

BS EN 649:2011



BSI Standards Publication

# Resilient floor coverings — Homogenous and heterogenous polyvinyl chloride floor coverings — Specification

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**National foreword**

This British Standard is the UK implementation of EN 649:2011. It supersedes BS EN 649:1997, which is withdrawn.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 - Homogenous and heterogenous  
polyvinyl chloride floor coverings - Specification**Revêtements de sol résilients - Revêtements de sol  
homogènes et hétérogènes à base de polychlorure de  
vinyle - SpécificationsElastische Bodenbeläge - Homogene und heterogene  
Polyvinylchlorid-Bodenbeläge - Spezifikation

This European Standard was approved by CEN on 6 February 2011.

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## Foreword

This document (EN 649:2011) 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of an identical text or by endorsement, at the latest by September 2011, and conflicting national standards shall be withdrawn at the latest by September 2011.

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## 1 Scope

This European Standard specifies the characteristics of homogeneous and heterogeneous floor coverings, based on polyvinyl chloride and modifications thereof, 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 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 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 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 435, *Resilient floor coverings — Determination of flexibility*

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

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

#### **homogeneous floor covering**

floor covering with one or more layers of the same composition and colour, patterned throughout its thickness

### 3.2

#### **heterogeneous floor covering**

floor covering consisting of a wear layer and other compact layers which differ in composition and/or design and can contain a reinforcement

### 3.3

#### **polyvinyl chloride floor covering**

floor covering with surface layers which are produced using polyvinyl chloride (and modifications thereof) as binder

## **4 Requirements**

### **4.1 General requirements**

Floor coverings described in this 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 standard shall be classified in the appropriate wear group specified in Table 2, i.e. in group T, P, M or F, 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 Homogeneous products and 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 standard shall be classified as suitable for different levels of use in accordance with the performance requirements specified in Table 3, when tested with the methods given therein. Classification shall conform to the scheme established in EN 685.

Table 1 — General requirements

Characteristic	Requirement	Test method
Roll form:		EN 426
length width	m mm Not less than the nominal values	
Tiles:		EN 427
side length	mm Deviation $\leq 0,13$ % of nominal length up to 0,5 mm maximum	
squareness and straightness for side length	mm Deviation allowed at any point	
$\leq 400$ mm $> 400$ mm	$\leq 0,25$ $\leq 0,35$	
Overall thickness	mm	EN 428
Average	Nominal value + 0,13 Nominal value - 0,10	
individual values	Average value $\pm 0,15$	
Total mass per unit area	$g/m^2$ Nominal value + 13% - 10%	EN 430
average		
Residual indentation (average)	mm $\leq 0,1$	EN 433
Dimensional stability after exposure to heat %		EN 434
sheets and tiles (intended for welding)	$\leq 0,4$	
tiles (intended for dry-joint laying)	$\leq 0,25$	
Curling after exposure to heat:	mm	EN 434
sheets and tiles (intended for welding)	$\leq 8$	
tiles (intended for dry-joint laying)	$\leq 2$	
Flexibility	Test using a 20 mm mandrel. For products which show signs of cracking, perform a further test using a 40 mm mandrel. If results show no further cracking, record the use of a 40 mm mandrel.	EN 435 Method A
Colour fastness to artificial light	6 minimum	EN ISO 105-B02: Method 3 <sup>a</sup>

<sup>a</sup> Expose a full size 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 <sup>3</sup>	$F_v \leq 2,0^a$	$2,0 < F_v \leq 4,0$	$4,0 < F_v \leq 7,5$	$7,5 < F_v \leq 15,0$	EN 660-2
<sup>a</sup> The average value shall be the nominal value + 13 % but not more than 0,1 mm. – 10 %. No individual shall vary more than $\pm 0,15$ mm from the average value.					

