BS EN 1307:2014+A1:2016

BSI Standards Publication

Textile floor coverings — Classification

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National foreword

This British Standard is the UK implementation of EN 1307:2014+A1:2016. It supersedes BS EN 1307:2014 which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to CEN text carry the number of the CEN amendment. For example, text altered by CEN amendment A1 is indicated by ▌A1⟩ ⟨A1▐.

The national committee have commented on, and voted against, this standard at all stages up to and including Formal Vote. They have concerns about the ability of the standard to correctly classify textile carpets.

Specifically, different end use classes rely on half grade delineation of appearance retention assessment which the relevant standard itself states is outside the expected variability. The comment applies to all the floor coverings covered by this standard.

The UK participation in its preparation was entrusted to Technical Committee PRI/3, Textile floor coverings.

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

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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Textile floor coverings - Classification

Revêtements de sol textile - Classement d'usage

Textile Bodenbeläge - Einstufung

This European Standard was approved by CEN on 13 March 2014 and includes Amendment 1 approved by CEN on 22 November 2015.

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European foreword

This document (EN 1307:2014+A1:2016) has been prepared by Technical Committee CEN/TC 134 “Resilient, textile and laminate floor coverings”, the secretariat of which is held by NBN.

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of an identical text or by endorsement, at the latest by July 2017 and conflicting national standards shall be withdrawn at the latest by July 2017.

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 includes Amendment 1 approved by CEN on 22 November 2015.

This document supersedes ▌A1⟩ EN 1307:2014 ⟨A1▌.

The start and finish of text introduced or altered by amendment is indicated in the text by tags ▌A1⟩ ⟨A1▌.

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1 Scope

This European Standard specifies the requirements for classification of all textile floor coverings and carpet tiles, excluding rugs and runners (see ISO 2424) into use classes with regard to one or more of the following properties: wear, appearance retention, additional performance properties and classes for luxury rating.

This European Standard refers to the classification as defined in EN ISO 10874.

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 984, *Textile floor coverings — Determination of the mass per unit area of the use surface of needled floor coverings*

EN 985: 2001, *Textile floor coverings — Castor chair test*

EN 986, *Textile floor coverings — Tiles — Determination of dimensional changes due to the effects of varied water and heat conditions and distortion out of plane*

EN 994, *Textile floor coverings — Determination of the side length, squareness and straightness of tiles*

EN 1269, *Textile floor coverings — Assessment of impregnations in needled floor coverings by means of a soiling test*

EN 1471, *Textile floor coverings — Assessment of changes in appearance*

EN 1814, *Textile floor coverings — Determination of resistance to damage at cut edges using the modified Vettermann drum test*

EN 1963:2007, *Textile floor coverings — Tests using the Lisson Tretrad Machine*

CEN/TS 15398, *Resilient, textile and laminate floor coverings — Floor covering standard symbols*

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

EN ISO 105-E01, *Textiles — Tests for colour fastness — Part E01: Colour fastness to water (ISO 105-E01)*

EN ISO 105-X12, *Textiles — Tests for colour fastness — Part X12: Color fastness to rubbing (ISO 105-X12)*

EN ISO 354, *Acoustics — Measurement of sound absorption in a reverberation room (ISO 354)*

EN ISO 10140-3, *Acoustics — Laboratory measurement of sound insulation of building elements — Part 3: Measurement of impact sound insulation (ISO 10140-3)*

EN ISO 24345, *Resilient floor coverings — Determination of peel resistance (ISO 24345)*

ISO 1763, *Carpets — Determination of number of tufts and/or loops per unit length and per unit area*

ISO 1765, *Machine-made textile floor coverings — Determination of thickness*

ISO 1766, *Textile floor coverings — Determination of thickness of pile above the substrate*

ISO 2424:2007, *Textile floor coverings — Vocabulary*

ISO 2551, *Machine-made textile floor coverings — Determination of dimensional changes due to the effects of varied water and heat conditions*

ISO 4919, *Carpets — Determination of tuft withdrawal force*

ISO 6356, *Textile and laminate floor coverings — Assessment of static electrical propensity — Walking test*

ISO 8302, *Thermal insulation — Determination of steady-state thermal resistance and related properties — Guarded hot plate apparatus*

ISO 8543, *Textile floor coverings — Methods for determination of mass*

ISO 10361, *Textile floor coverings — Production of changes in appearance by means of Vettermann drum and hexapod tumbler tester*

ISO 10965, *Textile floor coverings — Determination of electrical resistance*

〚A1〛

ISO 11856, *Textile floor coverings — Test methods for the determination of fibre bind using a Modified Martindale Machine* 〚A1〛

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 2424:2007 and the following apply.

3.1
non-adhered tile (loose laid tile)
tile installed without any use of a bonding system

Note 1 to entry: See Annex A.

3.2
adhered removable tile
tile installed with a bonding system allowing easy removal and reinstallation

Note 1 to entry: See Annex A.

3.3
permanently adhered tile
tile installed with a permanent bonding system

Note 1 to entry: See Annex A.

3.4
nominal value
value stated by the manufacturer

3.5
flat needled floor coverings types
floor coverings divided into the following three types:

a) Type A1: one visible layer (homogeneous product);

b) Type A2: more than one visible layer, the bonding compound of which does not reach the top of the use surface;

c) Type A3: more than one visible layer, the bonding compound of which is present throughout its thickness

Note 1 to entry: Layers such as secondary backing are also taken into consideration for the determination of the number of layers.

