



CE - LABELLING TEST REPORT

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MPET

Test Report Order No. 2718085

Client: GREENLAM Industries Limited
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INDIEN

Date of order: 09/03/2018

Order: Performance of tests for a three-layer parquet according to
EN 14342:2013 (CE-labelling) and EN 13489:2017

Contractor: EPH – Laboratory Surface Testing

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



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Head of Laboratory Surface Testing

The Test Report contains 10 pages and 1 annex with 18 pages. Any duplication, even in part, requires written permission of EPH. These test results are exclusively related to the tested material.

1 Task

The Notified Body (No. 0766) Entwicklungs- und Prüflabor Holztechnologie GmbH (EPH) was instructed by GREENLAM Industries Limited in Po.–Behror-301701 / INDIA to carry out selected tests of a three-layer parquet according to EN 14342:2013 for CE-labelling and EN 13489:2017.

2 Material

For the tests, the client has sent following three-layer parquet (entrance at the EPH laboratory 07/11/2018):

Three-layer parquet
Coating: UV lacquered
Top layer: Oak Natural
Structure: 3 layer cross laminated
Dimensions: 2100 mm x 135 mm x 15 mm

3 Test performance

3.1 Tests according to EN 14342:2013 (CE-labelling)

3.1.1 Reaction to fire tests according to EN 13501-1:2010

The test procedures were carried out at the Development and Examination Laboratory for Wood Technology Ltd. (EPH) in Dresden in accordance with the following in EN 13501-1:2010 for floor coverings issued reaction to fire tests:

DIN EN ISO 11925-2: Reaction to fire test – Ignitability of products subjected to direct impingement of flame – Part 2: Single-flame source test;

DIN EN ISO 9239-1: Reaction to fire tests for floorings – Part 1: Determination of the burning behaviour using a radiant heat source.

The product was tested with loose laying at 8 mm fibre cement according to EN 13238:2010 as substrate layer, i.e. the results are valid for products used as a horizontal floor covering installed on mineral subfloor according to EN 13238:2010, using adhesives or not.

The final classification for the reaction to fire performance of the 3 layer parquet flooring was determined according to EN 13501-1:2010 based on the results of both tests.

The test was carried out on: 28/11/2018.

3.1.2 Determination of the formaldehyde emission according to the test chamber method DIN EN 717-1:2005

The determination of the formaldehyde release was carried out according to the chamber method DIN EN 717-1:2005 (Testing “back to back”) under following test conditions:

Test pieces	4 test pieces à 200 x 280 mm	Temperature:	23°C ± 0,5 K
Test chamber:	KT 60 (0.225 m ³)	Rel. air humidity:	45 ± 3 %
Test period:	27/11/2018 – 07/12/2018	Air exchange ratio:	1.0 ± 0.05/ h
Start tests:	28/11/2018	Loading ratio:	1.0 ± 0.02 m ² /m ³
Edge sealing:	Full	Parameter recording:	Temperature; air humidity

Limit of Detection (LOD) of test method: 0.008 ppm HCHO

Limit of Quantitation (LOQ) of test method: 0.02 ppm HCHO (1 ppm = 1.24 mg/m³)

3.1.3 Determination of the PCP content according to CEN/TR 14823:2004

The determination of the chloro-organic pesticide PCP was conducted in compliance with CEN TR 14823:2004 and the IHD-standard IHD-W-409 (2017-04) after derivatisation with acetic anhydride with a gas chromatograph using ECD-detection (GC-ECD). External calibration was performed with commercial calibration standards.

The test results are average values of a double determination related to dry mass, measured following ISO 16979:2003.

Limit of quantitation (LOQ) for 2 g of sample: 0.05 mg/kg

The test was carried out on: 21/11/2018.

3.1.4 Determination of the anti-skid properties according to CEN/TS 15676:2008

The determination of the slip resistance (Pendulum test) was carried out according to CEN/TS 15676:2008 with a Portable Skid Resistance Tester SRT 5800 (Fig. 1).

The test was carried out under laboratory conditions at 23 °C and 50 % relative humidity.



Fig. 1: Portable Skid Resistance Tester SRT 5800

The test was carried out on: 19/11/2018.

3.1.5 Determination of the thermal conductivity and thermal resistance according to EN 12664:2001

The thermal conductivity and thermal resistance were measured according to DIN EN 12664:2001.

The test material was categorised as a material, which is rectangular layered to the heat flow. The test was carried out according to this categorisation.

A two-plate device, type TLP 900-H, was used to determine the thermal conductivity.

