

Test Report No. 7191034109-MEC12-JWG
dated 16 APR 2012



PSB Singapore

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SUBJECT:

Testing of "Cresto" Brand Solid Surfacing Material

TESTED FOR:

CO-Top Design Services
No. 2 Kranji Link
Singapore 728648

Attn: Mr Rikki Chow

SAMPLE DESCRIPTION:

The following "Cresto" brand solid surfacing material test specimens were submitted by CO-Top Design Services on 5th April 2012.

Nominal specimen dimensions	Quantity	Photo
300mm x 150mm x 12mm	5 pcs	
250mm x 250mm x 12mm	4 pcs	
200mm x 200mm x 12mm	6 pcs	
76mm x 25mm x 12mm	8 pcs	
64mm x 13mm x 12mm	12 pcs	
50mm x 50mm x 12mm	45 pcs	
50mm x 25mm x 12mm	4 pcs	
8mm x 8mm x 12mm	2 pcs	
300mm x 150mm x 12mm	2 pcs	
9mm x 9mm x 9mm	5 pcs	
ASTM D638, Type III	7 pcs	



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TEST METHODS:

PS 18 : 1966

International Association of Plumbing and Mechanical Officials – Material and Property Standard for Cultured Marble Lavatory

- 1) Density
ASTM D792-2008
Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement

Norminal specimen dimensions : 50mm x 25mm x 12mm
No. of determinations : 2

- 2) Impact Resistance
PS18, Clause 4.1

Norminal specimen dimensions : 250mm x 250mm x 12mm
Dropped height : 6"
No. of determinations : 1

- 3) Barcol Hardness
PS18, Clause 5.4

Norminal specimen dimensions : 250mm x 250mm x 12mm
No. of determinations : 40

- 4) Oven Test for Cracking and Crazing
PS18, Clause 5.5

Norminal specimen dimensions : 200mm x 200mm x 12mm
Test condition : 74 ± 2°C for 10 days
No. of determinations : 2

- 5) Water Absorption
PS18, Clause 4.4

Norminal specimen dimensions : 76mm x 25mm x 12mm
Pre-conditioning : 50 ± 3°C for 24hrs
Water immersion : 23 ± 1°C for 24hrs
Reconditioning : 50 ± 3°C for 24hrs
No. of determinations : 3

- 6) Stain
PS18, Clause 5.8

Norminal specimen dimensions : 250mm x 250mm x 12mm
Test condition : 23 ± 2°C for 24hrs
No. of determinations : 1

- 7) Scrub Test (Washability)
PS18, Clause 5.9

Norminal specimen dimensions : 300mm x 150mm x 12mm
No. of cycles : 40,000
No. of determinations : 2



TEST METHODS (CONTINUE):

8) Cigarette Test

PS18, Clause 5.8

Norminal specimen dimensions : 150mm x 150mm x 20mm
Burning time : 3 mins
No. of determinations : 1

9) Izod Impact Strength

ASTM D256:2010

Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics

Norminal specimen dimensions : 64mm x 12mm x 12mm
Capacity of pendulum : 2J
No. of determinations : 9

10) Tensile Properties

ASTM D638:2003

Standard Test Method for Tensile Properties of Plastics

Nominal specimen dimensions : ASTM D638, Type III
Initial gauge length : 50mm
Length of grip separation : 115mm
Crosshead speed : 5mm/min
No. of determinations : 5

11) Coefficient of Thermal Expansion by Thermomechanical Analysis

ASTM E831:2006

Standard Test Method for Linear Thermal Expansion of Solid Materials by Thermomechanical Analysis

Instrument used : TMA 2940 Thermomechanical Analyzer
Test condition : Ambient to 200°C
Nominal thickness : 9 mm
Heating rate : 5°C/min
Load : 0.02N
Atmosphere : Air

12) Chemical Resistance

Norminal specimen dimensions : 50mm x 50mm x 12mm
Test condition : 23 ± 2°C for 24hrs
No. of determinations : 1

James Lillis



TEST RESULTS:

S/N	Test Characteristics	Test Results / Observations	PS 18-66 Test Requirements
1	Density (g/cm ³), average	1.80	NA
2	Impact Resistance	No visible cracks was observed	Shall not show cracks
3	Barcol Hardness, average	60	40 minimum
4	Oven test for Cracking or Crazing	No visible cracks or crazing was observed	Shall not show evidence of cracking or crazing
5	Water absorption (a) Water absorbed (%), average (b) Increase in weight (%), average (c) soluble matter (%), average	0.039 0.036 0.003	Shall not absorb water in excess of 0.58% in 24hrs
6	Stain (a) Coffee (b) Tea (c) Washing Detergent (d) Acetone (e) Olive Oil (f) Lipstick (g) Fly Spray (h) Ink Washable (i) 6% Urea (j) Alcohol (k) 1% Iodine (l) Shoe Polish (paste form) (m) Vinegar (n) 10% Household Ammonia Solution (o) 10% Citric Acid solution (p) Amy Acetate (q) Carbon Tetrachloride (r) Trisodium Phosphate	No effect No effect No effect No effect No effect No effect No effect No effect No effect No effect No effect No effect No effect No effect No effect No effect No effect No effect No effect	Shall be such that it will withstand all reagents
7	Scrub Test	Slight brush were observed on the two tested solid surface panels	Shall withstand 40,000 cycles. Only slight brush marks are allowed.
8	Cigarette Test (mm)	0.01	Shall not be more than 0.38mm
9	Izod Impact Strength (J/m), average	19.8	NA
10	(a) Maximum Tensile Strength (MPa), average (b) Elongation at Break (%), average	25.7 0.2	NA NA
11	Coefficient of Thermal Expansion (µm/m°C) (a) Alpha 1 (50°C to 80°C) (b) Alpha 2 (140°C to 180°C)	41 90 (Figure 1)	NA

James Lili



TEST RESULTS: (CONTINUE)

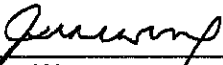
Chemical Resistance	Test Results / Observations	
	Results	Test Requirement
1) Hydrofluoric Acid (Conc)	0.5	1.0
2) Hydrofluoric Acid (50%)	0.5	0
3) Hydrofluoric Acid (20%)	0.5	0
4) Nitric Acid (Conc)	0.5	1.0
5) Nitric Acid (20%)	0	0
6) Sulphuric Acid (98%)	2.0	3.0
7) Sulphuric Acid (20%)	0.5	0
8) Perchloric Acid (80%)	0.5	0
9) Perchloric Acid (12%)	0	0
10) Phosphoric Acid (85%)	1.0	0
11) Phosphoric Acid (17%)	0	0.5
12) Sodium Hydroxide (sat. aq)	0	0.5
13) Sodium Hydroxide (20%)	0	2.0
14) Potassium Hydroxide (30%)	0	0.5
15) Potassium Hydroxide (10%)	0	0
16) Alcoholic Potassium Hydroxide (30%)	0	0
17) Ammonia (0.89%)	0.5	0
18) Acetone	0	0.5
19) Chloroform	0.5	0
20) Carbon Tetrachloride	0	0
21) Toluene	0	0
22) Iso-propyl-alcohol (IPA)	0	0
23) Tetra hydro furan	0.5	0
24) Ethyl acetate	0	0
25) Di-ethyl-ether	0	0
26) Bleach (Household)	0	0
27) Hydrogen peroxide (3%)	0	0
28) Iodine (3.5%) aq	2.0	0
29) Bromine (sat. aq)	0	0
30) Potassium permanganate (sat.)	2.0	0
31) Ferric chloride (25%)	0	0
32) Silver Nitrate (5%)	0	1.0
33) Lead acetate (sat. aq)	0	0
34) Writing ink (Common)	0	0
35) Gentian violet (1% aq)	2.0	0
36) Motor Oil	0	0
37) Methyl alcohol	0	0
38) Acetic Acid	0.5	0

James Lim



REMARKS:

0 denotes "No effect"
0.5 denotes "Faint Mark"
1.0 denotes "Noticeable Mark"
2.0 denotes "Obvious Mark"
3.0 denotes "Severe Mark"