3.6
pile needled floor coverings types
floor coverings divided into the following three types:

a) Type B1:

1) needled textile floor covering with pile in which the use-surface is composed of entangled fibres bonded together by a mechanical and a chemical process;

2) the mechanical bonding system is a consolidation of a batt of fibres through entanglement by multiple penetrations of barbed needles in one or more (visible) layers;

3) needles are used for structuring this pre-needled felting material;

4) the use surface is either a geometric or linear design, a velours or a rib pattern;

b) Type B2:

1) needled textile floor covering with pile in which the use-surface is composed of entangled fibres bonded together by a mechanical and a chemical process;

2) the mechanical bonding system is a consolidation of a batt of fibres through entanglement by multiple penetrations of barbed needles in one or more (visible) layers;

3) mechanically brushing machines are being used for structuring this pre-needled felting material, resulting in a roughened surface with relatively long and coarse protruding fibres;

4) the bonding system is applied to the back;

c) Type B3:

1) needled textile floor covering with pile in which the use-surface is composed of fibre spheres bonded together by a mechanical and a chemical process;

2) the chemical bonding system is incorporated in the backing

4 Description of levels of use

Textile floor coverings shall be classified as suitable for different levels of use in accordance with the performance requirements specified in Clause 7.

The different levels of use shall be as described in Table 1.

Table 1 — Levels of use intensity

Domestic use
21 Moderate
22 General
23 Heavy
Commercial use
31 Moderate
32 General
33 Heavy

If symbols are used for the use classes, luxury rating classes and additional characteristics, the symbols listed in CEN/TS 15398 shall be used.

NOTE These symbols can also be found at www.floorsymbols.com.

5 Identification requirements

The following information shall be provided in accordance with the definitions in ISO 2424 and or in accordance with the list of references in Annex B:

— commercial references;

— composition of the use surface;

— type of manufacture (see Annex B ref 1);

— type of surface (see Annex B ref 2);

— type of primary backing (see Annex B ref 3) (if applicable);

— type of secondary backing (see Annex B ref 4) (if applicable);

— type of colouring/patterning (see Annex B ref 5);

— type of category of needled floor covering (see 3.5 and 3.6) (if applicable).

The producer shall also declare the values of the characteristics listed in Table 2.

Table 2 — Characteristics

A1

Characteristic	Test method	Tolerances (to nominal value)	Applicable for (X means applicable)				
			Carpets with pile	Carpets without pile	Flat Needled	Pile Needled	Flocked
Total thickness (in mm)	ISO 1765	+ 15 % / −10 %	X	X	X	X	X
Total mass per unit area (in g/m^2)	ISO 8543	±15 %	X	X	X	X	X
Effective pile thickness / Thickness of pile above substrate (SPT) (in mm)	ISO 1766	+ 15 % / −10 %	X			Type B2, B3	
Effective pile mass / Mass of pile above substrate per unit area (SPW) (in g/m^2)	ISO 8543 EN 984 [a]	+ 15 % / −10 %	X			Type B2, B3	
Mass per unit area of the use-surface (in g/m^2)	EN 984 [a]	+ 15 % / −15 %			Type A2, A3		
Surface pile density (SPD) (in g/cm^3)	ISO 8543		X			Type B2, B3	
Number of tufts or loops (per dm^2)	ISO 1763	+ 10 % / −7,5 %	X				

[a] EN 984 only applicable for needled floor coverings categories A2, A3, B2 and B3 when the use surface visually can be distinguished from the substrate.

A1

NOTE EU Regulation 1007/2011 and associated national regulations address fibre composition.

6 Basic requirements

Textile floor coverings shall conform to the basic requirements specified in Table 3.

Table 3 — Basic requirements

Characteristic	Test method	Requirements	Applicable for (X means required)				
			Carpets with pile	Carpets without pile	Flat Needled	Pile Needled	Flocked
Colour fastness to light [a b]	EN ISO 105-B02		X	X	X	X	X
- *Man-made fibres*		≥ 5					
- *Natural fibres*		≥ 4					
Colour fastness to rubbing [a b]	EN ISO 105-X12		X	X	X	X	X
- *Wet*		≥ 3					
- *Dry*		≥ 3–4					
Colour fastness to water (change in colour) [a b]	EN ISO 105-E01		X	X	X	X	X
- *Plain carpets*		≥ 3–4					
- *Other carpets*		≥ 4					
Colour fastness to water(staining) [a b]			X	X	X	X	X
- *All carpets*		≥ 2–3					
Fibre bind < 80 % natural fibres							
- *Loop pile carpets*	EN 1963:2007 test C	Fuzzing below level of reference photographs	X				
- *Cut pile carpets*	EN 1963 test A (Number of cycles defined by calibration)	Loss of mass < 25 %	X				X
〚A1〛 Fibre bind for cut-pile carpets with ≥ 80 % natural fibres	ISO 11856	Weight loss < 250 mg at 10 000 rubs and < 70 mg between 10 000 and 30 000 rubs	X				〚A1〛
Dimensional stability [c]	ISO 2551	Shrinkage ≤ 1,2 % Extension ≤ 0,5 %		X	X	X	X
Assessment of impregnation	EN 1269	≥ 2–3			X		
〚A1〛 Hairiness /pilling	EN 1963 test D 200 cycles	≥ 2,5		X[d]	X	Type B1	
Peel resistance	EN ISO 24345	≥ 40 N per 50 mm					X
Water impermeability	Annex G	pass					X

[a] Conformity to be declared by manufacturer for each colour.

[b] In case of blends, the predominant fibre is leading. In case of 50/50 blends, the most stringent criterion is valid.

[c] At the final stage due to the effects of varied heat and water conditions, only applicable if loose laid.

[d] Requirement to be met after testing in both directions (machine and across) for carpets without pile. 〚A1〛

NOTE In case of carpet tiles, for additional basic requirements see Annex A.

7 Level of use classification

Textile floor coverings are classified as to their suitability for use based on one or more properties referred to in Table 4. The final use class allocated to a textile floor covering is the lowest of the classes obtained for all relevant properties as referred to in Table 4.

