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Unilin BVBA - Division Flooring
Mr Dr. Theo Smet
Ooigemstraat 3

8710 WIELSBEKE
BELGIEN

Dresden, 16 February 2011
70-em/pe

# Test report
# Order-No. 270380

| | |
|---|---|
| **Customer:** | Unilin BVBA - Division Flooring<br>Ooigemstraat 3<br>8710 Wielsbeke<br>Belgium |
| **Date of order:** | 08.12.2010 |
| **Order:** | Performance of tests of laminate floorings according to EN 13329 |
| **Institution:** | EPH – Laboratory Surface Testing |
| **Engineer in charge:** | Dipl.-Ing. (FH) M. Peter |

i.V.

Dr.-Ing. R. Emmler
Head of Laboratory Surface Testing

The test report contains 8 pages. Any duplication, even in part, requires written permission of EPH. These test results are exclusively related to the tested material.

# 1 Task

The Development and Examination Laboratory for Wood Technology Ltd. (EPH) was instructed by Unilin Flooring / Belgium to carry out testing of laminate floor coverings according to EN 13329.

# 2 Test material

The costumer has sent three variants of laminate floor coverings. Receipt at the EPH-laboratory: 17.12.2010. The variants were identified as following:

| | |
|---|---|
| Var. 1: | Laminate floor covering Quick Step "CLASSIC", LU 32<br>dimensions 1200 mm x 190 mm x 7 mm |
| Var. 2: | Laminate floor covering Quick Step "ELIGNA", LU 32<br>dimensions 1380 mm x 156 mm x 8 mm |
| Var. 3: | Laminate floor covering Quick Step "LARGO", LU 32<br>dimensions 2050 mm x 205 mm x 9,5 mm |

The test specimens were cut at the EPH-laboratory.

# 3 Test performance

## 3.1 Determination of the resistance against abrasion

The test was carried out according to EN 13329 Annex E with a Taber-Abraser-Type 5151. The related test wheels were prepared with sanding paper type S42.

## 3.2 Determination of the impact resistance

The test was carried out according to EN 13329 Annex F. The test with a small ball was carried out according to EN 438 part 2 with an Erichsen Impact Tester 305. The test with the big ball was carried out according to EN 438 part 2 with equipment according to the standard.

## 3.3 Determination of the residual indentation

The test was carried out according to EN 433.

## 3.4 Determination of the surface soundness

The test was carried out according to DIN EN 311.

### 3.5 Resistance against staining

The test was carried out according to EN 13329 with the indicated test substances of EN 438 part 2.

### 3.6 Determination of the resistance against cigarette burn

The test was carried out according to EN 438 part 2, 2005, article 30 with the cigarette sort f6.

### 3.7 Thickness swelling

The test was carried out according to EN 13329 Annex G.

### 3.8 Determination of the light fastness

The test was carried out according to EN 13329 in a Weather Ometer Ci 3000 (Xenon arc irradiation behind 3 mm thick window glass). The test was carried out until the grade 6 of the blue wool scale according to EN 20105, B02 was reached. The grey scale according ISO 105-A02 was used for the visual inspection.

### 3.9 Determination of geometric properties

The test was carried out according to EN 13329 Annex A and B.

### 3.10 Determination of the effect of the simulated movement of a furniture leg

The test was carried out according to EN 424 with equipment according to the standard.

### 3.11 Determination of the resistance against soft chair rolls

The test was carried out according to EN 425 (25000 cycles) with a machine made by Feingeräte Baumberg.

### 3.12 Determination of the humidity

The test was carried out according to EN 322.

### 3.13 Assessment of appearance

The test was carried out according to EN 438.