The test specimens were arranged in many tiers (2 specimens on top of each other), due to the minimum thickness for the measurement.

The test material was conditioned at a temperature of 23 °C and a relative humidity of 50 % until the test was started. After conditioning, the test pieces were placed into the test device immediately.

The mean thickness was determined using 16 single values (4 measurements per specimen). The mean density was calculated from 4 measured values (one per specimen).

The measurement was carried out at mean temperatures of 10 °C, of 20 °C and of 30 °C. The thermal conductivity and thermal resistance at a reference temperature of 10 °C was calculated from the measurement values.

The test was carried out on 22/11/2018.

3.1.6 Determination of the bending properties according to EN 1533:2010

The determination of bending properties was carried out according to EN 1533:2010-12 "Wood flooring – Determination of bending strength under static load – Test methods".

The tests were carried out by means of the following test assembly required at the test standard and defined by the Contractor:

- 3 flooring elements side by side,
- number of spans: 3 (4 support beams)
- distance between beams (centre distance): 203 mm (8"),
- width of beams: 45 mm,
- end-joints placed near the middle of distance between beams (acc. to figure 3 of EN 1533),
- fastening with 2 universal screws 4.5 x 60 mm per support,
- number of test assemblies: 6 per variant.

The maximum concentrated load was determined applying the load by a 50 mm x 50 mm square shaped indenter.

The maximum load was determined on 6 assemblies. The advance of testing cylinder was set so that the rupture was reached within a time of (300 ± 120) s. Based on the test results was estimated the 5-percentile value of the maximum load F_k .

Average value of rupture load:

$$F_m = \sum_{i=1}^n \frac{F_i}{n}$$

Standard deviation:

$$s_F = \sqrt{\frac{\sum_{i=1}^n (F_i - F_m)^2}{n-1}}$$

5-percentile value:

$$F_k = F_m - t_{05} \cdot s_F$$

t_{05} ... Student coefficient (acc. to Table 1 of EN 1533)

The test was carried out on: 27/11/2018.

3.2 Test according to EN 13489:2003

3.2.1 Determination of the geometric properties according to EN 13489:2017 / EN 13647:2011

The determination of the geometrical properties was carried out according to EN 13489:2017 / EN 13647:2011.

The test was carried out on: 15/11/2018.

3.2.2 Determination of the moisture content according to EN 13489:2003 / EN 13183-1:2002

The humidity content was determined according to EN 13489:2003 / EN 13183-1:2002.

The test was carried out on: 26/11/2018.

4 Results

4.1 Tests according to EN 14432:2013 (CE-labelling)

4.1.1 Reaction to fire performance according to EN 13501-1:2010

The tested 3 layer parquet flooring attained the following results:

Testing procedure according to EN 13501-1			Fire class according to EN 13501-1*
Single-flame source test according to DIN EN ISO 11925-2	Burning behaviour using a radiant heat source according to DIN EN ISO 9239-1		
Requirement max. extent of flame ≤ 150 mm	Critical heat flow in kW/m ²	Integral smoke production in % x min	
fulfilled	3.90	86.0	D _{fl} -s1

Critical heat flow ≥ 3.0 kW/m² ⇒ Fire class D_{fl}
 Critical heat flow ≥ 4.5 kW/m² ⇒ Fire class C_{fl}
 Critical heat flow ≥ 8.0 kW/m² ⇒ Fire class B_{fl}

Smoke production ≤ 750 % * min ⇒ Smoke parameter s1
 else ⇒ Smoke parameter s2

The corresponding test and classification report with the detailed results of the tested variant are enclosed in annex 1 of this report.

4.1.2 Formaldehyde emission according to DIN EN 717-1:2005

Formaldehyde emission in:	
mg/m ³	ppm
0.04 (240 h)*	< 0.03 (240 h)*

* Abort criterion following DIN EN 717-1:2005: the decline of the calculated concentration curve is equal or lower than 5% over the testing time of 4 days (within 28 days)

4.1.3 PCP content according to CEN/TR 14823:2004

PCP content in mg / kg
< LOQ

LOQ = Limit of quantitation

4.1.4 Anti-skid properties according to CEN/TS 15676:2007

Estimated sliding pendular value according to DIN CEN/TS 15676:2008 (USRV)										
Single values										Mean value
67	66	76	75	71	71	66	65	66	61	71

4.1.5 Thermal conductivity and thermal resistance according to EN 12664:2001

Measured density in kg/m ³	Measured thickness in mm	Thermal conductivity in W/(m*k)	Thermal resistance in (m ² K)/W*
560	15.2	0.104	0.146

* The requirement of $R \leq 0.15$ (m²K)/W for floor heating suitability of materials, which was fixed by the German Federal Association Radiant Panel Heating, was fulfilled by the tested parquet.