Table 4 — Test methods for classification

Carpet type	Test methods for classification and applicable clauses					
	Abrasion resistance	**Hairiness (pilling)**	**General structural integrity**	**Change in colour**	**Change of appearance**	**Additional mandatory requirements**
Pile carpets except needled pile carpets					Clause 8	For class 32 ≥ 80 % wool SPD ≥ 0,10 g/cm^3.
Needled carpets						
- *Flat Needled A1,A2,A3*	9.2		9.3	9.4		
- *Pile needled* B1	10.2	10.3	10.4		10.5	
- *Pile needled* B2+B3			10.4		10.5	
Carpets without pile	11.2		11.3		11.4	
Flocked	12.2				12.1	For class 32/33: Dimensional stability according to ISO 2551 shrinkage and extension ≤ 0,2 %.

8 Classification of Pile Carpets

Pile carpets are classified by testing for change in appearance.

Carpets shall be tested in accordance with ISO 10361 in either the Hexapod or the Vettermann apparatus using the number of cycles for short and long term tests as specified in Table 5 and shall be assessed for change in appearance in accordance with EN 1471. The median grade for overall change in appearance shall conform to the minimum requirements specified in Table 5.

The use of an underlay is optional but shall always be mentioned in reporting. If the carpet is to be tested over an underlay, the underlay shall have a work of compression (see Annex E) of (175 ± 25) J/m^2.

Table 5 — Classification on change in appearance for pile carpets

Class	All other carpets		Carpets ≥ 80 % wool	
	Short-term[a]	Long term[b]	Short-term[a]	Long term[b]
21	2	No requirement	2	No requirement
22	No requirement	2	No requirement	2
23	3,5	2,5	3	2,5
31	3	2,5	3	2,5
32	No requirement	3	3	2,5 [c]
33	4	3,5	3,5	3

[a] Vetterman 5 000 cycles or hexapod 4 000 cycles.
[b] Vetterman 20 000 cycles or hexapod 12 000 cycles.
[c] Additional requirement: SPD ≥ 0,10 g/cm³.

9 Classification for flat needled floor coverings

9.1 General

Flat needled floor coverings are classified by testing abrasion resistance, general structure integrity and change in colour. The final class is the lowest result of all individual classes obtained.

9.2 Abrasion resistance – Lisson test - Mass loss per unit area (m_v)

The requirements for each class are specified in Table 6; m_V is calculated as indicated in EN 1963 test A.

Table 6 — Abrasion resistance requirements for all flat needled products

Class	m_v (g/m²)
21	No requirement
22	≤ 80
23	≤ 40
31	≤ 50
32	≤ 40
33	≤ 30

9.3 General structural integrity

The requirements for all flat needled floor coverings for each class are specified in Table 7.

Table 7 — General structural integrity

Class	Test Method (EN 985 test C)	Requirement
Domestic (21,22,23)	10 000 cycles	No destruction (as described in EN 985:2001, Clause 9.3)
Commercial (31,32,33)	25 000 cycles	

9.4 Change in colour

All flat needled floor coverings shall be tested using the castor chair test in accordance with EN 985 using the number of cycles specified in Table 8.

Use the assessment conditions specified in EN 1471. Assess the change in colour by comparing the contrast between the un-fatigued and fatigued specimen with the contrast shown by the standard grey scales. Assign grades to the nearest 0,5 grade.

For each class, the median grade for change in colour shall conform to the minimum requirements specified in Table 8.

Table 8 — Change in colour – requirements

Class	EN 985 test B 750 cycles	EN 985 test A 5 000 cycles	EN 985 test A 25 000 cycles
21	No requirement	No requirement	No requirement
22	2	No requirement	No requirement
23	2–3	2–3	No requirement
31	2–3	2	No requirement
32	2–3	2–3	No requirement
33	3	2–3	2

10 Classification for needled floor coverings with pile

10.1 General

Needled floor coverings with pile are classified by testing on abrasion resistance, hairiness (Type B1 only), general structure integrity and change in appearance. The final class is the lowest result of all individual classes obtained.

The use of an underlay (see Annex E) is optional but shall always be mentioned in reporting. If the carpet is to be tested over an underlay, the underlay shall have a work of compression of (175 ± 25) J/m^2.

10.2 Abrasion resistance – Lisson test - Mass loss per unit area (m_V)

The requirements for each class are specified in Table 9; m_V and m_{rv} are calculated as indicated in EN 1963 test A.

Table 9 — Abrasion resistance for needled floor coverings with pile

〈A1〉

Class	Relative fibre loss (m_{rv}) %	Absolute fibre loss (m_V) g/m²
	Type B2 and B3	Type B1
21	No requirement	No requirement
22	≤ 45	≤ 80
23	≤ 25	≤ 40
31	≤ 35	≤ 50
32	≤ 25	≤ 40
33	≤ 15	≤ 30

〈A1〉

10.3 Hairiness (pilling) - Lisson test for needled floor coverings with pile

10.3.1 Type B1 products

The requirements for each class are specified in Table 10.

Table 10 — Hairiness (pilling) - Lisson test – Type B 1 products

Class	Test method	Requirements
21	EN 1963, Test D	≥ 2,5
22		≥ 2,5
23		≥ 3,5
31		≥ 3,0
32		≥ 3,5
33		≥ 4,0

10.3.2 Type B 2 and type B 3 products

No requirements for type B2 and type B3 products.

10.4 General structural integrity

The requirements for needled floor coverings with pile are specified in Table 11.

Table 11 — General structural integrity

Class	Test Method (EN 985 test C)	Requirement
Domestic (21,22,23)	10 000 cycles	No destruction (as described in EN 985:2001, 9.3)
Commercial (31,32,33)	25 000 cycles	

10.5 Change in appearance

Carpets shall be tested in accordance with ISO 10361 in either the Hexapod or the Vettermann apparatus using the number of cycles for short and long term tests as specified in Table 12 and shall be assessed for change in appearance in accordance with EN 1471. The median grade for overall change in appearance shall conform to the minimum requirements specified in Table 12.