# 4 Results

## 4.1 Determination of the resistance against abrasion

| Variant | Number of revolutions until the IP value according to EN 13329 (n = 3 ) | Abrasion class according to EN 13329 |
|---|---|---|
| 1 | 4300 | AC4 |
| 2 | 4700 | AC4 |
| 3 | 6300 | AC5 |

n = number of test specimens

## 4.2 Resistance against impact

| Variant | Impact resistance (small ball) in N according to EN 13329 (n = 5) | Impact resistance (big ball) in mm according to EN 13329 (n = 5) | Impact class according to EN 13329 |
|---|---|---|---|
| 1 | 12 | 1750 | IC2 |
| 2 | 14 | 2000 | IC2 |
| 3 | 13 | 2000 | IC2 |

## 4.3 Determination of the residual indentation

| Variant | Mean value for the residual indentation in mm |
|---|---|
| 1 | 0 |
| 2 | 0 |
| 3 | 0 |

## 4.4 Surface soundness

| Variant | Surface soundness in N/mm² | | |
|---|---|---|---|
| | $\bar{x}$ (n = 9) | s | v |
| 1 | 1,76 | 0,15 | 8,5 |
| 2 | 1,90 | 0,19 | 10,1 |
| 3 | 2,04 | 0,24 | 11,7 |

x = mean value s = standard deviation v = variation coefficient

## 4.5 Resistance against staining

| Variant | Test result according to EN 438-2 in grade with / without covering | | | | |
|---|---|---|---|---|---|
| | Aceton | Coffee | Natriumhydroxide (NaOH, 25 %) | Hydrogensuper-oxyde ($H_2O_2$, 30 %) | Black shoe cream |
| 1 | 5/5 | 5/5 | 5/5 | 5/5 | 5/5 |
| 2 | 5/5 | 5/5 | 5/5 | 5/5 | 5/5 |
| 3 | 5/5 | 5/5 | 5/5 | 5/5 | 5/5 |

Grade 5 = no visible change

## 4.6 Resistance against cigarette burn

| Variant | Results of the visual inspection according to EN 438 part 2 in grade with the cigarette type f6 |
|---|---|
| 1 | 5 |
| 2 | 5 |
| 3 | 5 |

Grade 5 = no visible change

## 4.7 Thickness swelling

| Variant | Statistic values in % in length direction | | | Statistic values in % in width direction | | | Mean value in % |
|---|---|---|---|---|---|---|---|
| | $\bar{x}$ (n = 3) | s | v | $\bar{x}$ (n = 3) | s | v | |
| 1 | 12,4 | 0,6 | 4,6 | 12,6 | 0,1 | 0,5 | 12,5 |
| 2 | 10,0 | 0,3 | 3,2 | 10,2 | 0,3 | 2,6 | 10,1 |
| 3 | 8,7 | 0,1 | 1,3 | 9,2 | 0,1 | 0,7 | 8,9 |

x = mean value s = standard deviation v = variation coefficient

## 4.8 Determination of the light fastness

| Variant | Change of colour of the sample in grey scale N° by colour change of blue wool scale 6 | Light fastness in the level of the blue wool scale according to the criteria of EN 438 part 2 |
|---|---|---|
| 1 | 5 | >6 |
| 2 | 5 | >6 |
| 3 | 5 | >6 |

Grey scale N° 5 = no change of colour

## 4.9 Geometric properties

| Variant | Joint opening in mm | | High difference in mm | |
|---|---|---|---|---|
| | Mean value | max. value | Mean value | max. value |
| 1 | 0 | 0 | 0,01 | 0,03 |
| 2 | 0 | 0 | 0,01 | 0,02 |
| 3 | 0 | 0 | 0,01 | 0,02 |

| Variant | Thickness t | | Length l | Width w | | Squareness | Straightness |
|---|---|---|---|---|---|---|---|
| | in mm | | | | | | in mm/m |
| | $\Delta t_{mittel}$ | $t_{max} - t_{min}$ | $\Delta l$ | $\Delta w_{mittel}$ | $w_{max} - w_{min}$ | $q_{max}$ | $s_{max}$ |
| 1 | 0,06 | 0,17 | 0 | 0 | 0,1 | 0 | 0 |
| 2 | 0,02 | 0,11 | 0 | 0,1 | 0,1 | 0 | 0 |
| 3 | 0,12 | 0,22 | 0,2 | 0,1 | 0 | 0 | 0 |

| Variant | Flatness of width $f_W$ | | Flatness of length $f_L$ | |
|---|---|---|---|---|
| | $f_W$ concave in % | $f_W$ convex in % | $f_W$ concave in % | $f_W$ convex in % |
| 1 | 0,03 | 0,17 | 0 | 0,25 |
| 2 | 0,07 | 0,02 | 0 | 0,14 |
| 3 | 0,05 | 0,16 | 0,11 | 0,10 |

