Report 67027
Test Report

Applicant

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Reference

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Application

Testing and classification according EN 15114, stair and castor chair suitability, fraying resistance, electrical propensity and vertical resistance.

Test Material

"epoca profile mod 350"

Material used in testing was anonymized for laboratory purposes. A detailed sample list is contained in the report.

Issuing and Signatures

Number of pages contained: 16

Original Issue / Vienna 2011-10-20 / da/AM/KK 120

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Contents

1 Order

1.1 Chronology

Date	*Received*	*Order*
2011-09-09	2011-09-14	Testing and classification according EN 15114, stair and castor chair suitability, fraying resistance, electrical propensity and vertical resistance.

1.2 Samples

No.	*Received*	*Sample Identification*
1	2011-09-14 (1)	"epoca profile mod350"

(1) Samples provided by the customer. (2) Sample drawn by ÖTI.

2 Findings / Tests performed

2.1 Description of specimen

Description of specimen according to ISO 2424

Test Results

Sample tested: 1

Dimensions:	tiles
Manufacturing procedure:	flat woven
Structure of face side:	loop pile
Coloration of face side:	uni
Type of backing:	textile nonwoven backing
Type of fibres at face side *):	100% polyamide

*) In accordance with the at present valid version of the appropriate European Directives; fibre materials less then 2 % are not considered

According to EN 15114, this is a textile floor covering without pile.

2.2 Determination of mass per unit area

Test conditions

According ISO 8543
Test atmosphere: 20° C / 65 % rel. humidity
Number of specimens: 4

Test results

Tested sample: 1

	Mass per unit area
Mean value	**2526 g/m²**
Coefficient of variation	2,4 %
Confidence interval (P = 95 %) absolute width	± 98 g/m²

2.3 Determination of thickness

Test conditions

Testing according ISO 1765
Test atmosphere: 20° C / 65 % rel. humidity
Number of specimens: 4

Test results

Tested sample: 1

	total thickness
Mean value	**5,1 mm**
Coeffizient of variation	1,1 %
Coeffizient interval (P=95 %) absolute width	± 0,1 mm

2.4 Determination of hairiness (pilling)

Test Conditions

Testing according EN 1963, test D
Duration: 200 double passages

Test Results

Tested sample: 1

	Assessment of appearance after 200 double passages according Photo standard	
Samples	longitudinal direction	cross direction
Total Median	4	4,5
Worst Result	4	

Evaluation

The specimen fulfills the requirements of EN 15114.

2.5 Determination of the basic requirement of carpets without pile

Test conditions

According to EN 15114:2008

Test results

Tested sample: 1

	Basic requirements	Test results
Colour fastness to [a]		Conformity to be declared by the manufacturer for each colour
◆ Light	≥ 5 (pastel shade [b] ≥ 4)	
◆ Rubbing		
- dry	≥ 3-4	
- wet	≥ 3	
◆ Water – change in colour		
- plain carpets	≥ 3-4	
- other carpets	≥ 4	
◆ Water – staining [c]		
- - all carpets	≥ 2-3	
Hairiness/ Pilling[e]	≥ 2-3	4
Colour change [d]		Conformity to be declared by the manufacturer for each production run
◆ Due to spilled water	≥ 4	
◆ Due to soiling subsequent to spilled water	≥ 3	
Dimensional change[f]	Shrinkage (both directions): ≤ 1,2% Expansion (both directions): ≤ 0,5%	Length: - 0.2%/ + 0.1% Cross: -0.1%/ +0.1%

[a] Conformity to be declared by the manufacturer for each colour
[b] Pastel shade: colour corresponding to a standard depth ≤ 1/12 (in accordance with EN ISO 105-A01)
[c] On multi fibre: worst result
[d] Conformity to be declared by the manufacturer
[e] Worst result (of longitudinal or cross direction)
[f] Not valid for tiles (see Annex A), not valid for permanently glued floor coverings.

Judgement

The tested material fulfills the basic requirements of carpets without pile according to EN 15114:2008, point 4.