Table 12 — Classification on change in appearance for needled floor coverings with pile

〈A1〉

Class		Short-term [a]	Long term [b]
21		2	1
22		2,5	2
23		3	2,5
31		3	2,5
32		3	2,5
33	Option 1	3,5	3
	Option 2	3	2,5
		And castor chair suitability r ≥ 2,4 EN 985 test A	

[a] Vettermann 5 000 cycles or Hexapod 4 000 cycles.

[b] Vettermann 20 000 cycles or Hexapod 12 000 cycles.

〈A1〉

11 Classification of textile floor coverings without pile, except needled

11.1 General

Textile floor coverings without pile are classified by testing on abrasion resistance, general structure integrity and change in appearance. The final class is the lowest result of all individual classes obtained.

The use of an underlay is optional but shall always be mentioned in reporting. If the carpet is to be tested over an underlay, the underlay shall have a work of compression (see Annex E) of (175 ± 25) J/m².

11.2 Abrasion resistance – Lisson test - Mass loss per unit area (m_V)

The requirements for each class are specified in Table 13; m_V is calculated as indicated in EN 1963 test A.

Table 13 — Abrasion resistance of textile floor coverings without pile

Class	mass loss (m_v) g/m^2
21	≤ 225
22	≤ 200
23	≤ 75
31	≤ 130
32	≤ 75
33	≤ 30

11.3 General structural integrity

The requirements for textile floor coverings without pile are given in Table 14.

Table 14 — General structural integrity

Class	Test Method (EN 985 test C)	Requirement
Domestic (21, 22, 23)	10 000 cycles	No destruction (as described in EN 985:2001, 9.3)
Commercial (31, 32, 33)	25 000 cycles	

11.4 Change in appearance

Carpets shall be tested in accordance with ISO 10361 in either the Hexapod or the Vettermann apparatus using the number of cycles for short and long term tests as specified in Table 15 and shall be assessed for change in appearance in accordance with EN 1471. The median grade for overall change in appearance shall conform to the minimum requirements specified in Table 15.

Table 15 — Classification on change in appearance for textile floor coverings without pile

Class	Short-term [a]	Long term [b]
21	2	No requirement
22	No requirement	2
23	3,5	3
31	3	2,5
32	No requirement	3
33	4	3,5

[a] Vettermann 5 000 cycles or Hexapod 4 000 cycles.
[b] Vettermann 20 000 cycles or Hexapod 12 000 cycles.

12 Classification for flocked carpets

12.1 Abrasion resistance

The requirements for each class are specified in Table 16. The abrasion resistance shall be tested in accordance with the test method described in Annex F of this standard using the number of cycles as indicated in Table 16.

Table 16 — Abrasion resistance for flocked carpets

Class	Cycles
21	No requirement
22	No requirement
23	No requirement
31	500
32 [a]	1 000
33 [a]	1 000
[a] Additional dimensional stability requirements for classes 32 and 33 flocked carpets: according to ISO 2551 shrinkage and extension shall be not more than 0,2 % in each direction at final stage due to the effects of varying water and heat conditions.	

12.2 Classification on change in appearance

Flocked floor coverings shall be tested in accordance with ISO 10361 in either the Hexapod or the Vettermann apparatus using the number of cycles for short and long term tests as specified in Table 17 and shall be assessed for change in appearance in accordance with EN 1471. The median grade for overall change in appearance shall conform to the minimum requirements specified in Table 17.

Table 17 — Classification of change in appearance for flocked carpets

Class	Short-term [a]	Long term [b]
21	2	No requirement
22	No requirement	2
23	3,5	2,5
31	3	2,5
32	No requirement	3
33	4	3,5
[a] Vetterman 5 000 cycles or Hexapod 4 000 cycles.		
[b] Vetterman 20 000 cycles or Hexapod 12 000 cycles.		

13 Luxury rating requirements

Textile floor coverings shall be classified for luxury rating as specified in Table 18.

Table 18 — Luxury rating classes

Luxury rating classes		
Class	**Mass per unit area of use surface above substrate (in g/m² according to ISO 8543 or EN 984)**	**Conformity without testing**
LC1	≤ 400	- Flat needled type A1/A2/A3 - Carpets without pile - Flocked carpets
LC2	> 400	- Pile needled type B3
LC3	> 600	
LC4	> 800	
LC5	> 1 000	

14 Additional Performance Properties

Additional performance properties shall be based on the characteristics and corresponding requirements in Table 19.

Table 19 — Additional performance properties

Characteristic	Requirement	Test method
Castor chair suitability		EN 985:2001 Test A
- Intensive use	r ≥ 2,4	
- Occasional use	r ≥ 2,0	
Antistatic behaviour		ISO 6356
- Body voltage	≤ 2,0 kV at 25 %rh	
Electrical propensity		
- Horizontal resistance	Declared value	ISO 10965
- Vertical resistance:	Declared value	
- Conductive floor covering	Vertical resistance ≤ $1,0 \times 10^6$ Ω	ISO 10965
- Static dissipative floor covering	Vertical resistance ≤ $1,0 \times 10^9$ Ω	
Acoustic properties		
- Impact sound insulation	Calculation in accordance with EN ISO 717-2, declare value ΔL_w	EN ISO 10140-3 / Annex D
- Sound absorption	Calculated value (α_s)	EN ISO 354
	Calculated value (α_w)	
Thermal resistance	Declared value in m^2K/W	ISO 8302
Suitability occasional humid conditions		
- Dimensional stability	Shrinkage ≤ 0,8 % in each direction at final stage due to the effects of varied water and heat conditions	ISO 2551
	Extension ≤ 0,4 % in each direction at final stage due to the effects of varied water and heat conditions	
- Colour fastness to wet/dry rubbing	≥ 4	EN ISO 105-X12
- Resistance to rot	Textile floor coverings not containing cellulose - or natural fibres are deemed to conform.	
Suitability for use on stairs	As described in Annex C.	Annex C
Fraying behaviour [a]	Resistant to fraying	EN 1814

[a] Not applicable for needled/flocked carpets.