### 4.10 Effect of the simulated movement of a furniture leg

| Variant | Description of the damages / changes |
|---|---|
| 1 | no visible change / damages |
| 2 | no visible change / damages |
| 3 | no visible change / damages |

### 4.11 Resistance against soft chair rolls

| Variant | Description of the damages / changes after 25.000 revolutions |
|---|---|
| 1 | no visible change / damages |
| 2 | no visible change / damages |
| 3 | no visible change / damages |

### 4.12 Humidity

| Variant | Humidity in % |
|---|---|
| 1 | 6,8 |
| 2 | 6,5 |
| 3 | 6,5 |

### 4.13 Assessment of the appearance

| Variant | Description of the damages according to EN 438-2 |
|---|---|
| 1 | no visible damages |
| 2 | no visible damages |
| 3 | no visible damages |

## 5 Evaluation

The tested products of laminate floor coverings can be evaluated for the several properties according to EN 13329 (table 1 and 2) as following (LU = level of use according DIN EN 13329, table 2):

| Variant | Property | Result | General requirements / classification requirements according to EN 13329 |
|---|---|---|---|
| 1<br>2<br>3 | Resistance against abrasion | Abrasion class AC4<br>Abrasion class AC4<br>Abrasion class AC5 | LU 21-23 and 31-32 are fulfilled<br>LU 21-23 and 31-32 are fulfilled<br>LU 21-23 and 31-33 are fulfilled |
| 1<br>2<br>3 | Resistance against impact | Impact class IC2<br>Impact class IC2<br>Impact class IC2 | LU 21-23 and 31-32 are fulfilled<br>LU 21-23 and 31-32 are fulfilled<br>LU 21-23 and 31-32 are fulfilled |
| 1<br>2<br>3 | Residual indentation | 0 mm<br>0 mm<br>0 mm | General requirements according to table 1 are fulfilled. |
| 1<br>2<br>3 | Surface soundness | 1,76 N/mm²<br>1,90 N/mm²<br>2,04 N/mm² | General requirements according to table 1 are fulfilled. |
| 1<br>2<br>3 | Resistance against staining | Grade 5<br>Grade 5<br>Grade 5 | LU 21-23 and 31-33 are fulfilled<br>LU 21-23 and 31-33 are fulfilled<br>LU 21-23 and 31-33 are fulfilled |
| 1<br>2<br>3 | Cigarette burns | Grade 5<br>Grade 5<br>Grade 5 | LU 21-23 and 31-33 are fulfilled<br>LU 21-23 and 31-33 are fulfilled<br>LU 21-23 and 31-33 are fulfilled |
| 1<br>2<br>3 | Thickness swelling | 12,5 %<br>10,1 %<br>8,9 % | LU 21-23 and 31-33 are fulfilled<br>LU 21-23 and 31-33 are fulfilled<br>LU 21-23 and 31-33 are fulfilled |
| 1<br>2<br>3 | Light fastness | Grade > 6<br>Grade > 6<br>Grade > 6 | General requirements according to table 1 are fulfilled. |
| 1<br>2<br>3 | Geometric properties | All results are in the permissible tolerance.<br>All results are in the permissible tolerance.<br>All results are in the permissible tolerance. | General requirements according to table 1 are fulfilled. |
| 1<br>2<br>3 | Simulated movement of a furniture leg | no visible change / damages<br>no visible change / damages<br>no visible change / damages | LU 21-23 and 31-33 are fulfilled<br>LU 21-23 and 31-33 are fulfilled<br>LU 21-23 and 31-33 are fulfilled |
| 1<br>2<br>3 | Resistance against soft chair rolls | no visible change / damages<br>no visible change / damages<br>no visible change / damages | LU 21-23 and 31-33 are fulfilled<br>LU 21-23 and 31-33 are fulfilled<br>LU 21-23 and 31-33 are fulfilled |
| 1<br>2<br>3 | Humidity | 6,8 %<br>6,5 %<br>6,5 % | General requirements according to table 1 are fulfilled. |
| 1<br>2<br>3 | Assessment appear-ance | no visible damages<br>no visible damages<br>no visible damages | General requirements according to table 1 are fulfilled. |