2.6 Determination of changes in appearance – Drum Test

Test conditions

According to EN 1307 and ISO/TR 10 361
Assessment according EN 1471
Number of drum revolutions: 5 000 and 22 000
Number of specimens: 1

Test results

Tested sample: 1

	5 000 revolutions	22 000 revolutions
Index of appearance change (median)	4.5	4
Index of colour change (median)	4-5	4
Main reasons for change	colour	colour
Index after colour correction (median)	**4.5**	**4**
Index after colour correction (mean)	**4.5**	**4**

Damages by the treatment	none

Assessment indices: Index 1 – high change, Index 5 – no change

2.7 Determination of the mass loss of textile floor coverings using the Lisson Tretrad machine

Test conditions

According to EN 1963, test A
Soles: Vulcanised SBR-rubbers with a wave profile
Number of treads: 2200
Adjustment of wheel height: --5 mm
Number of specimens: 4

Test results

Tested sample: 1

	Mass loss per unit area [m_v]		Relative mass loss [m_{rv}]	
Mean value	**0**	**g/m²**	**-**	**%**
Coefficient of variation	0	%	-	%
Confidence interval (P = 95 %) absolute width	± 0	g/m²	± -	%

Tretradindex:	-

Note:
The primary function of the test with the "Lisson-Tretrad-Machine" is to obtain from textile floor coverings a criteria for the wear performance in practical use. The used "Lisson-Tretrad" with four feet – which are covered with changeable rubber soles – runs on a straight line forwards and backwards, with a slip of 20 % and a surface pressure of 150 N, on the surface of the test specimen (which is lying on a test table). After a defined count of reciprocating motion the mass loss will be ascertained.

2.8 Determination of general structural integrity

Test conditions

Testing according: EN 985, test C
Test apparatus: castor chair test equipment from Feingerätebau Baumberg
Typ of castors: single-wheel swivel castor, type H

Test Results

Tested sample: 1

Duration	Damages by the treatment
10 000 cycles	none
25 000 cycles	none

2.9 Classification of carpets without pile

Test conditions

According to EN 15114:2008

Test results

Tested sample: 1

Material of the use surface (by the applicant)			polyamide
Specification of the change in appearance			
Drum test (Vettermann)	◆ Short term	[5.000 turns]	4.5
	◆ Long term	[22.000 turns]	4
Specification of wear behaviour			
Lisson-Tretrad	◆ Mass loss m_v (g/m²)		no mass loss
Specification of general structural integrity			
Damages by the treatment	◆ Short term	[10.000 turns]	no damages by the treatment
	◆ Long term	[25.000 turns]	no damages by the treatment

Classification

Classification of change in appearance	class 33
Classification of wear behaviour	class 33
Classification of general structural integrity	class 33

Overall use class	**class 33**
Luxury rating class	**LC1 *)**

***):** Carpets without pile are classified in luxury rating class LC1 according to EN 15114 point 6.

Explanations:
Textile floor coverings are classified to their suitability in different use classes. There are three essential characteristics for the classification: change in appearance, wear behaviour and general structural integrity. These three characteristics serve the description of the use behaviour in dependence to the intensity of use. **The use class assigned to the carpet is the lowest one that was reached after the testing.** The different use classes are described as followed:

Domestic		Commercial	
Class	**Use intensity**	**Class**	**Use intensity**
21	moderate / light	- - -	- - -
22	general / medium	- - -	- - -
22+	general	31	light
23	heavy	32	general
- - -	- - -	33	heavy

The use- and comfort-classes are corresponding to the following till now common judgements for the wear- and comfort behaviour.

Level of use classification		"use class"
EN 15114	**EN 1307:1997**	
21	1	low
22	2	normal
22+ / 31		
23 / 32	3	heavy
33	4	extreme

Luxury rating class	"luxury value"
LC 1	plain
LC 2	good
LC 3	high
LC 4	luxurious
LC 5	prestige

2.10 Determination of the castor chair suitability of textile floor coverings

Test conditions

According to EN 985, Method A
Test apparatus: castor chair test equipment, Typ: Feingerätebau Baumberg
Castors: according EN 985

Test results

Tested sample: 1

Test duration	change of attribute	Index of colour change *)	Index of appear-ance change *)
5 000 revolutions	colour	3-4	3.5
25 000 revolutions	colour	2-3	2.5
Castor chair index (r)	**3.3**		

*) Note: Index 1 - high change / Index 5 - no change

Damages by the treatment: none

Classification

According the specifications of **EN 15114** the specimen can be classified as:

"suitable for intensive use"

2.11 Classification of the suitability for use on stairs

Test conditions

According to EN 1963; Test method B: nosing test

Test results

Tested sample: 1

Appearance change*) in the edge area	**low appearance change**

*)complete mean

Classification

According to EN 15114 the specimen can be classified as suitable

"for intensive use"

Note: A workmanlike construction of the stair nose with a rounding radius of at least 10 mm is presupposed to the judgement.