**Table 3 — Classification requirements for level of use**












Class	Symbol	Level of use	Overall thickness <sup>a</sup> (homogeneous and heterogeneous) Nominal value, mm				Thickness of wear layer <sup>a</sup> (heterogeneous) Nominal value, mm				Effect of a castor chair <sup>b</sup>	Seam strength N/50 mm
			T	P	M	F	T	P	M	F		
21		domestic moderate	1,0	1,0	1,0	1,0	0,15	0,25	0,40	0,60	No requirement	No requirement
22		domestic general	1,5	1,5	1,5	1,5	0,20	0,35	0,50	0,80		
22+		domestic general										
23		domestic heavy	1,5	1,5	1,5	1,5	0,30	0,45	0,65	1,00		
31		commercial moderate										

Table 3 (continued)

Class	Symbol	Level of use	Overall thickness <sup>1</sup> (homogeneous and heterogeneous) Nominal value, mm				Thickness of wear layer <sup>a</sup> (heterogeneous) Nominal value, mm				Effect of a castor chair <sup>b</sup>	Seam strength N/50 mm
			T	P	M	F	T	P	M	F		
32		commercial general	1,5	1,5	1,5	2,0	0,40	0,55	0,80	1,20	If tested for verification, no disturbance to the surface other than slight change in appearance and no delamination shall occur	When welded in accordance with the manufacturers instructions:  average value ≥ 240  individual values ≥ 180
41		light industrial moderate										
33		commercial heavy	2,0	2,0	2,0	2,0	0,55	0,70	1,00	1,50		
42		light industrial general										
34		commercial very heavy	2,0	2,0	2,0	2,5	0,70	1,00	1,50	2,00		
43		light industrial heavy										
Test method			EN 428				EN 429					
<p><sup>a</sup> The average value shall be the nominal value with a tolerance of +13 % but not more than 0,1 mm. -10 %</p> <p>Individual values shall not vary more than 0,05 mm or 15 % below the average, whichever is greater. Where this requirement is not met by only one individual value, however, the test shall be repeated once more.</p> <p><sup>b</sup> Floor coverings in classes 32 to 43 are <i>a priori</i> classified as suitable for castor chair use and need not be tested.</p>												

## 5 Marking

Homogenous and heterogenous polyvinyl chloride floor coverings and/or their packaging shall bear the following marking:

- a) number and date of this European Standard, i.e. EN 649:2011;
- b) manufacturer's or supplier's identification;
- c) product name;
- d) colour/pattern, and number batch 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).

## **Annex B** (informative)

### **Additional methods of tests**

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

- effect of simulated movement of a furniture leg (EN 424);
- peel resistance (EN 431);
- shear force (EN 432);
- spreading of water (EN 661);
- curling on exposure to moisture (EN 662);
- conventional pattern depth (EN 663);
- volatile loss (EN 664);
- exudation of plasticizers (EN 665);
- gelling (EN 666);
- mass/unit area of a reinforcement or backing (EN 718).

## Bibliography

- [1] EN 423, *Resilient floor coverings — Determination of resistance to staining*
- [2] EN 424, *Resilient floor coverings — Determination of the effect of the simulated movement of a furniture leg*
- [3] EN 431, *Resilient floor coverings — Determination of peel resistance*
- [4] EN 432, *Resilient floor coverings — Determination of shear force*
- [5] EN 661, *Resilient floor coverings — Determination of the spreading of water*
- [6] EN 662, *Resilient floor coverings — Determination of curling exposure to moisture*
- [7] EN 663, *Resilient floor coverings — Determination of conventional pattern depth*
- [8] EN 664, *Resilient floor coverings — Determination of volatile loss*
- [9] EN 665, *Resilient floor coverings — Determination of exudation of plasticizers*
- [10] EN 666, *Resilient floor coverings — Determination of gelling*
- [11] EN 684, *Resilient floor coverings — Determination of seam strength*
- [12] EN 718, *Resilient floor coverings — Determination of mass per unit area of a reinforcement or a backing of polyvinyl chloride floor coverings*
- [13] EN 1081, *Resilient floor coverings — Determination of the electrical resistance*
- [14] EN 1815, *Resilient and textile floor coverings — Assessment of static electrical propensity*
- [15] EN 1818, *Resilient floor coverings — Determination of the effect of loaded heavy duty castors*
- [16] EN 436, *Resilient floor coverings — Determination of density*



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