Report 46307

Test Report

Applicant

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Reference

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Application

Testing and classification of the use area, stair suitability, resistance to fraying, electrical resistance and colour-fastness to water, -rubbing and artificial light.

Test Material

highline 630 AB

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

Issuing and Signatures

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Contents

1 Order

1.1 Chronology

Date	*Received*	*Order*
2004-04-20	2004-04-29	Testing and classification of the use area, stair suitability, resistance to fraying, electrical resistance and colour-fastness to water, -rubbing and artificial light.

1.2 Sample Material

No.	*Received*	*Quantity*	*Description*
1	2004-04-28 (1)	~ 1,5 running meter	Textile floor covering "highline 630 AB"
2	2004-04-28 (1)	~ 1,5 running meter	Textile floor covering "highline 630 AB"
3	2004-08-26 (1)	~ 2,2x1m	Textile floor covering "highline 630 AB"

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

2 Findings / Tests performed

2.1 Description of specimen

According to ISO 2424

Tested sample: 1, 2, 3

Dimensions: rolls
Manufacturing procedure: tufted
Structure of face side: cut pile
Coloration of face side: multicoloured patterned
Type of backing: textile nonwoven backing
Type of fibres at face side according to directive 71/307/CEE*): 100 % polyamide
(according to the specification by the applicant)

*) Fibre materials making up less than 2 % of the pile weight are not considered.

2.2 Determination of mass per unit and pile mass per unit area

Test conditions

According ISO 8543
Test atmosphere: 20° C / 65 % rel. humidity
Type of shearing apparature: Sharp pointed knife
Number of samples: 4

Test results

Tested sample: 2

	mass per unit	pile mass per unit area
Mean value [g/m²]	**2323**	**446**
Coefficient of variation [%]	0,5	3,8
Confidence interval (P = 95 %) absolute width [g/m²]	± 19	± 28

Note: The pile mass per unit area of pile carpets represents the mass over the carpet-ground which can be sheared with the sharp pointed knife. If other procedures are consulted for the shearing of the pile material, then is to be counted on deviating results. The pile mass per unit area should not be confounded with the pile weight.

2.3 Determination of thickness and thickness of pile

Test conditions

Testing according
Determination of thickness according to ISO 1765
Determination of thickness of pile according to ISO 1766
Test atmosphere: 20° C / 65 % rel. humidity
Shearing methode: Sharp pointed knife
Number of samples: 4

Test results

Tested sample: 2

	thickness	thickness of pile
Mean value [mm]	**8,4**	**4,0**
Coeffizient of variation [%]	3,1	7,2
Confidence interval (P = 95 %) absolute width [mm]	± 0,5	± 0,5

2.4 Calculation of surface pile density and pile fibre volume ratio

Test conditions

The calculation was made according ISO 8543 with integration of the following test results:

Pile material:	100 % polyamide
Density of pile material [g/cm³]:	1,14
Mass of pile per unit area [g/m²]:	446
Thickness of above the substrate pile [mm]:	4,0

Test results

Tested sample: 2

Surface pile density [g/cm³]	0,112
Relative surface pile density [%]	9,8

2.5 Determination of number of tufts or loops

Test conditions

According to ISO 1763

Test results

Tested sample: 2

Number of tufts or loops / 10 cm:	
in length direction:	60,3
in cross direction:	39,6
Number of tufts or loops per dm²:	2388
Number of tufts or loops per m²:	238.800

2.6 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: 2300
Adjustment of wheel height: - 5 mm
Number of specimens: 4

Test results

Tested sample: 2

	Mass loss per unit area (m_v)	Relative mass loss (m_{rv})
Mean value	No mass loss	
Coefficient of variation		
Confidence interval (P = 95 %) absolute width		

Tretradindex: 4,0

2.7 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: 2

	5 000 revolutions	22 000 revolutions
Index of appearance change (median):	4,0	3,0
Index of colour change (median):	3-4	3
Main reasons for change:	colour	colour + structure
Index after colour correcture (median):	**4,0**	**3,0**
Index after colour correcture (mean):	**3,8**	**3,1**

