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English Version

Laminate floor coverings - Elements with a surface layer based on aminoplastic thermosetting resins - Specifications, requirements and test methods

Revêtements de sol stratifiés - Eléments dont la surface est à base de résines aminoplastes thermodurcissables - Spécifications, exigences et méthodes d'essai

Laminatböden - Elemente mit einer Deckschicht auf Basis aminoplastischer, wärmehärtbarer Harze - Spezifikationen, Anforderungen und Prüfverfahren

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (prEN 13329:2013) has been prepared by Technical Committee CEN/TC 134 "Resilient, textile and laminate floor coverings", the secretariat of which is held by NBN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 13329:2006+A1:2008.

Compared to EN 13329:2006+A1:2008 the following changes have been made:

- a) general definition for laminate floor coverings included.
- b) test method for the light fastness stated more precisely.
- c) general requirements for thickness tolerances of elements with pre-attached underlays added.
- d) requirements for abrasion resistance changed.
- e) requirements for cigarette resistance deleted.
- f) general requirements for surface soundness changed into a classification requirement, requirements partly increased.
- g) defined foam for a system test for impact resistance with the big ball and castor chair resistance added and requirements for both properties changed.
- h) requirements for thickness swelling partly changed.
- i) requirements for locking strength added.
- j) requirements for dimensional stability changed.
- k) technical characteristic micro-scratch resistance added.
- l) test method for abrasion resistance in Annex E stated more precisely.
- m) Annex G for hardness measurements for abrasion wheels added.
- n) test method for impact resistance in Annex H stated more precisely.

1 Scope

This European Standard specifies characteristics, requirements and test methods for laminate floor coverings (as defined in 3.1). It also specifies requirements for marking and packaging.

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.

Laminate floor coverings are considered for domestic and commercial levels of use, including domestic kitchens. This standard does not specify requirements relating to areas which are subjected 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.

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

EN 311, *Wood-based panels — Surface soundness — Test method*

EN 318, *Wood based panels — Determination of dimensional changes associated with changes in relative humidity*

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 438-2, *High-pressure decorative laminates (HPL) — Sheets based on thermosetting resins (usually called laminates) — Determination of properties*

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

EN 20105-A02, *Textiles — Tests for colour fastness — Part A02: Grey scale for assessing change in colour*

EN ISO 105-B02, *Textiles — Tests for colour fastness — Part B02: Colour fastness to artificial light: Xenon arc fading lamp test*

EN ISO 4892-2:2009, *Plastics — Methods of exposure to laboratory light sources — Part 2: Xenon-arc lamps (ISO 4892-2:2006 + Amd.1:2009)*

EN ISO 4918, *Resilient, textile and laminate floor coverings — Castor chair test*

EN ISO 10874, *Resilient, textile and laminate floor coverings — Classification (ISO 10874:2009)*

EN ISO 24343-1, *Resilient and laminate floor coverings — Determination of indentation and residual indentation — Part 1: Residual indentation*

ISO 48, *Rubber, vulcanized or thermoplastic — Determination of hardness (Hardness between 10 IRHD and 100 IRHD)*

ISO 6506-1, *Metallic materials — Brinell hardness test — Part 1: Test method*

ISO 7267-2, *Rubber-covered rollers — Determination of apparent hardness — Part 2: Shore-type durometer method*

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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*

ISO 24339, *Laminate and textile floor coverings — Determination of dimensional variations after exposure to humid and dry climate conditions*

3 Terms and definitions

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

3.1**laminate floor covering**

rigid floor covering, typically in a plank or tile format, with a multiple layer structure, e.g. backer, substrate and décor, and worked edges that allow the product to be joined together to form a larger integral unit. Laminate flooring does not include products with a resilient, stone, textile, wood, leather or metal top surfacing material(s)

3.2**surface layer**

upper decorative layer, which may vary in surface texture and gloss level, consisting of one or more thin sheets of a fibrous material (usually paper), impregnated with aminoplastic, thermosetting resins (usually melamine)

Note 1 to entry: By the simultaneous action of heat and pressure, these sheets are either pressed as such (HPL, CPL, Compact), and in the case of HPL and CPL bonded on a substrate (usually wood-based panels), or in the case of DPL directly pressed on a substrate (usually wood-based panels). The product is usually finished with a backer (e.g. HPL, CPL, impregnated papers), primarily used as a balancing material.