4.1.6 Results of the tests for the determination of bending properties according to EN 1533:2010

Values of parameters of the bending strength				
Span	Average value (F _m)	Standard deviation	Student coefficient (according to Table 1 of EN 1533) (n = 6)	Maximum Load (F _K)
203 mm	3550 N	840 N	2.02	1850 N

On measuring points, the maximum load was determined (see following Tables):

Maximum Load at a Span of 203 mm

Assembly	Measuring Pont	Max. Load [kN]	Kind of Rupture
1	A	2.51	Break in short side connection
2	A	3.08	Break in short side connection
3	A	4.11	Break in short side connection
4	A'	4.49	Break in short side connection
5	A'	4.27	Break in short side connection
6	A'	2.83	Break in short side connection

Measuring points:

A see figure 3 in EN 1533, section A-A, loading at the grooved side of the short side connection

A' see figure 3 in EN 1533, section A'-A', loading at the tongued side of the short side connection

4.2 Tests according to EN 13489:2017

4.2.1 Geometric properties according to EN 13489:2017 / EN 13647:2011

Squareness in %*	Over tooth (between the elements) in mm**
0.07	0.10

* Requirement according to EN 13489:2017 Table 5: ≤ 0.2 % above the width

** Requirement according to EN 13489:2017 Table 5: ≤ 0.2 mm

Thickness of the wear layer in mm*	Deviation in the width max. / min. in mm**	Deviation in the length max. / min. in %***
2.9	0.1 / 0.1	0.04 / 0.03

* Requirement according to EN 13489:2017 Table 5: ≥ 2.5 mm

** Requirement according to EN 13489:2017 Table 5: ± 0.2 mm

*** Requirement according to EN 13489:2017 Table 5: ± 0.1 %

Transverse curvature in %*	Longitudinal curvature in %**	
	Broadside**	Narrow side**
0.01	0.1	0.0

* Requirement according to EN 13489:2017 Table 5: ≤ 0.2 % above the width

** Requirement according to EN 13489:2017 Table 5: ≤ 0.1 % above the length

4.2.2 Moisture content according to EN 13489:2017 / EN 13183-1:2002

Moisture of wood in %*		
Mean value (n = 4)	Standard deviation	Variation coefficient in %
7.8	0.2	2.6

* Requirement according to EN 13489:2017, chapter 4.4: 5 % - 9 %

5 Evaluation

5.1 Requirements according to EN 14342:2013 (CE-labelling)

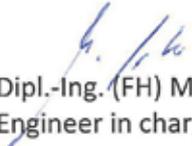
The tested variant of three-layer parquet can be classified regarding to the tested properties according to EN 14342:2013 for the CE-labelling as follows:

Property	Results	Declaration according to EN 14342:2013
Reaction to fire according to EN ISO 9239-1:2010 and EN ISO 11925-2:2011; Classification according to EN 13501-1:2010 - Critical heat flow - Smoke production	3.9 kW / m ² 86 % * min	D _{fl} -s1
Formaldehyde emission according to EN 717-1:2005	0.03 ppm (240 h)	class E1
Content of PCP according to CEN/TR 14823:2004	< LOQ	PCP ≤ 5 x 10 ⁻⁶ n
Anti-skid properties according to CEN/TS 15676:2008	USRV 71	USRV 71
Thermal conductivity according to EN 12664:2001	0.104 W/(m*K)	0.10 W/(m*K)
Maximum load according to EN 1533:2010 Span: 203 mm	1850 N	1.85 kN (203 mm)

5.2 Requirements according to EN 13489:2003

The tested variant of three-layer parquet can be evaluated for the several properties according to EN 13489:2017 as following:

Property	Results		Requirements according to EN 13489:2017
Geometric properties according to EN 13489:2017 / EN 13647:2011	Thickness of the wear layer	2.9 mm	fulfilled
	Deviation in the width	0.1 mm	fulfilled
	Deviation in the length	0.0 %	fulfilled
	Squareness	0.1 %	fulfilled
	Transverse curvature	0.0 %	fulfilled
	Longitudinal curvature broadside / narrow side	0.1 % / 0.0 %	fulfilled fulfilled
	Over tooth	0.10 mm	fulfilled
Moisture content according to EN 13489:2017 / EN 13183-1:2002	7.8 %		fulfilled


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