



BSI Standards Publication

**Resilient floor coverings
— Polyvinyl chloride floor
coverings on jute backing
or on polyester felt backing
or on a polyester felt with
a polyvinyl chloride backing
— Specification**

National foreword

This British Standard is the UK implementation of EN 650:2012. It supersedes BS EN 650:1997, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PRI/3/60, Textile & Resilient Floor Coverings.

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

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EN 650

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September 2012

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Supersedes EN 650:1996

English Version

Resilient floor coverings - Polyvinyl chloride floor coverings on jute backing or on polyester felt backing or on a polyester felt with a polyvinyl chloride backing - Specification

Revêtements de sol résilients - Revêtements de sol à base de polychlorure de vinyle sur support de jute ou de polyester avec envers en polychlorure de vinyle -
Spécifications

Elastische Bodenbeläge - Bodenbeläge aus Polyvinylchlorid mit einem Rücken aus Jute oder Polyesterfilz oder auf Polyesterfilz mit einem Rücken aus Polyvinylchlorid - Spezifikation

This European Standard was approved by CEN on 10 August 2012.

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Foreword

This document (EN 650:2012) has been prepared by Technical Committee CEN/TC 134 "Resilient, textile and laminate 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of an identical text or by endorsement, at the latest by March 2013, and conflicting national standards shall be withdrawn at the latest by March 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 650:1996.

The following technical changes were introduced in this version:

- Wear group classification is based on one method (EN 660-2) instead of two (EN 660-1 and -2)
- A requirement on "wear layers" has been added
- A new table 3 was included. The original table 3 is now table 4.
- Annexes A and B were merged and new characteristics added (staining, cigarette resistance, curling when wet)

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies the characteristics of floor coverings based on polyvinyl chloride and modifications thereof, on jute or polyester backing or on polyester felt with polyvinyl chloride backing, supplied in either tile or roll form.

To encourage the consumer to make an informed choice the standard includes a classification system (see EN 685) based on intensity of use, which shows where these floor coverings should give satisfactory service. It also specifies requirements for marking.

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

EN 425, *Resilient and laminate floor coverings — Castor chair test*

EN 426, *Resilient floor coverings — Determination of width, length, straightness and flatness of sheet material*

EN 427, *Resilient floor coverings — Determination of the side length, squareness and straightness of tiles*

EN 428, *Resilient floor coverings — Determination of overall thickness*

EN 429, *Resilient floor coverings — Determination of the thickness of layers*

EN 430, *Resilient floor coverings — Determination of mass per unit area*

EN 431, *Resilient floor coverings — Determination of peel resistance*

EN 432, *Resilient floor coverings — Determination of shear force*

EN 433, *Resilient floor coverings — Determination of residual indentation after static loading*

EN 434, *Resilient floor coverings — Determination of dimensional stability and curling after exposure to heat*

EN 436, *Resilient floor coverings — Determination of density*

EN 660-2, *Resilient floor coverings — Determination of wear resistance — Part 2: Frick-Taber test*

EN 661, *Resilient floor coverings — Determination of the spreading of water*

EN 663, *Resilient floor coverings — Determination of conventional pattern depth*

EN 684, *Resilient floor coverings — Determination of seam strength*

EN 685, *Resilient, textile and laminate floor coverings — Classification*

EN 718, *Resilient floor coverings — Determination of mass per unit area of a reinforcement or a backing of polyvinyl chloride floor coverings*

EN ISO 105-B02:1999, *Textiles — Tests for colour fastness — Part B02: Colour fastness to artificial light: Xenon arc fading lamp test (ISO 105-B02:1994, including amendment 1:1998)*

3 Terms and definitions

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

3.1

polyvinyl chloride floor covering on jute backing

floor covering consisting of a polyvinyl chloride surface layer applied to jute felt backing

3.2

polyvinyl chloride floor covering on polyester felt backing

floor covering consisting of a polyvinyl chloride surface layer applied to polyester felt backing

3.3

polyvinyl chloride floor covering on polyester felt with polyvinyl chloride backing

floor covering consisting of a polyvinyl chloride surface layer applied to polyester felt with a polyvinyl chloride backing

4 Requirements and testing

4.1 General requirements

Floor coverings described in this European Standard shall conform to the appropriate general requirements as specified in Table 1 when tested in accordance with the methods given therein.

4.2 Classification requirements

4.2.1 Wear group classification

Polyvinyl chloride floor coverings are classified in the appropriate wear group specified in EN 660-2.

Floor coverings described in this standard shall be classified in wear group T or P.

Floor coverings with a transparent wear layer are a priori group T and need not be tested

4.2.2 Wear layers

A homogeneous product shall retain its wear group classification throughout the thickness of the product if tested.

A wear layer shall retain its wear group classification throughout its thickness if tested.