3.3**substrate**

core material of the laminate floor covering

Note 1 to entry: It is generally a particleboard, as defined in EN 309, or a Medium Density Fibreboard or High Density Fibreboard (MDF or HDF), as defined in EN 316.

3.4**backer**

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

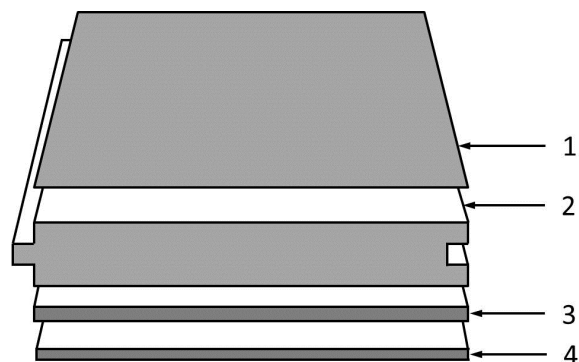
Note 1 to entry: The backer is generally made of impregnated papers.

3.5**underlay**

layer placed between the laminate floor covering and the subfloor to impart specific properties. Some laminate floor covering products have the underlay pre-attached directly to the backer.

3.6**laminate floor covering element**

piece of the floor covering with profiled edges to facilitate assembly at installation (see Figure 1)

**Key**

- 1 Surface layer
- 2 Substrate
- 3 Backer
- 4 Underlay (optional)

Figure 1 — Laminate floor-covering element

4 Requirements

4.1 General requirements

All laminate floor coverings shall conform to the general requirements given in Table 1, when tested by the methods specified therein.

SIST EN 13329:2016

<https://standards.iteh.ai/catalog/standards/sist/956a5e5f-dc4b-4c14-9be9-2f64e2a8b58b/sist-en-13329-2016>

Table 1 — General requirements

Characteristic	Requirement	Test method
Thickness of the element, (<i>t</i>) without underlay	$\Delta t_{\text{average}} \leq 0,50$ mm, relative to nominal value $t_{\text{max.}} - t_{\text{min.}} \leq 0,50$ mm	Annex A
With pre-attached underlay	$\Delta t_{\text{average}} \leq 0,50$ mm, relative to nominal value $t_{\text{max.}} - t_{\text{min.}} \leq 0,80$ mm	Annex A
Length of the surface layer, (<i>l</i>)	For the nominal values given, no measured value shall exceed: $l \leq 1500$ mm: $\Delta l \leq 0,5$ mm $l > 1500$ mm: $\Delta l \leq 0,3$ mm/m	Annex A
Width of the surface layer, (<i>w</i>)	$\Delta w_{\text{average}} \leq 0,10$ mm, relative to nominal value $w_{\text{max.}} - w_{\text{min.}} \leq 0,20$ mm	Annex A
Length and width of squared elements, (<i>l = w</i>)	$\Delta l_{\text{average}} \leq 0,10$ mm relative to nominal value $\Delta w_{\text{average}} \leq 0,10$ mm, relative to nominal value $l_{\text{max.}} - l_{\text{min.}} \leq 0,20$ mm $w_{\text{max.}} - w_{\text{min.}} \leq 0,20$ mm	Annex A
Squareness of the element, (<i>q</i>)	$q_{\text{max.}} \leq 0,20$ mm	Annex A
Straightness of the surface layer, (<i>s</i>)	$s_{\text{max.}} \leq 0,30$ mm/m	Annex A
Flatness of the element, (<i>f</i>)	Maximum single values: $f_{w, \text{concave}} \leq 0,15$ % $f_{w, \text{convex}} \leq 0,20$ % $f_{l, \text{concave}} \leq 0,50$ % $f_{l, \text{convex}} \leq 1,00$ %	Annex A
Openings between elements, (<i>o</i>)	$o_{\text{average}} \leq 0,15$ mm $o_{\text{max.}} \leq 0,20$ mm	Annex B
Height difference between elements, (<i>h</i>)	$h_{\text{average}} \leq 0,10$ mm $h_{\text{max.}} \leq 0,15$ mm	Annex B
Dimensional variations after changes in relative humidity, (δl , δw)	$\delta l_{\text{average}} \leq 0,9$ mm $\delta w_{\text{average}} \leq 0,9$ mm	Annex C
Light fastness ^b	Colour contrast between unexposed and exposed sample part ≥ 4 of grey scale according to EN 20105 -A02	EN ISO 4892-2 procedure B – cycle 5 (50 % rel. hum.) ^a
Static indentation	residual indentation $\leq 0,05$ mm	EN ISO 24343-1