15 Report

The test reports for the individual tests carried out for the purposes of classification shall include the summarized information shown in Annex B.

NOTE The layout of the report can differ from that shown in Annex B.

16 Symbols

If symbols are used for the use classes, luxury rating classes and additional characteristics, the symbols listed in CEN/TS 15398 shall be used.

NOTE These symbols can also be found on www.floorsymbols.com.

Annex A
(normative)

Requirements for carpet tiles

Carpet tiles shall conform to the requirements given in Table A.1.

Table A.1 — Requirements for carpet tiles

Characteristics	Test method	Non adhered tile (Loose laid)	Adhered tile	
			Removable	Permanent
Total mass of individual tile	ISO 8543	≥ 0,875 kg	≥ 0,500 kg	No requirement
Total mass per unit area (m^2)	ISO 8543	≥ 3,500 kg	≥ 2,000 kg	No requirement
Dimensions	EN 994	±0,20 % in the same batch		
Squareness and straightness of edges	EN 994	±0,15 % in both directions		
Dimensional stability [a]	EN 986	Shrinkage and extension ≤ 0,2 % in both directions		Shrinkage ≤ 0,4 % in both directions Extension ≤ 0,2 % in both directions
Distortion out of plane	EN 986	Max deviation of any part of the sample from its plane ≤ 2mm		No requirement
Damage at cut edge (fraying)	EN 1814	No damage		

[a] For all flocked carpet tiles class 32/33: Shrinkage and extension in both directions ≤ 0,1 %.

Annex B
(normative)

Summary of test report

B.1 General

The summary test report shall include the information given in Table B.1.

Table B.1 — Summary test report

Identification, basic information and use classification			
Product identity		Date (dd.mm.yyyy)	
Manufacturer/applicant		Type of surface (see B.2.2)	
Type of manufacture (see B.2.1)		Secondary backing (see B.2.4)	
Carpet type (Table 4)			
Basic requirements (Table 3)	Pass/Fail	Dimensions	
Primary backing (see B.2.3)		Yarn type	
Colouring (see B.2.5)		Surface pile thickness (mm)	
Pile fibre composition		Surface pile mass (g/m^2) [a]	
Total thickness (mm)		Number of tufts per dm^2	
Total carpet mass (g/m^2)		Foam/felt thickness (mm)	
Surface pile density (g/cm^3) [a]		Foam/felt apparent density (g/m^3)	
Surface treatment for antistatic characteristics	Yes/No	Hairiness (type B1)	
Drum test Vettermann short-term [b]		Drum test Vettermann long term [b]	
Drum test Hexapod short-term [b]		Drum test Hexapod long term [b]	
Test done on underlay	Yes/No	Abrasion resistance m_a/m_v [d]	
Appearance retention class		General structural integrity [d]	Pass/fail
Change in colour [c]			
Peel resistance	Pass/fail	Water impermeability	Pass/fail
Abrasion resistance blade test	class	Dimensional stability (loose laid only)	Pass/fail
Overall use class		Luxury class	
Additional characteristics if applicable			
Castor chair suitability	Occasional/ Intensive	Stair suitability	Occasional/ Intensive
Thermal resistance ($m^2.K/W$)		Impact sound insulation (ΔL_w)	
Body voltage walking test (kV)		Sound absorption α_w	

Vertical resistance (Ω)		Static dissipative floor covering Ω	Pass/Fail
Horizontal resistance (Ω)		Conductive floor covering Ω	Pass/Fail
Incidental humid conditions suitability	Pass/Fail	Resistance to fraying	Pass/Fail
Specific information carpet tiles			
Type of tile		Basic requirements Annex A	Pass/Fail
Non adhered/loose laid	Yes/No	Dimensions of the tile (cm)	
Adhered removable	Yes/No	Total mass individual tile (kg)	
For permanent bonding	Yes/No	Total mass per unit area (kg/m²)	

[a] Applicable for carpets with pile and needled carpets types B1, B2 and B3.
[b] Applicable for carpets with pile, carpets without pile and needled carpets types B1, B2 and B3.
[c] Applicable for needled carpets types A1, A2 and A3.
[d] Applicable for carpets without pile and needled carpets types A1, A2, A3, B1, B2 and B3.

B.2 List of references to Annex B

B.2.1 Ref 1 Type of manufacture

Ref-Nr	D	E	F	NL
M1	Gewebt	Woven	Tissée	Geweven
M2	Gewirkt	Knitted	Tricotée	Gebreid
M3	Geklebt	Bonded pile	Nappé à velours	Geplakt
M4	Nadelvlies	Needle felt	Aiguilletée	naaldvilt
M5	Getuftet	Tufted	Touffetée	Getuft
M6	Flocked	Flocked	Flocked	Flocked

B.2.2 Ref 2 Type of surface (combinations are possible)

Ref-Nr	D	E	F	NL
A1	Schnittpol	Cut pile	Velours coupé	Gesneden pool
A2	Flach	Flat	Plat	vlak
A3	Strukturiert	Structured	Structuré	Gestructureerd
A4	Schlingenpol	Loop pile	Velours bouclé	Lussenpool
A5	Haarig	Hairy	A poils longs	Harig

B.2.3 Ref 3 Type of primary backing (combinations are possible)

Ref-Nr	D	E	F	NL
P1	Gewebe	Woven fabric	Tissu	Weefsel
P2	Folie	Foil	Film	Folie
P3	Vlies	Non-woven fabric	Voile non-tissé	Vlies

B.2.4 Ref 4 Type of additional backings (combinations are possible)

