TEST REPORT: 7191025103-CHM12-01-LSM

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SUBJECT

Chemical Resistance Testing of "MAICA Compact Laminates"

CLIENT

Maica Laminates Sdn Bhd
5100, Lorong Mak Mandin 5,
Mak Mandin Industrial Estate,
13400 Butterworth
Penang,Malaysia

Attn: Mr. Kow Cheng Fung

SAMPLE SUBMISSION / TEST DATE

31 Oct & 22 Dec 2011 / 11 Nov 2011 - 13 Jan 2012

SAMPLE DESCRIPTION

3 sets of "MAICA Compact Laminates" were received

Sample Reference

Colour : Black
Code : Nacht
Size : 16 mm (H) x 100 mm (W) x 100 mm (L)
Qty : 106

Colour : White
Code : Schnee
Size : 16 mm (H) x 100 mm (W) x 100 mm (L)
Qty : 111

Colour : Grey
Code : Asche
Size : 16 mm (H) x 100 mm (W) x 100 mm (L)
Qty : 107

TÜV SÜD PSB

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METHOD OF TEST

BS EN 438-2:2005
High-pressure decorative laminates (HPL). Sheets based on thermosetting resins (usually called laminates).
Determination of properties
Clause 26: Resistance to Staining

The above chemical test was conducted in accordance with BS EN 438-2:2005. Small quantity of test chemical is applied on the surface of the laminates and is covered to restrict evaporation.

The test parameters are described as follows:
Temperature : 23 ± 2 °C
Duration : 24 hours

After the test, the surface is washed with distilled water and dried with a clean cloth before visual inspection and evaluation.

The evaluation of the effect on the surface is expressed in accordance with the following rating scale

Rating	Description
5	No Visible Change
4	Slight Change of gloss and / or colour only visible at certain viewing angles
3	Moderate marked change of gloss and / or colour
2	Marked change of gloss and / or colour
1	Surface distortion and / or blistering

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RESULTS

No.	Group	%	Rating		
			Nacht Black	**Schnee** White	**Asche** Grey
	Acid				
1	Acetic Acid	100	5	5	5
2	Dichromate Acid	5	5	5	5
3	Chromic Acid	60	5	5	5
4	Formic Acid	90	5	5	5
5	Hydrochloric Acid	10	5	5	5
6	Hydrochloric Acid	37	5	5	5
7	Hydrofluoric Acid	48	4	4	2
8	Nitric Acid	20	5	5	5
9	Nitric Acid	30	5	5	5
10	Nitric Acid	65	5	4	3
11	Nitric Acid	70	4	4	4
12	Nitric Acid 65% : Hydrochloric Acid 37%	1:3	4	3	3
13	Perchloric Acid	60	5	5	5
14	Phosphoric Acid	85	5	5	5
15	Sulphuric Acid	25	5	5	5
16	Sulphuric Acid	33	5	5	5
17	Sulphuric Acid	77	5	5	5
18	Sulphuric Acid	85	5	5	5
19	Sulphuric Acid	98	4	4	4
20	Sulphuric Acid 77% :Nitric Acid 70%	1:1	4	4	4
21	Sulphuric Acid 85%:Nitric Acid 70%	1:1	4	4	4
	Bases				
22	Ammonium Hydroxide	28	5	5	5
23	Sodium Hydroxide	10	5	5	5
24	Sodium Hydroxide	20	5	5	5
25	Sodium Hydroxide	40	5	5	5
26	Sodium Hydroxide Flake	-	5	5	5

RESULTS (cont'd)

No.	Group	%	Rating		
			Nacht Black	**Schnee** White	**Asche** Grey
	Biologic stains				
27	Acridine Orange	1	5	4	5
28	Alizarin Complexone Dihydrate	1	5	5	5
29	Aniline Blue (Water Soluble)	1	5	5	5
30	Basic Fuchsin	1	4	4	4
31	Carbol Fuchsin	1	3	3	3
32	Carmine	1	5	5	5
33	Eosin B	1	5	5	5
34	Gentian Violet (Dye)	1	5	5	5
35	Giemsa Stain	1	5	5	5
36	Kongo Red	1	5	4	5
37	Malachite Green Oxalate	1	5	5	5
38	Methyl Violet 2B	1	5	5	5
39	Methylene Blue	1	5	5	5
40	Safranine O	1	5	5	5
41	Sudan III	1	5	5	5
42	Wright Stain	1	5	5	5
	Halogens				
43	Iodine 0.1N	-	5	3	3
44	Iodine Crystal	-	4	2	2
45	Tincture of Iodine	-	4	2	2
	Salts				
46	Copper Sulphate	10	5	5	5
47	Potassium Iodite	10	5	5	5
48	Potassium Permanganate	10	2	2	2
49	Silver Nitrate	1	5	5	5
50	Sodium Hypochloride	13	5	5	5
51	Sodium Sulfide	saturated	5	5	5
52	Zinc Chloride	saturated	5	5	5
	Organic Chemicals				
53	Amyl Acetate	-	5	5	5
54	Benzene	-	5	5	5
55	Cresol	-	5	5	5
56	Dimethylformamide	-	5	5	5
57	Formaldehyde	37	5	5	5
58	Furfural	-	4	3	3

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RESULTS (cont'd)

No.	Group	%	Rating		
			Nacht Black	**Schnee** White	**Asche** Grey
	Organic Chemicals				
59	Gasoline	-	5	5	5
60	Methyl Ethyl Ketone	-	5	5	5
61	n-Butyl Acetate	-	5	5	5
62	Phenol	90	5	5	5
63	Xylene	-	5	5	5
	Solvents				
64	Acetic Anhydride	-	5	5	5
65	Acetone	-	5	5	5
66	Acetonitrile	-	5	5	5
67	Butyl Alcohol	-	5	5	5
68	Carban Tetrachloride	-	5	5	5
69	Chloroform	-	5	5	5
70	Dichloro Acetic Acid	-	5	5	5
71	Dichloromethane	-	5	5	5
72	Diethyl Ether	-	5	5	5
73	Dioxane	-	5	5	5
74	Ethyl Alcohol	-	5	5	5
75	Ethyl Acetate	-	5	5	5
76	Ethylene Glycol	-	5	5	5
77	n-Hexane	-	5	5	5
78	Methyl Alcohol	-	5	5	5
79	Methylene Chloride	-	5	5	5
80	Methylisobutylketone	-	5	5	5
81	Mono Chlorobenzene	-	5	5	5
82	Naphthalene	-	5	5	5
83	Tetrahydrofurance	-	5	5	5
84	Toluene	-	5	5	5
85	Trichloroethylene	-	5	5	5

LEOW SIONG MING
TECHNICAL EXECUTIVE

for DR LI SIHAI
AVP / SENIOR CHEMIST
COATINGS & INDUSTRIAL CHEMICALS
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July 2011