

Laminate floor coverings — Specifications, requirements and test methods

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 29 and a back cover.

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Laminate floor coverings – Specifications, requirements and test methods

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Laminatböden – Spezifikationen, Anforderungen und Prüfverfahren

This European Standard was approved by CEN on 20 May 2000.

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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 Central Secretariat has the same status as the official versions.

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

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 134, Resilient and textile floor coverings, the Secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by December 2000, and conflicting national standards shall be withdrawn at the latest by December 2000.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

The annexes A, B, C, D, E, F and G are normative.

1 Scope

This European Standard specifies characteristics, states requirements and gives test methods for laminate floor coverings (as defined in paragraph 3.1).

It includes a classification system, based on EN 685, 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.

This standard does not specify requirements relating to areas which are subjected to frequent wetting, such as bathrooms, laundry rooms or saunas, but it does apply to domestic kitchens.

2 Normative references

This European Standard incorporates by dated or undated references, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this standard only when incorporated in it by amendment or revision. For the undated references, the latest edition of the publication referred to applies.

EN 309	Wood particleboards – Definition and classification.
prEN 311:1999	Wood-based panels – Surface soundness – Test method.
EN 316	Wood fibreboards – Definition, classification and symbols.
EN 318	Fibreboards – 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 the simulated movement of a furniture leg.
EN 425	Resilient floor coverings – Determination of the effect of a castor chair.
EN 433	Resilient floor coverings – Determination of residual indentation after static loading.

EN 438	Decorative high pressure laminates (HPL) – Sheets based on thermosetting resins.
EN 685	Resilient floor coverings – Classification.
EN 12529:1998	Castors and wheels – Castors for furniture – Castors for swivel chairs – Requirements.
EN 20105-A02	Textiles – Test for colour fastness – Part A02: Gray scale for assessing change in colours (ISO 105-A02:1993).
EN ISO 105-B02	Textiles – Test for colour fastness – Colour fastness to artificial light: Xenon arc fading lamp test (ISO 105-B02:1994, including amendment 1:1998).
ISO 48	Rubber, vulcanized or thermoplastic – Determination of hardness (hardness between 10 IRHD and 100 IRHD).
ISO 6506	Metallic materials – Brinell hardness test.

3 Terms and definitions

For the purposes of this standard the following terms and definitions apply.

3.1

lamine floor covering

floor covering with a surface layer consisting of one or more thin sheets of a fibrous material (usually paper), impregnated with aminoplastic, thermosetting resins (usually melamine)

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 backing (e.g. HPL, CPL, impregnated papers and veneers), primarily used as a balancing material.

3.1.1

surface layer

upper decorative layer intended to be the visible side when the floor is installed

This layer consists of sheets impregnated with thermosetting resins, pressed by three different techniques:

- High-pressure laminates (HPL), as defined in EN 438;
- Continuous pressed laminates (CPL);
- Directly pressed to the substrate (DPL).

3.1.2

substrate

core material of the laminate floor covering

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.

3.1.3

backing

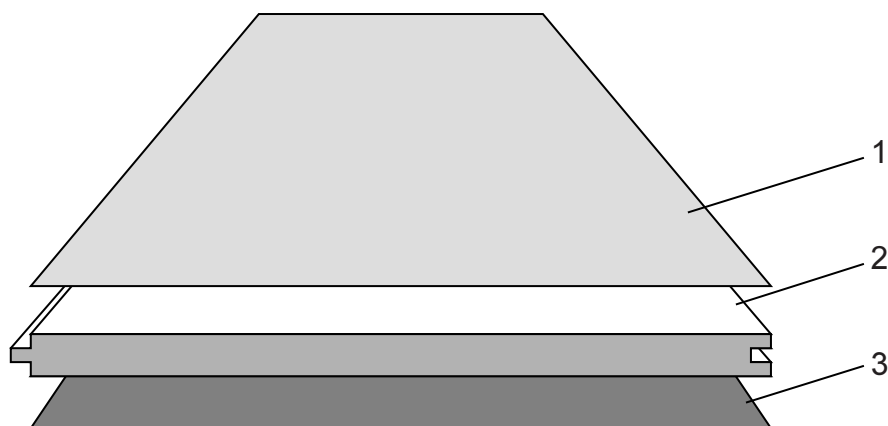
layer opposite to the surface layer

The backing is generally made of HPL, CPL, impregnated papers or veneers. It is primarily used to balance and stabilize the product.