Ref-Nr	D	E	F	NL
S1	Appretur	Finish	Apprét	Appret
S2	Schaumrücken (SBR)	Foam (SBR)	Mousse (SBR)	Schuim (SBR)
S3	Schaumrücken (PUR)	Foam (polyurethane)	Mousse de polyuréthane	Polyurethaanschuim
S4	Schwerbeschichtung (PUR)	PUR heavy backing	Dossier PUR lourd à envers textile	PUR rug met textiellaag
S5	Schwerbeschichtung (APO)	Heavy backing (APO)	Deuxième dossier lourd (PO atactique)	Rug atactisch PO
S6	Noppenrücken (PUR)	PVC nep back	Enduction PVC à boutons	PVC noppenrug
S7	Noppenrücken (SBR)	Latex nep back	Enduction latex à boutons	Latex noppenrug
S8	EVA Schwerbeschichtung	EVA backing	Dossier EVA	EVA rug
S9	Schwerbeschichtung Polyolefine basiert	Polyolefine based backing	Dossier polyolefine lourd	Polyofine gebaseerde rug
S10	Textilrücken	Textile backing	Dossier Textile	Textiel rug
S11	PVB Schwerbeschichtung	PVB backing	Dossier PVB	PVB rug
S12	Glas-Verstärkung	Glass reinforcement	Renforcement fibre de verre	Glas versterking

B.2.5 Ref 5 Type of colouring/patterning

Ref-NR	D	E	F	NL
C1	Uni ungemustert	Plain	Uni	Uni
C2	Gemustert	Patterned	A dessin	Met dessin
C3	Mehrfarbig ungemustert	Tonal effect	A effet de couleur	Met kleureffect

Annex C
(normative)

Criteria for the assessment of stair suitability

C.1 Pile carpets

This annex shall be used only for carpets that are intended to be installed without the use of protective stair nosings. For carpets that are intended to be installed using protective stair nosings, the overall use class shall determine the stair suitability.

NOTE The use of stair nosings/edgings in public areas is often the subject of local bye-laws and legislations.

For loop pile textile floor coverings, the thickness of the pile above the substrate measured according to ISO 1766 shall be ≤ 12 mm.

If the backing can be seen on a new unused piece of the carpet when bent at 90° over a (12,5 ± 1) mm radius, as long as the visible backing is not part of the design then the carpet shall be deemed to be unsuitable.

Assess the appearance, tested according to EN 1963, of each specimen using at least three independent assessors according to the characteristics given in Tables C.1 and C.2. At least 3 out of 4 samples shall fulfil the requirements as listed below.

Carpets showing a pile loss of more than 3 tufts when assessed in accordance with Table C.1 or Table C.2 shall be tested and classified according to the pile withdrawal force test given in Table C.3.

Carpets fulfilling all of the following criteria are deemed to classify for occasional stair use:

— spun yarn;

— minimum 50 % natural fibres;

— installed on underlay with a work of compression of (175 ± 25) J/m^2;

— overall use class minimum 22;

— fulfilling the minimum criteria for pile withdrawal in Table C.3.

Table C.1 — Loop pile

Suitability	Criteria
Not Suitable	Extreme changes at the area of the stair edge, e.g.: - destroyed primary backing, foam or secondary backing; - visible backing, as long as this is not part of the design; - more than 3 fully broken loops; - cob webbing with a fibre length of 15 mm or more.
Suitable for occasional use	Moderate changes at the area of the stair edge: - not more than 3 broken loops over the whole width; - cob webbing with a fibre length of 5 mm to 15 mm; - moderate pattern changes at the stair edge compared to areas of the test specimen exposed to the flat treatment with the Lisson Tretrad; - carpets showing pile loss (more than 3) are tested and classified according to the pile withdrawal force test (ISO 4919 and Table C.3); - minimum use class 22.
Suitable for intensive use	Minor changes at the area of the stair edge: - limited filament destruction (no broken loops); - cob webbing with a fibre length less than 5 mm; - minor pattern changes at the stair edge compared to areas of the test specimen exposed to the flat treatment with the Lisson Tretrad; - carpets showing pile loss (more than 3) are tested and classified according to the pile withdrawal force test (ISO 4919 and Table C.3); - minimum use class 31.

Table C.2 — Cut pile

Suitability	Criteria
Not Suitable	Extreme changes at the area of the stair edge, e.g.: - destroyed primary backing, foam or secondary backing; - visible backing by wear to backing on more than 3 piles or by tufting out of more than 3 piles.
Suitable for occasional use	Moderate changes at the area of the stair edge: - moderately more important loss of yarn twist or ply twist compared to areas of the test specimen exposed to the flat treatment with the Lisson Tretrad; - partial loss of filaments; - moderate change in pattern and/or contrast at the stair edge compared to areas of the test specimen exposed to the flat treatment with the Lisson Tretrad; - carpets showing pile loss (more than 3) are tested and classified according to the pile withdrawal force test (ISO 4919 and Table C.3); - minimum use class 22.
Suitable for intensive use	Minor changes at the area of the stair edge: - slightly more important loss of yarn twist or ply twist compared to areas of the test specimen exposed to the flat treatment with the Lisson Tretrad; - no visible loss of filaments; - minor change in pattern and/or contrast at the stair edge compared to areas of the test specimen exposed to the flat treatment with the Lisson Tretrad; - carpets showing pile loss (more than 3) are tested and classified according to the pile withdrawal force test (ISO 4919 and Table C.3); - minimum use class 31.

Table C.3 — Pile withdrawal force according to ISO 4919

Class	Woven carpets		Tufted carpets	
	Cut pile	Loop pile	Cut pile	Loop pile
21	Not suitable	Not suitable	Not suitable	Not suitable
22	≥ 3 N	≥ 5 N	≥ 8 N	≥ 16 N
23	≥ 5 N	≥ 10 N	≥ 10 N	≥ 20 N
31	≥ 3 N	≥ 5 N	≥ 8 N	≥ 16 N
32	≥ 5 N	≥ 10 N	≥ 10 N	≥ 20 N
33	≥ 7 N	≥ 12 N	≥ 15 N	≥ 30 N

C.2 Flat needled floor covering

If the floor covering is intended to be installed using protective stair nosings, then these tests shall not apply. The overall use class determines the stair suitability.