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

Damages by the treatment: none

2.8 Determination of the basic requirement of pile carpets with synthetic pile-fibres

Test conditions

According to EN 1307

Test results

Tested sample: 2

Surface structure: cut pile carpet
Pile material: 100 % polyamide

	Basic requirements	Test results
Colour fastness to		
• light fastness	≥ 5 (pastel hue ≥ 4 [1])	The applicant garanties the minimum values of the colour fastness as stated beside.
• fastness to rubbing		
dry	≥ 3	
wet	≥ 3 – 4	
• fastness to water		
plain carpets	≥ 3 – 4 [2]	
patterned carpets	≥ 4 [2]	
Fibre bind of carpets with a pile material of 100 % wool or 80 % wool/20 % polyamide		
• Mass loss - wool	≤ 350 mg	-- mg
• Mass loss – 80 % wool/ 20 % polyamide	≤ 225 mg	-- mg
Fibre bind of carpets with synthetic pile-material		
• Loop pile carpets	Fussing below level of reference photographs	--
• Cut pile carpets	weight loss ≤ 25 % of the pile weight	0 %
•		

[1] Pastel shade: Colour according to 1/12 judging type depth (ISO 105-A01:1995)

[2] Change in colour

Comment

The tested material fullfills the basic requirements of pile carpets according to EN 1307 point 6.

2.9 Classification of pile carpets in use classes

Test conditions

According to EN 1307

Test results

Tested sample: 2

Surface structure:	cut pile
Pile material:	100 % polyamide
Surface pile weight [g/m²]:	446
Surface pile thickness [mm]:	4,0
Surface pile density [g/cm³):	0,112
Number of tufts [tufts/m²]:	238.800
Mean fibre fiseness [dtex]:	--
Fibre factor [F_F]:	--
Tretrad index [I_{TR}]:	4,0
Drum test (Vettermann):	
• Short term [5.000 turns]:	4,0
• Long term [22.000 turns]:	3,0
Wear index [WI]:	--
Luxury-index [CF]:	18,1

According to EN 1307:1997 the tested carpet is specified as „Categorie N – other carpets“.

Classification

Use class:	class 3	wear class:	heavy
Luxury rating class:	class LC 2	luxury class:	good

Explanation:

Textile floor-coverings are classified to their suitability in different use classes. There are two essential characteristics for the classification: Wear behaviour and appearance change. These both characteristics serve the description of the use behaviour in dependence to the intensity of use: The use class assigned to the carpet is the lower one that was reached after the testing of the wear behaviour and the appearance change.

The different use classes are described according to EN 1307 point 4.2 as followed:

Class of the use area	Intensity of use	Examples of use	
		living area	business area
1	easy use	easy	---
2	normal use	normal	---
3	heavy use	heavy	normal
4	extreme use	---	heavy

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

Wear class according EN 1307	Use class
1	low
2	normal
3	heavy
4	extreme

Luxury class according EN 1307	Luxury value
LC 1	simple
LC 2	good
LC 3	high
LC 4	luxurious
LC 5	prestige

2.10 Determination of the resistance to fraying

Test conditions

Testing according to EN 1814
Classification according to EN 1307
Drum turns per minute: 16
Number of drum turns: 11 000
Number of test samples: 1
Kind of test sample: wall-to-wall

Test results

Tested sample: 1

Damages on cut edge after treatment: none

Judgement

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

Explanation: Extra heavy walking conditions with a high use intensity are simulated by the conducted test. The judgement of the fraying behaviour is limited to the property of the tested sample itself. Precautions for strengthening during the installation or other actions, which could improve the fraying behaviour, are not considered by this test. The judgement of the fraying behaviour of carpet rolls is only valid, when the carpet is complete glued down to the subfloor.

2.11 Classification of the suitability for use on stairs

Test conditions

According to EN 1963
Test methode: Test B: nosing test

Test results

Tested sample: 2

Overall median of the appearance change in the edge area: **Note 3**

Judgement note: Note 1 - extreme appearance change
Note 2 - moderate appearance change
Note 3 - low appearance change

Classification

According to EN 1963 the specimen can be classified as **suitable for use area 3 („strong “).**

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

2.12 Assessment of static electrical propensity – walking test

Test conditions

According to EN 1815
Testing atmosphere: 23 °C ± 1 °C / 25 % ± 3 % rel. humidity
Base plate: > 10^9 Ω rubber mat on metal plate
Sole-material: rubber
Deviation from standard: The test was carried out only with rubber-soles, because the PVC-soles are internationally not available at this time.

