

BS EN 653:2011



BSI Standards Publication

Resilient floor coverings — Expanded (cushioned) polyvinyl chloride floor coverings — Specification

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National foreword

This British Standard is the UK implementation of EN 653:2011. It supersedes BS EN 653:1997, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PRI/60, Resilient floor coverings.

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

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English Version

Resilient floor coverings - Expanded (cushioned) polyvinyl chloride floor coverings - Specification

Revêtements de sol résilients - Revêtements de sol à base de polychlorure de vinyle expansé - Spécifications

Elastische Bodenbeläge - Geschäumte Polyvinylchlorid-Bodenbeläge - Spezifikation

This European Standard was approved by CEN on 10 March 2011.

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Foreword

This document (EN 653:2011) 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of an identical text or by endorsement, at the latest by October 2011, and conflicting national standards shall be withdrawn at the latest by October 2011.

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.

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1 Scope

This European Standard specifies the characteristics of floor coverings based on expanded (cushioned) polyvinyl chloride and modifications thereof, supplied in either tile or roll form.

To encourage the consumer to make an informed choice, the European 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 referenced documents are indispensable for the application 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 424, *Resilient floor coverings — Determination of the effect of the 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 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 684, *Resilient floor coverings — Determination of seam strength*

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

EN ISO 105-B02, *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
floor covering with surface layers which are produced using polyvinyl chloride (and modifications thereof) as binder

3.2

expanded polyvinyl chloride floor covering

floor covering with a transparent wear layer over a layer of foamed polyvinyl chloride carrying a printed pattern, which can be embossed in register with the printed pattern.

4 Requirements

4.1 General requirements

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

4.2 Classification requirements

4.2.1 Wear group classification

Floor coverings described in this European Standard shall be classified in the appropriate wear group, i.e. group T, P, M or F specified in Table 2, when tested in accordance with EN 660-2. Floor coverings with a transparent wear layer are a priori group T and need not be tested.

4.2.2 Level of use classification

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

Table 1 — General requirements

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: ≤ 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 (average)	g/m ²	Nominal value + 13% - 10%	EN 430
Density of the wear layer (average)	kg/m ³	Nominal value ± 0,50	EN 436
Dimensional stability after exposure to heat: sheets and tiles intended for welding tiles intended for dry-joint laying	%	≤ 0,4 ≤ 0,25	EN 434
Curling after exposure to heat: sheets and tiles (intended for welding) tiles (intended for dry-joint laying)	mm	≤ 8 ≤ 2	EN 434
Colour fastness to artificial light		6 minimum	EN ISO 105-B02 Method 3 ¹
¹ 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.			

Table 2 — Classification requirements for wear groups

Characteristic	Requirements for wear group				Test method
	T	P	M	F	
volume loss F_v mm ³	$F_v \leq 2,0^1$	$2,0 < F_v \leq 4,0$	$4,0 < F_v \leq 7,5$	$7,5 < F_v \leq 15,0$	EN 660-2
¹ If tested for verification					

Table 3 — Classification requirements for level of use










Class	Symbol	Level of use	Thickness of wear layer.	Effect of castor chair	Simulated movement of a furniture leg		Seam strength when welded in accordance with manufacturer's instructions N/50mm	Peel strength N/50mm	Underfoot comfort Indentation after static loading (average) mm	Residual Indentation after static loading (average) ,mm
			Nominal value ¹ , mm		Wear group T					
21		domestic moderate	0,15	No requirement	-	No requirement	No requirement	No requirement	≥ 40 when measured after 15 s under load	≤ 0,35
22		domestic general	0,20		No damage shall be visible after testing with a type 3 foot	No requirement	No requirement	No requirement		
22+		domestic general	0,20							
23		domestic heavy	0,25							
31		commercial moderate								

Table 3 (continued)

32		commercial general	0,35	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	When welded in accordance with manufacturer's instructions: no damage shall be visible to the seams, when tested with a type 0 foot	Average value ≥ 150 Individual values ≥ 120	Average value ≥ 50 Individual values ≥ 40	No requirement	$\leq 0,20$
41		light industrial moderate								
33		commercial heavy	0,50							
42		light industrial general								
			EN 429	EN 425	EN 424	EN 684		EN 431	EN 433	

¹The average value shall be the nominal value with a tolerance of + 13 % but not more than 0,1 mm.

- 10 %

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.

5 Marking

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

- a) number and date of this European Standard, i.e. EN 653:2011;
- 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 (see EN 1081);
- electrostatic propensity (see EN 1815);
- effect of stains (see EN 423).

Annex B (informative)

Additional methods of test

The following test methods are also available for this type of product but do not form part of the specification:

- shear force (EN 432);
- spreading of water (EN 661);
- volatile loss (EN 664);
- exudation of plasticizers (EN 665);
- gelling (EN 666);
- mass per unit area of a reinforcement or backing (EN 718).

Bibliography

- [1] EN 423, *Resilient floor coverings — Determination of resistance to staining*
- [2] EN 432, *Resilient floor coverings — Determination of shear force*
- [3] EN 661, *Resilient floor coverings — Determination of the spreading of water*
- [4] EN 664, *Resilient floor coverings — Determination of volatile loss*
- [5] EN 665, *Resilient floor coverings — Determination of exudation of plasticizers*
- [6] EN 666, *Resilient floor coverings — Determination of gelling*
- [7] EN 718, *Resilient floor coverings — Determination of mass per unit area of a reinforcement or a backing of polyvinyl chloride floor coverings*
- [8] EN 1081, *Resilient floor coverings — Determination of electrical resistance*
- [9] EN 1815, *Resilient floor coverings — Assessment of static electrical propensity*

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