2.12 Determination of the resistance to fraying

Test conditions

Testing according to EN 1814:2005
Number of test samples: 4
Kind of test sample: tiles

Test results

Tested sample: 1

Damages on cut edge after treatment: none

Judgement

The tested specimen can be classified as **resistant to fraying.**

2.13 Assessment of static electrical propensity – walking test

Test Conditions

According to ISO 6356
Testing atmosphere: 23 °C / 25 % rel. humidity
Base plate: Isolating rubber mat on metal plate
Sole-material: XS-664P Neolite
Pretreatment: none

Test results

Tested sample: 1

Supplied condition			
Measurement 1	Measurement 2	Measurement 3	**Mean value**
1,1 kV	1,0 kV	1,3 kV	**1,1 kV**

Judgement

The tested sample fulfills the requirements of EN 15114:2008 and can be classified as **antistatic** according EN 14041:2004; the requirements for durability aspects are fulfilled.

2.14 Determination of electrical resistances

Test conditions

According to ISO 10965
Test atmosphere: 23°C ± 1°C / 25% ± 3% rel. humidity
Circuit voltage: 500 V

Test results

Tested sample: 1

Sample	Measurement	Vertical resistance	Horizontal resistance
1	1	5.55 10^{11} Ω	7.68 10^{12} Ω
	2	3.17 10^{11} Ω	5.78 10^{12} Ω
2	1	4.87 10^{11} Ω	6.50 10^{13} Ω
	2	4.62 10^{11} Ω	5.87 10^{13} Ω
3	1	4.55 10^{11} Ω	1.07 10^{13} Ω
	2	4.37 10^{11} Ω	7.57 10^{12} Ω
Geometric mean value		**4.46 10^{11} Ω**	**1.55 10^{13} Ω**

2.15 Determination of total mass of individual tile

Test conditions

According ISO 8543
Test atmosphere: 20° C / 65 % rel. humidity
Number of samples: 4

Test results

Tested sample: 1

	total mass of individual tile
Mean value	**0.580 kg**
Coefficient of variation	0 %
Confidence interval (P = 95 %) absolute width	± 0.000 kg

2.16 Determination of the side length, squareness and straightness of tiles

Test condition

According to EN 994
Number of tested specimens: 3
Nominal dimension: Length: 480mm; Width: 480mm

Test results

Tested sample: 1

Determination of dimensions		Length direction	Cross direction
mean length	[mm]	480.2	480.0
min. average length	[mm]	480.0	480.0
max. average length	[mm]	480.4	480.1
difference between the smallest and the largest average length	[mm]	0.4	0.1
max. deviation from mean length	[%]	<0.1	<0.1
max. deviation from nominal dimension	[%]	0.1	0.0

Squareness and straightness		
max. deviation	[mm]	<0.20
max. deviation	[%]	<0.04

2.17 Determination of dimensional changes and distortion out of plane

Test conditions

According to EN 986

Test results

Tested sample: 1

		Dimensional change [%]	
		length	cross
1. Treatment 2 hours storage (drying) at 60 °C	1. Measurement	-0.2	-0.1
	2. Measurement	-0.2	-0.2
	3. Measurement	-0.2	-0.1
	Mean value	**-0.2**	**-0.1**
2. Treatment 2 hours storage in water at 20 °C	1. Measurement	±0.0	±0.0
	2. Measurement	±0.0	±0.0
	3. Measurement	+0.1	±0.0
	Mean value	**±0.0**	**±0.0**
3. Treatment 24 hours storage (drying) at 60 °C	1. Measurement	+0.1	+0.1
	2. Measurement	+0.1	+0.1
	3. Measurement	+0.2	+0.1
	Mean value	**+0.1**	**+0.1**
4. Treatment 48 hours storage at standard atmosphere	1. Measurement	-0.2	+0.1
	2. Measurement	-0.1	-0.1
	3. Measurement	-0.1	-0.0
	Mean value	**-0.1**	**±0.0**

maximum distortion out of plane [mm] after the treatment (step 4):			
specimen 1	specimen 2	specimen 3	**Mean value**
0	0	0	**0**

