# Report 66203
# *Test Report*

## *Applicant*

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DÄNEMARK

## *Reference*

Mrs. Ormstrup

## *Application*

Testing and classification according to EN 1307, determination of castor chair suitability, stair suitability and resistance to fraying and static electrical propensity.

## *Test Material*

"highline 1100 wt"

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* |
|---|---|---|
| 2011-05-13 | 2011-05-17 | Testing and classification according to EN 1307, determination of castor chair suitability, stair suitability and resistance to fraying and static electrical propensity. |

## 1.2 Samples

| *No.* | *Received* | *Sample Identification* |
|---|---|---|
| 1 | 2011-05-17 (1) | "highline 1100 wt" |

(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: | rolls |
| Manufacturing procedure: | tufted |
| Structure of face side: | cut pile |
| Coloration of face side: | multicoloured patterned |
| Type of backing: | textile secondary backing |
| Type of fibres at face side *): | 100 % polyamide<br>(according to the specification by the applicant) |

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

According to EN 1307, this is a pile carpet.

## 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: 1

| | mass per unit area | pile mass per unit area |
|---|---|---|
| **Mean value** | **2600 g/m²** | **851 g/m²** |
| Coefficient of variation | 1.1 % | 0.5 % |
| Confidence interval (P = 95 %) absolute width | ± 48 g/m² | ± 8 g/m² |

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 wear layer

### Test conditions

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

### Test results

Tested sample: 1

| | total thickness | thickness of wear layer |
|---|---|---|
| **Mean value** | **8.3 mm** | **5.6 mm** |
| Coeffizient of variation | 0.9 % | 0.8 % |
| Confidence interval (P = 95 %) absolute width | ± 0.2 mm | ± 0.1 mm |

## 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 | 1.14 g/cm³ |
| Mass of pile per unit area | 851 g/m² |
| Thickness of above the substrate pile | 5.6 mm |

### Test results

Tested sample: 1

| | |
|---|---|
| Surface pile density | 0.152 g/cm³ |
| Relative surface pile density | 13.3 % |

## 2.5 Determination of number of tufts or loops

### Test conditions

According to ISO 1763

### Test results

Tested sample: 1

| | | |
|---|---|---|
| Number of tufts or loops / 10 cm | in length direction: | 61.2 |
| | in cross direction: | 32.2 |
| Number of tufts or loops per dm²: | | 1971 |
| Number of tufts or loops per m²: | | 197100 |

## 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: 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** | **no mass loss** | |
| Coefficient of variation | | |
| Confidence interval (P = 95 %) absolute width | | |

| | |
|---|---|
| **Tretradindex:** | 5.5 |

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.

## 2.7 Determination of the basic requirement of pile carpets

### Test conditions

According to EN 1307:2008

### Test results

Tested sample: 1

| | |
|---|---|
| Surface structure | cut pile carpet |
| Pile material | 100 % polyamide |

| | 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 | |
| **Fibre bind for all carpets < 80 % Wool** | | |
| ◆ Loop pile carpets | Fuzzing below level of reference photographs | -- |
| ◆ Cut pile carpets | Loss of mass ≤ 25 % | ± 0.0 % |
| **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 | |

[a] Conformity to be declared by the manufacturer for each colour
[b] Pastel shade: colour corresponding to a standard depht ≤ 1/12 (in accordance with EN ISO 105-A01)
[c] On multi firbe: worst result
[d] Conformity to be declared by the manufacturer

### Judgement

The tested material fulfills fulfills the basic requirements of pile carpets according to EN 1307:2008, point 6.

## 2.8 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** | **4.0** |
| **Index after colour correction (mean)** | **4.5** | **3.8** |
| Damages by the treatment | none | |

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

## 2.9 Determination of the resistance to fraying

### Test conditions

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

### Test results

Tested sample: 1

Damages on cut edge after treatment: none

### Judgement

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

## 2.10 Classification of pile carpets

### Test conditions

According to EN 1307:2008

### Test results

Tested sample: 1

| | | | |
|---|---|---|---|
| Surface structure | | | cut pile carpet |
| Pile material | | | 100 % polyamide |
| Surface pile weight | | [g/m²] | 851 |
| Surface pile thickness | | [mm] | 5.6 |
| Surface pile density | | [g/cm³] | 0.152 |
| Number of tufts | | [tufts/m²] | 197100 |
| Fibre factor | | [FF] | -- |
| Tretrad index | | [$I_{TR}$] | 5.5 |
| Drum test (Vettermann) | ◆ Short term | [5.000 turns] | 4.5 |
| | ◆ Long term | [22.000 turns] | 4.0 |
| Resistance to fraying | | | resistant to fraying |
| Wear index | | [$W_i$] | -- |
| Luxury rating factor | | [$C_F$] | 44.4 |

