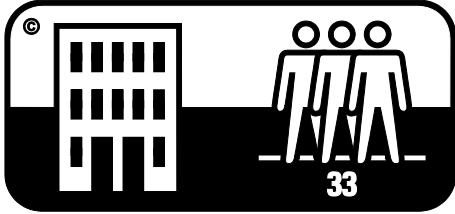
7.1 Marking

NOTE For CE-marking, see EN 14041.

Laminate floor coverings which comply with the requirements of this standard shall have the following information clearly marked by the manufacturer, either on their packaging, or on a label or on an information sheet included in the packaging:

- a) a reference to this European Standard;
- b) manufacturer's and/or supplier's identification;
- c) product name;
- d) colour/pattern and batch number;
- e) level of use symbols appropriate to EN ISO 10874 and in accordance with Table 3;
- f) nominal dimensions of one floor covering element in millimetres; if relevant: nominal thickness of pre-attached underlay;
- g) nominal thickness of products with pre-attached underlay e.g. 10 (8 + 2) mm;
- h) number of elements contained in a package;
- i) area contained in a package in square metres.

Table 3 — Classification symbols

Intensity of use according to EN ISO 10874	Domestic	Commercial
Moderate		
General		
Heavy		

7.2 Packaging

Laminate floor coverings shall be delivered in packages designed to protect the corners, edges and surfaces of the product under normal conditions of transport and handling. Installation, cleaning and maintenance instructions shall be delivered together with the product.

8 Test report

The test report shall include at least the following information:

- a) the name and address of the test laboratory;
- b) date of test report;
- c) a reference to this standard;
- d) full description of the product tested;
- e) sampling information;
- f) test results;
- g) all deviations from this standard.

Bibliography

- [1] EN 309, *Particleboards - Definition and classification*
- [2] EN 316, *Wood fibre boards - Definition, classification and symbols*
- [3] EN 14041, *Resilient, textile and laminate floor coverings - Essential characteristics*
- [4] ISO 24334, *Laminate floor coverings — Determination of locking strength for mechanically assembled panels*

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