Test results

Tested sample: 3

	Voltage	
Test 1	+ 0,7	kV
Test 2	+ 0,9	kV
Test 3	+ 0,7	kV
Mean value	**+ 0,8**	**kV**

Classification

By walking over this floor covering no disturbing electric charges will occur, even not by disadvantageous room – climates.
This floor covering can be classified as antistatic.

2.13 Determination of colour fastness to rubbing

Test conditions

According to EN ISO 105-X12
Used rubbing finger: rectangular 19 mm x 25,4 mm
Downward force: (9 ± 0,2) N
Percentage of soak (only rubbing wet): 100 %

Test results

Tested sample: 2

Staining of the cotton rubbing cloth:		
Colourfastness, dry rubbing:	Longitudinal direction:	Numerical rating: **5**
	Cross direction:	Numerical rating: **4-5**
Colourfastness, wet rubbing:	Longitudinal direction:	Numerical rating: **5**
	Cross direction:	Numerical rating: **5**

Note: Comment on assessment of colour fastness see enclosure.

2.14 Determination of colour fastness to water

Test conditions

According to EN ISO 105-E01

Test results

Tested sample: 2

Change in colour:	Numerical rating: **4-5**
Staining of adjacent fabric:	
- Adjacent fabric 1: polyamide	Numerical rating: **3-4**
- Adjacent fabric 2: wool	Numerical rating: **5**

Note: Comment on assessment of colour fastness see enclosure.

2.15 Determination of colour-fastness to artificial light

Test conditions

According to EN ISO 105-B02
Test equipment: Xenotest 150 S
Exposure method: 1
Kind of motion: Reversing motion
Effective humidity: 40 %
Max. temperature of the black-panel-thermometer: 50 °C

Test results

Tested sample: 2

Numerical rating of light-fastness: 7

Note: Light-fastness will be evaluated by a comparative scale, which consists of eight blue woollen fabrics, which are dyed gradated regarding their light-fastness and which will be treated under the same conditions as the specimen. It is given in figures, mark 1 thus represents very low and mark 8 very high light-fastness.

2.16 Summary of Results

Article	Highline 630 AB

Details		
Pile material (by the applicant)	100% Polyamide	
Total mass per unit area	2323 g/m²	
Mass of pile per unit area	446 g/m²	
Total thickness	8,4 mm	
Thickness of pile above the substrate	4,0 mm	
Surface pile density	0,112 g/cm³	
Number of tufts or loops	238800 /m²	
Mass loss		
Mass loss per unit area	no mass loss	
Tretrad-Index	4,0	
Change in appearance – drum test	Median	Mean value
Grade after colour correcture – 5000 cycles	note 4,0	note 3,8
Grade after colour correcture – 22000 cycles	note 3,0	note 3,1
Classification according EN 1307		
Carpet category	category N	
Basic requirements	fulfilled	
Level of use classification	class 3	
Wear class	heavy	
Luxury rating factor	18,1	
Luxury rating class	class LC 2	
Comfort class	good	
Resistance to fraying	resistent	
Stair suitability	suitable for wear class 3 („heavy")	
Electrical resistance		
Walking test	+0,8 kV	
Classification	antistatic	
Colour fastness to rubbing	lenght direction	cross direction
- dry	rate 5	rate 4-5
- wet	rate 5	rate 5
Colour fastness to water		
Change in colour	rate 4-5	
Staining of adjacent fabric, polyamide	rate 3-4	
Staining of adjacent fabric, wool	rate 5	
Colour fastness to artificial light	rate 7	

3 Remarks

Sample Material

Results of performed tests only refer to the sample material provided.

Without explicit written other agreement testing is destructive and the sample material is transferred to the property of ÖTI, which is entitled to freely decide on storage and disposal.

Quality management and accreditations

All tests and services are performed under a quality management system according to EN ISO 17025.

ÖTI is accredited by several organisations for various tests offered. It also is a Notified Body with the registration number 0534. The accreditation by the Federal Ministry as testing laboratory was repeated under AK 92714/263-I/12/04 (Individual accredited test procedures are marked with the federal laboratory logo), the accreditation for testing and surveillance of building products was given by the OIB (Österreichisches Institut für Bautechnik). Details and other accreditations are given on request and can be found on www.oeti.at.

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End of Report