Test Report No. 7191052119-MEC13-TYW
dated 04 MAR 2013

PSB Singapore

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SUBJECT:

Testing of Laminates Sample

TESTED FOR:

Greenlam Asia Pacific Pte Ltd
11 Sungei Kadut Crescent
Singapore 728683

Attn: Ms Lin Hui Ping

SAMPLES DESCRIPTION:

The following Laminates samples were submitted by Greenlam Asia Pacific Pte Ltd on 24 January 2013 for testing.

Sample	Approximate Dimensions	Quantity	Photo
Product Description: High Pressure Laminates Brand Name: New Mika	50mm x 50mm x 1mm	12 pcs	
	100mm x 100mm x 1mm	4 pcs	
	230mm x 230mm x 1mm	5 pcs	
	250mm x 250mm x 12mm	4 pcs	
	250mm x 50mm x 1mm	32 pcs	
	70mm x 70mm x 1mm	10 pcs	
	100mm x 80mm x 1mm	6 pcs	

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TEST METHODS:

BS EN 438-2 : 2005
High-pressure decorative laminates (HPL) - Sheets based on thermosetting resins (Usually called Laminates) - Part 2: Determination of properties

1 Determination of thickness
Nominal specimen dimensions : 50mm x 50mm x 1mm
No. of determinations : 3

2. Resistance to immersion in boiling water
Nominal specimen dimensions : 50mm x 50mm x 1mm
No. of determinations : 4

3. Resistance to water vapour
Nominal specimen dimensions : 100mm x 100mm x 1mm
No. of determinations : 1

4. Resistance to dry heat
Nominal specimen dimensions : 250mm x 250mm x 12mm
No. of determinations : 1

5. Dimensional stability at elevated temperature
Nominal specimen dimensions : 250mm x 50mm x 1mm
No. of determinations : 8

6. Dimensional stability at ambient temperature
Nominal specimen dimensions : 250mm x 50mm x 1mm
No. of determinations : 8

7. Resistance to crazing (Compact laminates)
Nominal specimen dimensions : 230mm x 230mm x 1mm
No. of determinations : 2

8. Resistance to Staining
Nominal specimen dimensions : 70mm x 70mm x 1mm
Reagent used : a) Acetone (16h)
b) Coffee (16h)
c) 25% Sodium Hydroxide (10min)
d) 30% Hydrogen Peroxide (10min)
e) Shoe Polish (10min)
No. of determinations : 2 each

9. Lightfastness (xenon arc)
Nominal specimen dimensions : 100 mm x 80 mm x 1 mm
Duration : 100 hrs
No. of determinations : 2

10. Resistance to cigarette burns
Nominal specimen dimensions : 250 mm x 250 mm x 12 mm
No. of determinations : 1

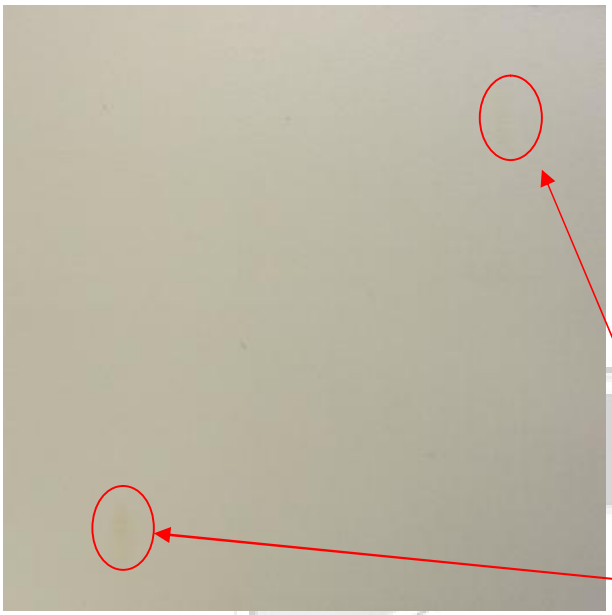
TEST RESULTS:

S/N	Characteristics	Unit	Results / Observations
1	Determination of thickness	mm	0.83
2	Resistance to immersion in boiling water a) Mass increase b) Thickness increase c) Change in appearance	 % % -	 6.5 8.6 Rating 5: no visible change
3	Resistance to water vapour	-	Rating 5: No visible change
4	Resistance to dry heat	-	Rating 5: No visible change
5	Dimensional stability at elevated temperature a) Dry-heat teat b) High-humidity test	 % % % %	 0.27 (Machine Direction) 0.28 (Cross- machine Direction) 0.20 (Machine Direction) 0.15 (Cross- machine Direction)
6	Dimensional stability at ambient temperature a) Low-humidity teat b) High-humidity test	 % % % %	 0.02 (Machine Direction) 0.09 (Cross- machine Direction) 0.06 (Machine Direction) 0.10 (Cross- machine Direction)
7	Resistance to crazing (Compact laminates)	-	Rating 5: Surfaces and edges unchanged from 'as received' condition
8	Resistance to Staining a) Acetone b) Coffee c) 25% Sodium Hydroxide d) 30% Hydrogen Peroxide e) Shoe Polish	 - 	 Rating 5: No visible change Rating 5: No visible change Rating 5: No visible change Rating 5: No visible change Rating 5: No visible change
9	Lightfastness (xenon arc), 100hrs	-	Grey scale 4-5
10	Resistance to cigarette burns	-	Rating 4: Slight brown stain (as shown in Figure 1)

Ting Yeow Wah
Higher Associate Engineer

Kong Siew Yong
Senior Associate Engineer
Polymer Products
Mechanical Centre

Figure 1: Photograph of resistance to cigarette burns test



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July 2011