^a Test until blue wool scale No. 6 according to EN ISO 105-B02 (= colour contrast 4 on the grey scale according to EN 20105 -A02 between exposed and unexposed part of blue wool scale)

^b Allow sample (24 ±1) recovery time without light exposure at 23 °C and 50 % rel. humidity before taking final assessment.

4.2 Classification requirements

All laminate floor coverings shall be classified as suitable for different levels of use according to the requirements specified in Table 2, when tested by the methods given therein. Classification shall conform to the scheme specified in EN ISO 10874.

The big ball impact test and the castor chair test shall be carried out with the pre-attached underlays or with the same prescribed underlay. In all other cases the standard foam of (2 ± 0,4) mm thickness with a CS value of (60 ± 10) kPa¹ according to CEN/TS 16354 shall be used.

NOTE The product Selitflex 1,6 made by Selit 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.

Table 2 — Classification requirements and levels of use

Class:	Levels of use							Test method
	Domestic			Commercial				
	Moderate	General	Heavy	Moderate	General	Heavy	Very Heavy	
	21	22	23	31	32	33	34	
Abrasion resistance	AC1	AC2	AC3		AC4	AC5	AC 6	Annex E
Impact resistance								Annex H
Small ball	$\geq 8 \text{ N}$				$\geq 12 \text{ N}$	$\geq 15 \text{ N}$	$\geq 20 \text{ N}$	
Big ball	$\geq 500 \text{ mm}$				$\geq 500 \text{ mm}$	$\geq 500 \text{ mm}$	$\geq 500 \text{ mm}$	
Resistance to staining	4, (groups 1 and 2) 3, (group 3)		5, (groups 1 and 2) 4, (group 3)			5, (groups 1, 2 and 3)		EN 438
Effect of a furniture leg	–		No damage shall be visible, when tested with foot type 0					EN 424
Effect of a castor chair	–		10 000 cycles, No damage ^c	20 000 cycles No damage ^c	25 000 cycles No damage ^c	25 000 cycles No damage ^c with type H wheels		ISO 4918 ^a
Thickness swelling	$\leq 20 \%$		$\leq 18 \%$			$\leq 15 \%$	$\leq 8 \%$	ISO 24336
Locking strength					$F_{10,2} \geq 1 \text{ kN/m}$ $F_{S0,2} \geq 2 \text{ kN/m}$	$F_{10,2} \geq 3,5 \text{ kN/m}$ $F_{S0,2} \geq 3,5 \text{ kN/m}$		ISO 24334
Surface sound-ness	$\geq 1,0 \text{ N/mm}^2$				$\geq 1,25 \text{ N/mm}^2$		$\geq 1,50 \text{ N/mm}^2$	Annex D
Dimensional stability							$\Delta w_{\text{avg}},$ $\Delta l_{\text{avg}}: \leq 0,15 \%$ $- 0,20 \% \leq$ $C_{\text{avg}}^b \leq 0,25 \%$ $J_{L \text{ avg}},$ $J_{S \text{ avg}}: \leq$ $0,15 \text{ mm}$ $h_{L \text{ avg}}, h_{S \text{ avg}}: \leq$ $0,15 \text{ mm}$	ISO 24339
^a Using soft castor wheels W PU (95 ±5) Shore A except for class 34 wheels H PA (95 ±5) Shore A ^b Take the maximum of C_{avg} from wet climate (23°C, 85 % rel. hum) and the minimum of C_{avg} from dry climate (23°C, 30 % rel. hum.) for the evaluation ^c After the test a maximum openings of the joints and a maximum height difference of 0,20 mm is allowed measured with test devices according to Annex B, chapter B.3								