Note:
A plus (+) is used to indicate an increase and a minus (-) is used to indicate shrinkage in dimensions.

appearance of specimen after treatment	
curling	no change
distortion	no change

2.18 Classification of carpets without pile, additional requirements for carpet tiles

Test conditions

According to EN 15114 2008, annex A

Test results

Tested sample: 1

	Requirements			Test results
	Non adhered tile *Loose laid*	Adhered tile *Removable*	*Permanent*	
Total mass of individual tile, ISO 8543	≥ 0.875 kg	≥ 0.625 kg	- - -	0.580 kg
Total mass per unit area, ISO 8543	≥ 3.5 kg/m²	≥ 2.5 kg/m²	- - -	2.5 kg/m²
Dimensions, EN 994	± 0.30 % on nominal dimensions			max. deviation on nominal dimensions longitudinal 0.1 % cross 0.0 %
	± 0,20 % in the same batch			max. deviation to the mean length longitudinal <0.1 % cross <0.1 %
Squareness and straightness of edges, EN 994	± 0,15 % in both directions			max. deviation <0.04 %
Dimension stability, EN 986	shrinkage in both directions ≤ 0,2 %		≤ 0,4 %	max. dimensional change longitudinal -0.2 %/ +0,1% cross -0.1/ +0,1% %
	extension in both directions ≤ 0,2 %		≤ 0,2 %	
Curling / doming, EN 986	max. deviation of any part of the sample from its plane ≤ 2 mm		- - -	max. curling / max. doming 0 mm
Damage at cut edge (fraying), EN 1814	no damage			no damage

Judgement

The submitted sample fulfils the additional requirements for permanent adhered carpet tiles according EN 15114:2008, Annex A (normative).

2.19 Summary of results

Article	"epoca profile mod350"	
Constructive characteristics		
material of use surface(by the applicant)	100% Polyamide	
Total mass per unit area	2526 g/m²	
Total thickness	5.1 mm	
Basic requirements	**fulfilled**	
Hairiness "pilling" (EN 1963 method D)	Fulfills the requirements	
Tests for determination of use classification level		
Change in appearance – "Vettermann" drum test (ISO 10361)	Median	Mean value
Grade after colour correction – 5000 cycles	4.5	4.5
Grade after colour correction – 22000 cycles	4	4
Wear behaviour (EN 1963 method A)		
Mass loss per unit area [m_v]	No mass loss	
General structural integrity (EN 985 method C)		
Damages by treatment - 10000 cycles	none	
- 25000 cycles	none	
Classification according EN 15114		
Basic requirements	fulfilled	
Classification of change in appearance	Class 33	
Classification for wear	Class 33	
Classification for general structural integrity	Class 33	
Level of use classification	**Class 33**	
Use intensity	commercial use 33 "heavy"	
Luxury rating classification	**LC1**	
Luxury value	LC1 "plain"	
Additional caracteristics		
Castor chair suitability (EN 985)	suitable for intensive use	
Antistatic (ISO 6356)		
Walking test	1.1 kV	
Electrical propensity (ISO 10965)		
Horizontal resistance	1.55×10^{13} Ω	
Vertical resistance	4.46×10^{11} Ω	
Fraying behaviour (EN 1814)	**resistant to fraying**	

Additional Requirements for tiles		fulfilled [1]
Total mass of individual tile (ISO 8543)		0.580 kg
Total mass per unit area (ISO 8543)		2.5 kg/m²
Dimensions (EN 994)	- max. deviation to nominal - max. deviation in the same batch	0.1 %
Squareness / straightness of edges (EN 994)	- deviation to nomial	<0.04 %
Dimension stability (ISO 986)	- skrinkage	-0.2 %/ +0.1 %
	- extension	-0.1 % / +0.1 %
Curling/doming (ISO 986)		0 mm
Resistance to fraying (EN 1814)		no damage

[1] Fulfils the requirements for "permanent adhered tiles"

3 Remarks

Validity

There are no regulations concerning validity in the appropriate single test standards. Regardless of any specified validity, this report stays valid at the most, as long as the product will be produced unchanged; this is the responsibility of the manufacturer. Possible national or international restrictions concerning the validity of test- and classification reports have to be considered; this is not the responsibility of the test laboratory.

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