NOTE The use of these edgings in public areas is often the subject of local bye-laws and legislation.

Assess the appearance of each specimen using at least three independent assessors according to the characteristics given in Table C.4. At least 3 out of 4 samples shall fulfil the requirements as listed below.

Table C.4 — Suitability

Suitability	Criteria
Not suitable	Extreme changes at the area of the stair edge: - destroyed primary backing, foam or secondary backing; - visible backing; - hairiness with average fibre length of more than 20 mm.
Suitable for occasional use	Moderate changes at the area of the stair edge: - hairiness with average fibre length of 20 mm or less; - moderate pattern changes at the stair edge compared to areas of the test specimen exposed to the flat treatment with the Lisson Tretrad; - minimum use class 22.
Suitable for intensive use	Minor changes at the area of the stair edge: - hairiness with average fibre length of 10 mm or less for fine fibre; - hairiness with average fibre length of 15 mm or less for coarse fibre; - minor pattern changes at the stair edge compared to areas of the test specimen exposed to the flat treatment with the Lisson Tretrad; - minimum use class 31.

C.3 Pile needled floor covering

The thickness of the pile above the substrate, according to ISO 1766, shall be ≤ 12,0 mm.

If the backing can be seen on a new unused piece of the carpet when bent at 90° over a (12,5 ± 1) mm radius, then the carpet will not be suitable.

If the carpet is intended to be installed using protective stair nosings, then these tests shall not apply.

The overall use class determines the stair suitability.

NOTE The use of these edgings in public areas is often the subject of legislation and local rules.

Assess the appearance of each specimen using at least three independent assessors according to the characteristics given in Table C.5. At least 3 out of 4 samples shall fulfil the requirements as listed below.

Table C.5 — Suitability

Suitability	Criteria
Not suitable	Extreme changes at the area of the stair edge: - destroyed primary backing, foam or secondary backing; - visible backing; - cob webbing with a fibre length more of 15 mm or more.
Suitable for occasional use	Moderate changes at the area of the stair edge: - cob webbing with a fibre length of 5 mm to 15 mm; - moderate pattern changes at the stair edge compared to areas of the test specimen exposed to the flat treatment with the Lisson Tretrad; - minimum use class 22.
Suitable for intensive use	Minor changes at the area of the stair edge: - cob webbing with a fibre length of less than 5 mm; - minor pattern changes at the stair edge compared to areas of the test specimen exposed to the flat treatment with the Lisson Tretrad; - minimum use class 31.

C.4 Carpets without pile: assessment of stair suitability

〚A1〉 *deleted text* 〈A1〛

If the carpet is intended to be installed using protective stair nosings, then these tests shall not apply. The overall use class determines the stair suitability.

NOTE The use of these edgings in public areas is often the subject of local bye-laws and legislation.

Assess the appearance of each specimen using at least three independent assessors according to the characteristics given in Table C.6. At least 3 out of 4 samples shall fulfil the requirements as listed below.

Table C.6 — Suitability

Suitability	Criteria
A1 Not Suitable	Extreme changes at the area of the stair edge: e.g. - destroyed primary backing, foam or secondary backing; - more than 3 fully broken loops; - cob webbing with a fibre length of 15 mm or more. A1
Suitable for domestic use	Moderate changes at the area of the stair edge: - not more than 3 broken loops over the whole with; - cob webbing with a fibre length of 5 to 15 mm; - moderate pattern changes at the stair edge compared to areas of the test specimen exposed to the flat treatment with the Lisson Tretrad; - minimum use class 22.
Suitable for commercial use	Minor changes at the area of the stair edge: - limited filament destruction (no broken loops); - cob webbing with a fibre length less than 5 mm; - minor pattern changes at the stair edge compared to areas of the test specimen exposed to the flat treatment with the Lisson Tretrad; - minimum use class 31.

Annex D
(informative)

Impact sound insulation

Carpets have a positive influence on impact sound insulation. This can be expressed by measurements according to EN ISO 10140. Without measurement (conformity without testing) the following values can be given in accordance with the calculated Luxury Class (see Table 18).

— LC1: $\Delta Lw \geq 10$ dB

— LC2: $\Delta Lw \geq 20$ dB

— LC3 to 5: $\Delta Lw \geq 25$ dB

Annex E
(normative)

Determination of work of compression of underlay

The work of compression is determined by measuring the thickness of an underlay specimen at an increasing load up to 100 kPa. For these measurements a pressure foot with a contact surface between 700 mm^2 and 1 000 mm^2 shall be used.

The work of compression may be calculated either directly by integration of the area under the loading curve between 2 kPa and 100 kPa by computer or by estimation of the area from discrete thickness measurements.

If the second method is used, thickness measurements shall be made at pressures of 2 kPa, 5 kPa, 10 kPa, 20 kPa, 50 kPa and 100 kPa. The work of compression (W_c, in J/m^2) shall be calculated using the following expression:

$$W_c = (1{,}5t_2 + 4t_5 + 7{,}5t_{10} + 20t_{20} + 40t_{50} - 73t_{100})$$

where

t_2 is the thickness (in mm) at 2,0 kPa pressure;

t_5 is the thickness (in mm) at 5,0 kPa pressure, etc.

Certain carpet thickness gauges may require modification and the manufacturer's advice should be sought.