4.3 Additional technical characteristics

When any of the characteristics given in Table 3 are required for specific applications, the laminate floor coverings shall be tested by the methods given therein. The properties stated in Table 3 are considered important for some specific products or applications.

Table 3 — Additional technical characteristics

Characteristic	Comment	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 EN 438 are permitted	EN 438-2
Micro-scratch resistance	Can be declared as micro-scratch resistance classes according to procedure A and/or B	EN 16094

5 Marking and packaging

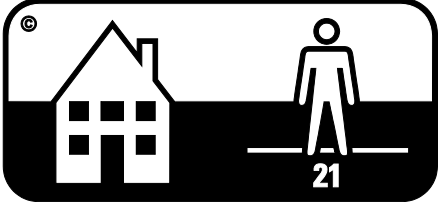
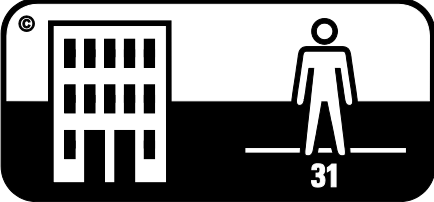
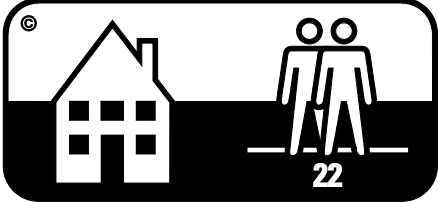
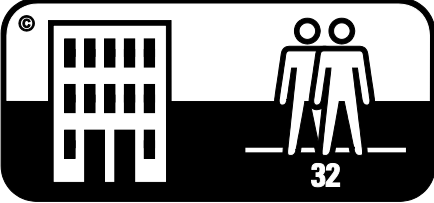
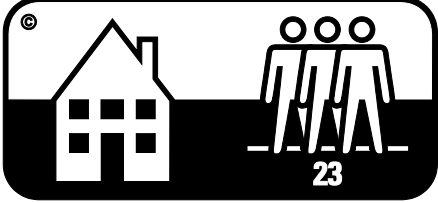
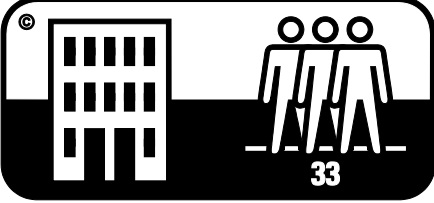

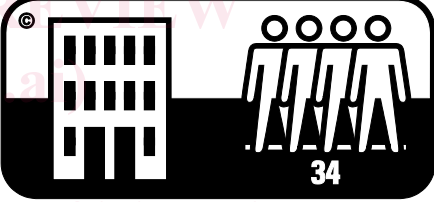
5.1 Marking

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 information sheet included in the packaging:

- a) number of 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 4;
- f) nominal dimensions of one floor covering element in millimetres; if relevant: nominal thickness of pre-attached underlay, nominal thickness of products with pre-attached underlay e.g. 10 (8 + 2) mm
- g) number of elements contained in a package;
- h) area contained in a package in square metres.

Table 4 — Classification symbols

	Domestic	Commercial
Moderate		
General		
Heavy		
Very Heavy		

5.2 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.

6 Test report

The test report shall include at least the following information:

- the name and address of the test laboratory;
- date of test report;
- a reference to this standard;
- full description of the product tested;
- sampling information;
- test results;
- all deviations from this standard.