4.2.3 Level of use classification

Floor coverings described in this European Standard shall be classified as suitable for different levels of use in accordance with the performance requirements specified in Table 3 and 4, when tested with the methods given therein. Classification shall conform to the scheme specified in EN 685.

Table 1 — General requirements (1 of 2)

Characteristic	Requirement	Test method
Roll form: length width	m mm Not less than the nominal values	EN 426
Tiles: side length squareness and straightness for side length: mm ≤ 400 mm > 400 mm > 400 mm (intended for welding)	mm Deviation ≤ 0,13 % of nominal length up to 0,5 mm maximum Deviation allowed at any point ≤ 0,25 ≤ 0,35 ≤ 0,50	EN 427
Overall thickness: average individual results	mm Nominal value + 0,18 - 0,15 Average value ± 0,20	EN 428
Total mass per unit area	g/m ² Nominal value + 13 % average - 10%	EN 430
Mass per unit area of backing Jute backing: average individual results Polyester backing average individual results	g/m ² ≥ 500 ≥ 400 ≥ 300 ≥ 270	EN 718
Density of the wear layer (average)	kg/m ³ Nominal value ± 0,50	EN 436
Dimensional stability after exposure to heat: Floor coverings on jute or polyester felt backing Floor coverings on polyester felt with polyvinyl chloride backing sheets and tiles intended for welding tiles intended for dry-joint laying	% ≤ 0,4 ≤ 0,4 ≤ 0,25	EN 434

Table 1 (2 of 2)

Curling after exposure to heat: mm Floor coverings on jute or polyester felt Floor coverings on polyester felt with polyvinyl chloride backing: sheets and tiles intended for welding tiles intended for dry-joint laying	≤ 8 ≤ 8 ≤ 2	EN 434
Colour fastness to artificial light	6 minimum	EN ISO 105-B02:1999 Method 3 ^a
Peel resistance N/50 mm average individual results	≥ 50 ≥ 40	EN 431
Shear force of backing (for jute backing only) average individual results	≥ 360 ≥ 280	EN 432
Spreading of water ^b	The time for water to spread to one edge of a test specimen shall be greater than 16 h	EN 661
^a Expose a full size of test specimen. Store a further test specimen in the dark, which will constitute the reference standard for assessment of colour change. ^b For floor coverings, other than those on jute backing, intended for use under moist conditions.		

Table 2 — Classification requirements for wear groups

Characteristic	Requirements for wear group				Test method
	T	P	M	F	
volume loss F_v mm ³	$F_v \leq 2,0$ ^a	$2,0 < F_v \leq 4,0$	$4,0 < F_v \leq 7,5$	$7,5 < F_v \leq 15,0$	EN 660-2
^a If tested for verification.					

Table 3 — Classification requirements for level of use (1 of 2)

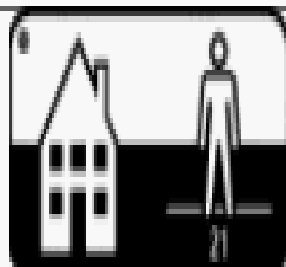
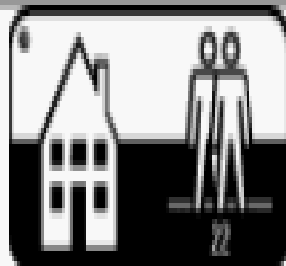
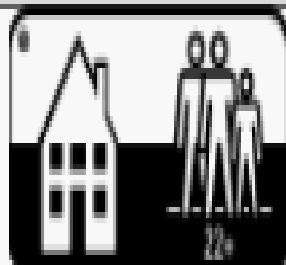
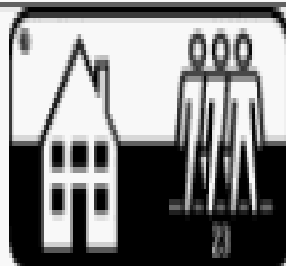
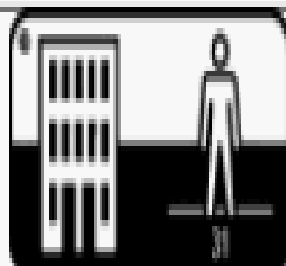
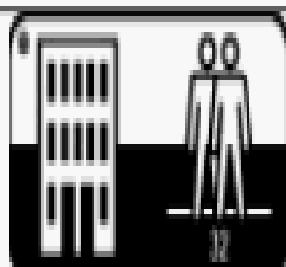
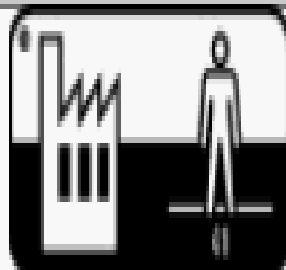
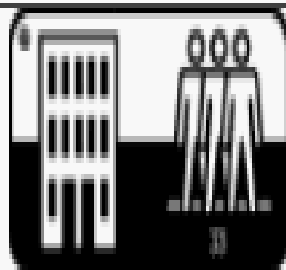
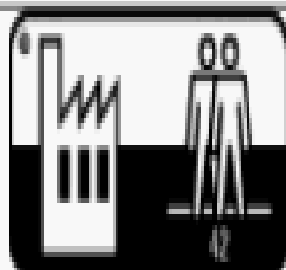
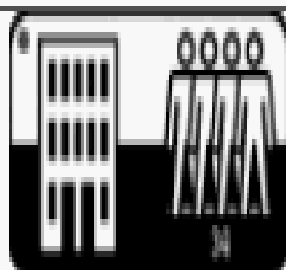
Class	Symbol ^d	Level of use	Thickness of wear layer. Nominal value ^c , mm		Conventional pattern of depth. Nominal value (minimum), mm		Effect of castor chair	Simulated movement of a furniture leg	Seam strength when welded in accordance with manufacturer's instructions N/50 mm
			T	P	T	P			
21		domestic moderate	0,15	0,20	0,13	0,15	No requirement	No requirement	No requirement
22		domestic general	0,20	0,30	0,15	0,18		No damage shall be visible after testing with a type 3 foot	
22+		domestic general	0,20	0,30	0,15	0,18			
23		domestic heavy	0,25	0,40	0,18	0,20			
31		commercial moderate	0,25	0,40	0,18	0,20			
32 ^{a b}		commercial general	0,35	0,50	0,30	-	No disturbance to the surface other than slight change in appearance and no delamination shall occur	No damage shall be visible after testing with a type 2 foot	Average value ≥ 150 Individual values ≥ 120