### Classification

| | |
|---|---|
| Type of carpet | Type 1 |
| Classification for wear | class 33 |
| Classification for change in appearance | class 33 |

| | |
|---|---|
| **Overall use class** | **class 33** |
| **Luxury rating class** | **LC 4** |

**Explanations:**
Textile floor coverings are classified to their suitability in different use classes. There are two essential characteristics for the classification: wear behaviour and change in appearance. 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 change in appearance.** 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 | moderate / 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 1307:2008 | 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 |

## 2.11 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 | 4 | 4.0 |
| 25 000 revolutions | colour | 3 | 3.0 |
| **Castor chair index (r)** | **3.8** | | |

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

Damages by the treatment: none

### Classification

According the specifications of **EN 1307** the specimen can be classified as:

**"suitable for intensive use"**

## 2.12 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 1307 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.

## 2.13 Assessment of static electrical propensity – walking test

### Test Conditions

According to ISO 6356
Testing atmosphere: 23 ± 1 °C / 25 ± 3 % 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** |
| - 0.2 kV | - 0.3 kV | - 0.6 kV | **- 0.4 kV** |

### Judgement

The tested sample in supplied condition can be classified as **antistatic** according EN 14041:2004.

## 2.14 Summary of Results

| Article | "highline 1100 wt" | |
|---|---|---|
| **Constructive characteristics** | | |
| material of use surface(by the applicant) | 100% Polyamide | |
| Total mass per unit area | 2600 g/m² | |
| Mass of pile per unit area | 851 g/m² | |
| Total thickness | 8.3 mm | |
| Thickness of pile above the substrate | 5.6 mm | |
| Surface pile density | 0.152 g/cm³ | |
| Number of tufts or loops | 197100 /m² | |
| **Basic requirements** | **fulfilled** | |
| **Fibre bind - Cut-Pile Carpets** | | |
| Lisson Tretrad (EN 1963, method A) | | |
| - relative mass loss [$m_{rv}$] | 0 % | |
| **Tests for determination of use classification level** | | |
| **Wear behaviour "Lisson-Tretrad" (EN 1963 method A)** | | |
| mass loss per unit area [$m_v$] | 0 g/m² | |
| relative mass loss [$m_{rv}$] | 0 % | |
| Tretradindex [$I_{tr}$] | 5.5 | |
| **Change in appearance – "Vettermann" drum test (ISO 10 361)** | Median | Mean value |
| assesment after colour correction – 5000 cycles | Note 4.5 | Note 4.5 |
| assesment after colour correction – 22000 Touren | Note 4.0 | Note 3.8 |
| **Classification according EN 1307** | | |
| Carpet category | Type 1 | |
| Basic requirements | fulfilled | |
| Classification of the wear performance | Class 33 | |
| Classification of the appearance retention | Class 33 | |
| **Level of use classification** | **Class 33** | |
| Use intensity | commercial use 33 "heavy" | |
| **Luxury rating classification** | **LC4** | |
| Luxury value | LC4 "luxurious" | |
| **Additional caracteristics** | | |
| **Castor chair suitability (EN 985)** | suitable for intensive use | |
| **Antistatic (ISO 6356)** | | |
| **Suitability for use on stairs (EN 1963 method D)** | **"suitable for intensive use"** | |
| **Fraying behaviour (EN 1814)** | **resistant to fraying** | |

# 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 for several directives with the registration number 0534 (see http://ec.europa.eu/enterprise/newapproach/nando/). The accreditation by the Federal Ministry of Economy, Family and Youth as testing laboratory was repeated under reference 92.714/0560-I/12/2009 (Individual accredited test procedures are marked with the federal laboratory logo), the accreditation for testing and inspection of construction products was given by the OIB (Austrian Institute of Construction Engeineering). Details and other accreditations are given on request and can be found on www.oeti.at.

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