Annex F
(normative)

Flocked floor coverings – Blade test

F.1 Principle of test

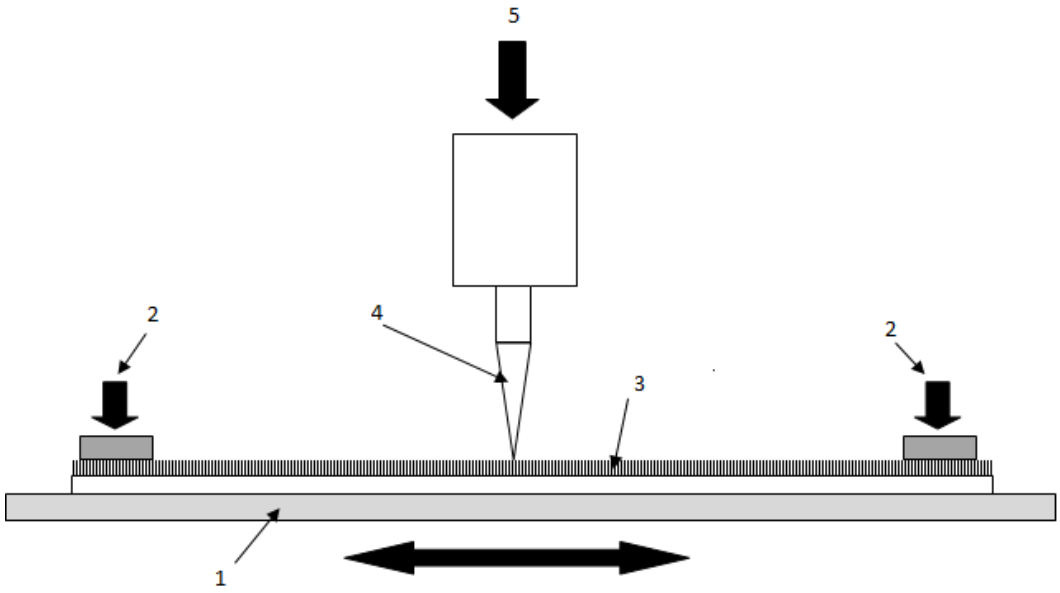
This test describes a laboratory test method to measure the abrasion resistance of flocked floor coverings.

A specimen of the flocked floor covering is placed on the test apparatus pile face up. A blade is then lowered onto the pile surface which rubs against the pile surface for a determined number of cycles, after which a visual assessment is made.

F.2 Apparatus

The flock abrasion testing machine (see Figure F.1) consists of a reciprocating base plate onto which the flocked flooring sample can be clamped. A blade and weight assembly can be lowered onto the sample. The apparatus moves over a distance of 100 mm at 60 cycles per minute. A cycle is defined as one forward and backward movement of the blade.

The blade is made of tool steel. It has a width of 20 mm, a thickness of 5 mm, a tip radius of 0,3 mm and a tip angle of 15°. The total mass of weight assembly and blade is (2 ± 0,05) kg.



Key

1 reciprocating base plate
2 specimen clamp
3 test specimen
4 blade
5 mass (2 ± 0,05) kg

Figure F.1 — Flock abrasion testing machine (schematic representation)

F.3 Preparation of test specimens

Cut a specimen of (40 × 300) mm from the flocked floor covering (pile direction is not important).

Condition the specimen in a standard atmosphere (20°C, 65 % relative humidity) for a minimum of 24 h.

F.4 Test procedure

Place the test specimen, pile uppermost, under the clamps and thread through under the raised blade.

Lower and tighten the clamps at each end while making sure that the test specimen is held taut (during the test the sample should remain flat without significant lifting in front of the blade).

Carefully lower the blade onto the specimen and ensure that the weight is in place on the spindle above the blade.

Set the counter to the required number of cycles and switch on the apparatus. After the pre-set number of cycles has been completed, the apparatus should stop automatically.

Remove the specimen from the apparatus and brush it lightly to remove any loose fibres before assessment.

F.5 Assessment of Results

Assess the specimen for wear. The pass criterion is that the pile shall not be removed such that 50 % backing becomes clearly visible.

F.6 Test Report

The test report shall include the following information:

a) all the information necessary for complete identification of the sample;

b) the conditioning and testing atmosphere;

c) reference to this standard;

d) whether or not the specimen has passed or failed the test;

e) any operations or conditions not specified in this standard, which might have affected the results;

f) date of report.

Annex G
(normative)

Flocked floor coverings – Water Impermeability Test

G.1 Principle of test

This test describes a laboratory test method to measure the impermeability to water of flocked floor coverings.

A specified amount of coloured liquid is poured from a height of 1 m onto the carpet face, where it is contained in a concentrated area for 24 h. The carpet is then evaluated for liquid penetration through the product.

G.2 Equipment

G.2.1 Methylene Blue solution (1 g per litre).

G.2.2 Funnel with 10 mm spout.

G.2.3 White tissue paper.

G.3 Conditioning and preparation of test specimens

Cut five specimens of (250 × 250) mm from across the width of the flocked floor covering.

Condition the specimens at standard atmosphere (20 °C, 65 % relative humidity) for a minimum of 24 h.

G.4 Test procedure

Lay each specimen on top of a clean white tissue on a horizontal surface.

Pour 100 ml of the methylene blue solution through the funnel onto the floor covering surface from a height of 1 m in a concentrated area (approximately 15 cm diameter).

Leave the specimens to stand for 24 h before evaluation.

G.5 Assessment of results

The specimens from each test are visually examined for evidence of water penetration through the backing onto the white tissue.

If no water penetration is visible, a cross section is carried out on the samples to see if the dye has penetrated into the secondary backing.

G.6 Test report

The test report shall include the following information:

a) all the information necessary for complete identification of the sample;

b) the conditioning and testing atmosphere;

c) reference to this standard;

d) whether or not the specimens showed water penetration or if visible dye was seen in the secondary backing;

e) if the specimen was found to be impermeable (or not);

f) any operations or conditions not specified in this standard, which might have affected the results;

g) date of report.

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