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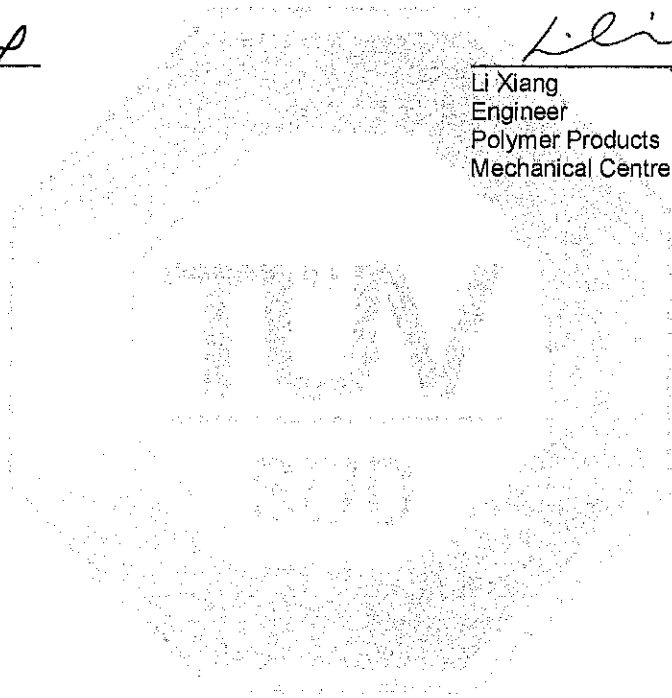
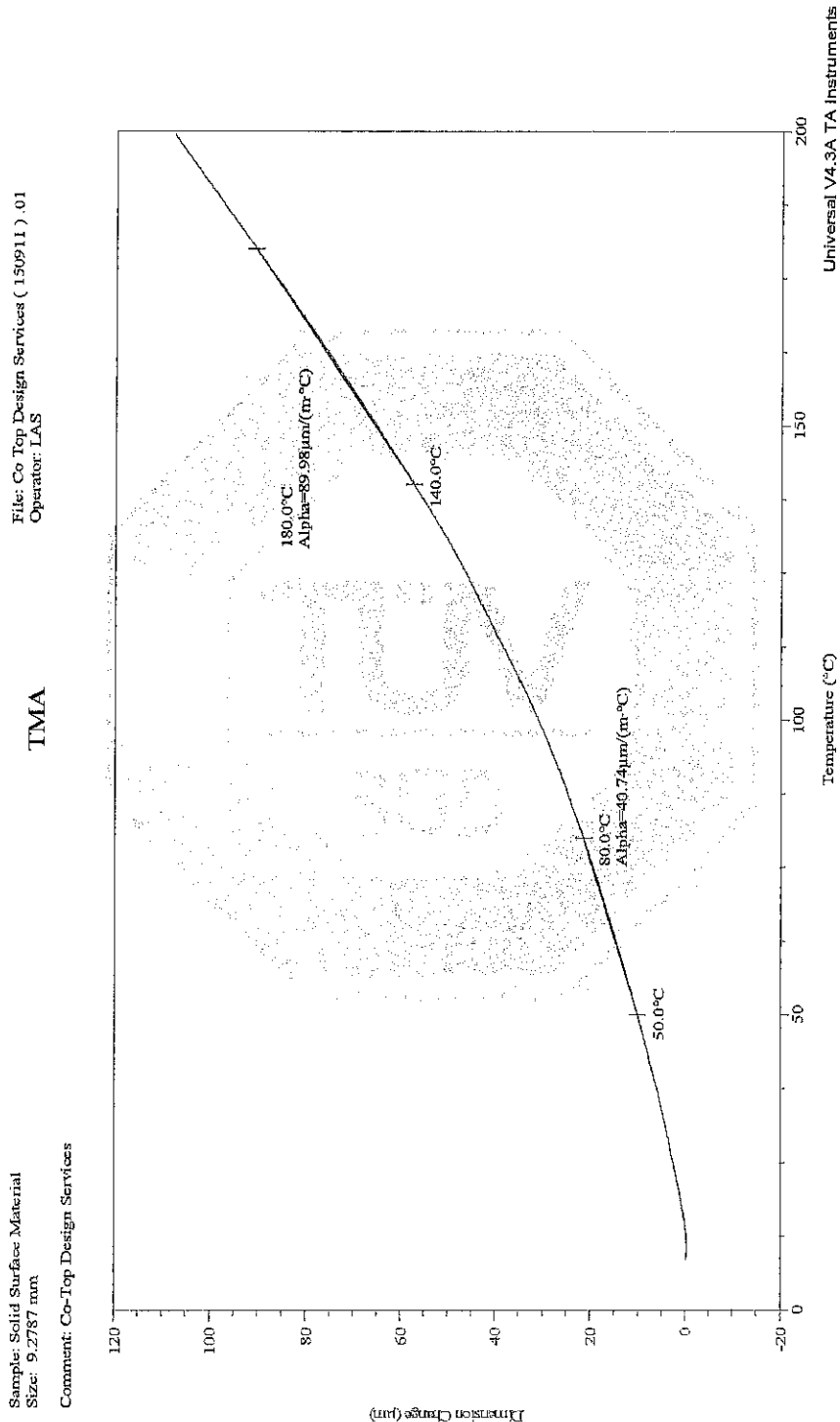




Figure 1: TMA thermogram of "Cresto" brand solid surfacing material test specimen



Dimension Change (µm)

James Kilis



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July 2011