The investigated variants of laminate floor coverings meet the requirements according to EN 13329 as following:

| Variant | Product / Dimension | Level of use | |
|---|---|---|---|
| | | declared | fulfilled |
| 1 | Laminate floor covering Quick Step "CLASSIC" dimensions 1200 mm x 190 mm x 7 mm | 32 | 32 |
| 2 | Laminate floor covering Quick Step "ELIGNA" dimensions 1380 mm x 156 mm x 8 mm | 32 | 32 |
| 3 | Laminate floor covering Quick Step "LARGO" dimensions 2050 mm x 205 mm x 9,5 mm | 32 | 32 |

Dipl.-Ing. (FH) M. Peter
Engineer in charge

AWTA TEXTILE TESTING

Australian Wool Testing Authority Ltd – trading as AWTA Textile Testing
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# TEST REPORT

CLIENT : PREMIUM FLOORS
PO BOX 1336
DEE WHY NSW 2099

TEST NUMBER : 7-547042-CN
DATE : 10/08/2006

SAMPLE DESCRIPTION Clients Ref: Laminate Flooring - Quick Step 800 Uniclic
Laminate flooring boards
Colour: Timber

Nominal composition: Clear paper cellulose wear layer impregnated with aluminium oxide and melamine/photographic decor layer, impregnated with melamine/high density fibreboard core impregnated with moisture resistant additive/recycled paper base impregnated with melamine

AS ISO 9239.1-2003 PART 1 (MODIFIED) Reaction to Fire Tests For Floorings
Determination of the Burning Behaviour using a radiant heat source

Date of sample arrival 09/06/2006
Date tested 07/08/2006

CHF (Critical Heat Flux/Critical Radiant Flux)

| | 1 | 2 | 3 | Mean | |
|---|---|---|---|---|---|
| Length | 6.7 | 6.9 | 6.3 | 6.3 | kW/m2 |
| Smoke Value | | | | | |
| Length | 4 | 4 | 4 | 4 | %min |

Observations: glowing, smouldering, penetration of flame through to substrate

Note: Sample was conditioned in accordance with BSEN 13238-2001 at a temperature of 23+/-2degC and Relative Humidity of 50+/-5% for a minimum of 48 hours prior to testing

Modification: Three specimens tested in the one direction only as supplied by client

Each specimen was clamped as supplied by client prior to testing

The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test, they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use

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AWTA LIMITED

0205/7/04

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# CE Declaration of conformity

I, undersigned Dr. Theo Smet, technical services manager of Unilin Flooring, Ooigemstraat 3, B-8710 Belgium, declare hereby that the laminate flooring products Quick-Step Majestic Pro, Arte, Perspective, Country, Vogue, Eligna, Elite, Largo, Rustic, Quadra, Linesse, Lagune, Classic Plus, Classic, Go made in Belgium (Wielsbeke), of the current sales program comply with:

- EU Construction Products Directive CPD 89/106, in accordance with CEN/TC134/EN 14041, type 3 – notified body: 0380-1161.
- CEN/TC134/EN 13329

Compliance with EN 14041 can be specified as

| Symbol | Requirement | Laboratory | Report | issued | Classification |
|---|---|---|---|---|---|
| $C_{fl}$-s1 | Reaction to fire | CTBA | 04/RC027<br>07/RC10<br>08/RC 24 | 08/2004<br>05/2007<br>09/2008 | $C_{fl}$-s1 |
| | PCP | TCHN | 5186/4 | 04/2006 | < detect. limit |
| E1 HCHO | Formaldehyde | TCHN<br>WKI | 4232/1,2,3 E<br>2008/2967-2968 | 08/2004<br>08/2008 | E1 |
| | Water-tightness | | | | Not relevant |
| DS | Slip resistance | TCHN | 5186/2<br>7330/2 | 09/2005<br>01/2008 | DS |
| | Static electricity | RUG | | | Anti-static |
| | Thermal conductivity R ($m_2$°K/W) | TCHN | 5186/1 | 09/2005 | Laminate: 0.051 – 0.061<br>Linesse: 0.10 |

Wielsbeke, 19-1-11

Dr. Theo Smet