Table 3 (2 of 2)

41 ^b		light industrial moderate	0,35	0,50	0,30	-	No disturbance to the surface other than slight change in appearance and no delamination shall occur	No damage shall be visible after testing with a type 2 foot	Average value ≥ 240 Individual values ≥ 180
33 ^b		commercial heavy	0,50	0,65	-	-			
42 ^b		light industrial general	0,50	0,65	-	-			
34 ^b		commercial very heavy	0,65	1,00	-	-			
Test method			EN 429		EN 663		EN 425	EN 424	EN 684











^a Floor coverings on polyester felt backing.

^b Floor coverings on polyester felt with polyvinyl chloride backing.

^c The average value shall be the nominal value with a tolerance of + 13 % / - 10 % but not more than 0,1 mm. Individual values shall not vary more than 0,05 mm or 15 % below the average, whichever is the greater. Where this requirement is not met by only one individual value, however, the test shall be repeated once more.

^d The floor symbols can be found at <http://www.floorsymbols.com>

Table 4 - Classification requirements for level of use

Class	Symbol	Level of use	Underfoot comfort Indentation after static loading (average), mm	Residual indentation after static loading (average), mm		
				Floor coverings on jute backing	Floor coverings on polyester felt	Floor coverings on polyester felt with polyvinyl chloride backing
21		domestic moderate	≥ 0,40 when measured after 15 s under load	≤ 0,50	≤ 0,40	≤ 0,35
22		domestic general				
22+		domestic general				
23		domestic heavy				
31		commercial moderate	No requirement	Not suitable		≤ 0,20
32		commercial general				
41		light industrial moderate				
33		commercial heavy		Not suitable		
42		light industrial general				
34		commercial very heavy				
Test method			EN 433			

5 Marking

Floor coverings covered by this standard and/or their packaging shall bear the following marking:

- a) number and date of this European Standard, i.e. EN 650:2012;
- b) manufacturer's or supplier's identification;
- c) product name;
- d) colour/pattern, and batch number and, if applicable, roll number;
- e) classes/symbols appropriate for the product;
- f) for rolls: the length, width and thickness;
- g) for tiles: the dimensions of a tile and the area in square metres contained in a package.

Annex A (informative)

Optional properties

Where the following properties are required for specific applications, the floor covering should be tested in accordance with the appropriate methods:

- electrical resistance (EN 1081);
- electrostatic propensity (EN 1815);
- effect of stains (EN 423);
- cigarette resistance (EN 1399);
- curling on exposure to moisture (EN 662);
- volatile loss (EN 664);
- exudation of plasticizers (EN 665);
- gelling (EN 666).

Bibliography

- [1] EN 423, *Resilient floor coverings — Determination of resistance to staining*
- [2] EN 662, *Resilient floor coverings — Determination of curling on exposure to moisture*
- [3] EN 664, *Resilient floor coverings — Determination of volatile loss*
- [4] EN 665, *Resilient floor coverings — Determination of exudation of plasticizers*
- [5] EN 666, *Resilient floor coverings — Determination of gelling*
- [6] EN 1081, *Resilient floor coverings — Determination of the electrical resistance*
- [7] EN 1815, *Resilient and textile floor coverings — Assessment of static electrical propensity*
- [8] EN 1399, *Resilient floor coverings — Determination of resistance to stubbed and burning cigarettes*

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