3.2

lamine floor covering element

consisting of a surface layer, a substrate and a backing, shaped and machined on its sides to the appropriate dimensions (see Figure 1). The elements are usually tongued and grooved to facilitate assembly at installation



Key

- 1 Surface layer
- 2 Substrate
- 3 Backing

Figure 1 - Construction of a 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 given therein.

For special applications, such as decorative pattern effects, tighter tolerances may be required.

The tolerances of the tongue and groove shall be such that when, for 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.

Table 1 - General requirements

Characteristic	Requirement	Test method
Thickness of the element, t	$\Delta t_{\text{average}} \leq 0,50$ mm, relative to nominal value $t_{\text{max}} - t_{\text{min}} \leq 0,50$ mm	Annex A
Length of the surface layer, l	For the nominal values given, no measured value shall exceed: $l \leq 1\,500$ mm $\Delta l \leq 0,5$ mm $l > 1\,500$ mm $\Delta l \leq 0,3$ mm/m	Annex A
Width of the surface layer, w	$\Delta w_{\text{average}} \leq 0,10$ mm, relative to nominal value $w_{\text{max}} - w_{\text{min}} \leq 0,20$ mm	Annex A
Length and width of squared elements, $l = w$	$\Delta l_{\text{average}} \leq 0,10$ 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, q	$q_{\text{max}} \leq 0,20$ mm	Annex A
Straightness of the surface layer, s	$s_{\text{max}} \leq 0,30$ mm/m	Annex A
Flatness of the element, f	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, o	$o_{\text{average}} \leq 0,15$ mm $o_{\text{max}} \leq 0,20$ mm	Annex B
Height difference between elements, h	$h_{\text{average}} \leq 0,10$ 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	Blue wool scale, part B02, not worse than 6	EN ISO 105
	Grey scale, part A02, not worse than 4	EN 20105
Static indentation	No visible change, i.e. $\leq 0,01$ mm indentation using a straight steel cylinder, $\varnothing = 11,30$ mm	EN 433
Surface soundness	$\geq 1,00$ N/mm ²	Annex D

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 685.

Table 2 - Classification requirements and levels of use

Class:	Levels of use						Test method
	Domestic			Commercial			
	Moderate	General	Heavy	Moderate	General	Heavy	
	21	22	23	31	32	33	
Abrasion resistance	AC1	AC2	AC3		AC4	AC5	Annex E
Impact resistance	IC1				IC2	IC3	Annex F
Resistance to staining	4, (groups 1 and 2) 3, (group 3)	5, (groups 1 and 2) 4, (group 3)					EN 438
Resistance to cigarette burns	—	4					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	—		No change in appearance or damage, as defined in EN 425. Single-wheel castors, as defined in EN 12529:1998, 5.4.4.2 (Type W) shall be used.				EN 425
Thickness swelling	≤ 20,0 %			≤ 18,0 %			Annex G

4.3 Additional requirements

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 requirements

Characteristic	Requirement	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

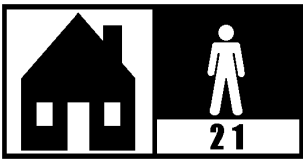
5 Marking, designation and packaging

5.1 Marking

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:

- number of this European Standard followed by suffix according to clause 5.2;
- manufacturer's and/or supplier's identification;
- product name;
- colour/pattern and batch number;
- symbol appropriate to the class of product according to Figure 2;
- the nominal dimensions of one floor covering element in millimetres;
- the number of elements contained in a package;
- the area in square metres contained in a package.

Table 4 - Classification symbols

	Domestic	Commercial
Moderate		
General		
Heavy		