

SURFACE PERFORMANCE  
—  
TEST REPORT



# TREFFERT

## SURFACE PERFORMANCE PRODUCT EVALUATION

Report No: Hs-1901-GP

Customer: Greenply

Date : 24.10.14

Subject:

Internal control

Customer's Request

Routine test

Complaint

Substrate: Oak

Objective : To evaluate the performance of the coating

### Panel A - Natural Oak

### Grammage /gsm

471-240-0000

12-15

611-237-0000

25

661-244-0000

15-20

661-244-0000

15-20

SANDING P320

Yes

611-237-0000

20

661-244-0000

15-20

661-244-0000

15-20

SANDING P400

Yes

651-240-1000 8

8

651-240-1000 8

8

471-240-0000

20

661-244-0000

20

661-244-0000

20



**Panel A - Natural Oak**

**Grammage /gsm**

SANDING P400

Yes

651-240-1000

8

651-240-1000

8

Test criteria	Standard	Result	
		A	B
CROSS HATCH & REMOVAL	EN ISO 2409	0-1	0-1
GLOSS 60°	ASTM D523	28%	28%
STAIN RESISTANCE	EN 438-2.26	5	-
	Acetone	5	-
	Coffee	5	-
	Vinegar	5	-
	Ammonia	5	-
	H2O2	5	-
	Shoe polish	5	-
ABRASION RESISTANCE	ASTM D4060 CS17	IP -> 10000 -	IP -3500 FP - 4000
SCRATCH RESISTANCE	EN 438-2.25	Rating 2	Rating 2
PENCIL HARDNESS	ASTM 3363	SH - F GH - 3H	- -
IMPACT RESISTANCE	EN 438-2.20	4N	4N
HAMBERGER PLANE	TC_01	32N	32N

**Remarks:**

1. Sample tested according to above standard.
2. Results obtained are based on substrate provided.
3. The QA values may vary with different substrates.

Prepared by  
**Haslin Sariman**  
 Executive, Quality & Assurance

Acknowledged by  
**Liza Bt.Abu Bakar**  
 QA/QC Manager

This report is computer generated. No signature is required.





## Appendix

### i) Cross-cut + adhesion test (EN ISO 2409)

#### Assessment:

0. The edges of the cuts are completely smooth: none of the squares of the lattice is detached.
1. Detachment of small flakes of the coating at the intersections of the cuts. A crosscut area not significantly greater than 5% is affected.
2. The coating has flaked along the edges and/or at the inter-section of the cuts. A cross-cut area significantly greater than 5%, but not significantly than 15%, is affected.
3. The coating has flaked along the edges of the cuts partly or wholly in large ribbons, and/or it has flaked partly or wholly on different parts of the square.
4. The coating has flaked along the edges of the cuts in large ribbons and/or some squares have detached partly or wholly. A cross-cut area significantly greater than 35% but not significantly greater than 65% is affected.
5. Any degree of flaking that cannot even be classified by classification 4

Table E.1 — Classification of test results

Classification	Description	Appearance of surface of cross-cut area from which flaking has occurred (Example for six parallel cuts)
0	The edges of the cuts are completely smooth; none of the squares of the lattice is detached.	—
1	Detachment of small flakes of the coating at the intersections of the cuts. A cross-cut area not significantly greater than 5 % is affected.	
2	The coating has flaked along the edges and/or at the intersections of the cuts. A cross-cut area significantly greater than 5 %, but not significantly greater than 15 %, is affected.	
3	The coating has flaked along the edges of the cuts partly or wholly in large ribbons, and/or it has flaked partly or wholly on different parts of the squares. A cross-cut area significantly greater than 15 %, but not significantly greater than 35 %, is affected.	
4	The coating has flaked along the edges of the cuts in large ribbons and/or some squares have detached partly or wholly. A cross-cut area significantly greater than 35 %, but not significantly greater than 65 %, is affected.	
5	Any degree of flaking that cannot even be classified by classification 4.	

### ii) Resistance to stain (EN 438-2.26)

#### Result

The result should read as below assessment

#### Assessment:

5. No visible change.
4. Slight change in brightness and colour.
3. Minor changes in brightness or colour, but no changes in the structure of the test surface.



- 2. Severe visible marking, but the structure of the test surface is broadly undamaged.
- 1. Severe visible marking with changes in the structure of the test surface.
- 0. Serious modification or destruction of the test surface.

**No. 5 is the best, No. 0 is the worst**

### iii) Resistance to scratching (EN 438-2.25)

#### Result

The scratch resistance of the laminate under test shall be expressed in accordance with the rating scale shown in the table

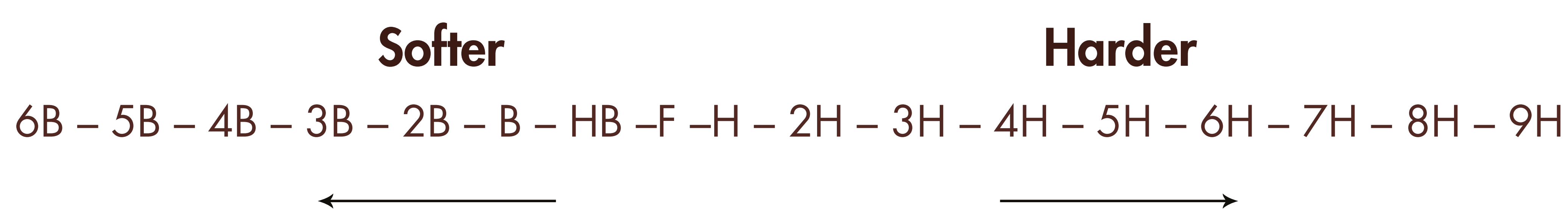
	Discontinuous scratches, or faint superficial marks, or no visible marks	> 90% continuous double circle of scratch marks clearly visible
<b>Rating 5</b>	6N	> 6N
<b>Rating 4</b>	4N	6N
<b>Rating 3</b>	2N	4N
<b>Rating 2</b>	1N	2N
<b>Rating 1</b>	-	1N

### iv) Pencil hardness test (ASTM D3363)

**The results shall be reported as follows:**

Gouge hardness (GH) : – the hardest pencil that will not cut (gouge/destroy) the film.

Scratch hardness (SH) : – the hardest pencil that will not dent or scratch the film.







## v) Resistance to abrasion (ASTM 4060-CS17)

### Assessment for ASTM 4060 (CS17) resurface after 500 cycles

Where

Bare wood (IP) is reached once highlighter cannot be removed at the point of each of four quadrants.

Final point (FP) is reached once 95% of under layer is exposed of a plain colour laminated panel.

The result can also be reported in value IP and FP separately.