Test Report No. 7191127762-MEC16/01A-KSY
dated 15 JAN 2016

PSB Singapore

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SUBJECT:

Testing of "Lion Chemtech Tristone" Acrylic Solid Surfacing Material

TESTED FOR:

Taishi-Tech (S) Pte Ltd
19 Senoko Avenue
Singapore 758308

Attn: Mr Alvin Tan

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SAMPLES DESCRIPTION:

The following white "Lion Chemtech Tristone" acrylic solid surfacing material test specimens (Typical as shown in Figure 1) were received for testing.

Approxiate Dimensions	Quantity	Date Received	Photograph
400 mm x 150 mm x 13 mm	2 pcs	04 December 2015	
250 mm x 250 mm x 13 mm	5 pcs	04 December 2015	
200 mm x 200 mm x 13 mm	2 pcs	04 December 2015	
150 mm x 150 mm x 13 mm	4 pcs	04 December 2015	
76.2 mm x 25.4 mm x 13 mm	6 pcs	04 December 2015	
50 mm x 25 mm x 13 mm	2 pcs	04 December 2015	
6 mm x 6 mm x 6 mm	4 pcs	04 December 2015	
64 mm x 13 mm x 13 mm (with notched)	12 pcs	15 December 2015	
Dumbbell shape, Type III	8 pcs	15 December 2015	

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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. Impact resistance
PS 18, Clause 5.3

Nominal specimen dimensions	:	250 mm x 250 mm x 13 mm
Dropped height	:	6" (reverse side)
No. of determinations	:	2

2. Barcol Hardness
PS 18, Clause 5.4

Nominal specimen dimensions	:	200 mm x 200 mm x 13 mm
No. of determinations	:	15 points

3. Oven Test for Cracking and Crazing
PS 18, Clause 5.5

Nominal specimen dimensions	:	150 mm x 150 mm x 13 mm
Test condition	:	74 ± 2°C for 10 days
No. of determinations	:	1

4. Water Absorption
PS 18, Clause 5.6

Nominal Specimen dimensions	:	76.2 mm x 25.4 mm x 13 mm
Conditioning of test specimens	:	50 ± 3 °C for 24 h
Immersion condition	:	23 ± 1 °C for 24 h
Reconditioning of test specimens	:	50 ± 3 °C for 24 h
No. of determinations	:	3

5. Stain
PS 18, Clause 5.8

Nominal specimen dimensions	:	250 mm x 250 mm x 13 mm
Test condition	:	23 ± 2 °C / 24 h

6. Cigarette Test
PS 18, Clause 5.8

Nominal specimen dimensions	:	200 mm x 200 mm x 13 mm
Duration	:	3min
No. of determinations	:	1

TEST METHODS: (CONT'D)

7. Scrub Test
PS 18, Clause 5.9

Nominal specimen dimensions	:	400 mm x 150 mm x 13 mm
No. of cycles	:	40000
No. of determinations	:	2

8. Specific Gravity / Density
ASTM D792 : 2013
Standard Test Method for Specific Gravity (Relative Density) and Density of Plastics by Displacement

Nominal specimen dimensions	:	50 mm x 25 mm x 13 mm
No. of determinations	:	2

9. Tensile Properties
ASTM D638 : 2010
Standard Test Method for Tensile Properties of Plastics

Nominal specimen dimensions	:	Dumbbell shape, Type III
Nominal thickness	:	12 mm
Gauge length	:	50 mm
Length of grips separation	:	115 mm
Crosshead speed	:	5 mm/min
No. of determinations	:	5

10. Izod Impact Strength (with notched)
ASTM D256 : 2010e1
Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics

Nominal specimen dimensions	:	64 mm x 13 mm x 12 mm
Capacity of pendulum	:	2.75 J
No. of determinations	:	10

11. Coefficient of Thermal Expansion
ASTM E831 : 2014
Standard Test Method for Linear Thermal Expansion of Solid Materials by Thermomechanical Analysis

Nominal thickness	:	6mm
Load used	:	5 g
Temperature range	:	Ambient to 200 °C
Scanning rate	:	5 °C/min
No. of determinations	:	1

TEST RESULTS:

Characteristics	Results / Observations	PS 18 : 1966 Requirements
1. Impact Resistance	No visible cracks was observed	Shall not show cracks
2a. % Water Absorbed, average 2b. % Increase in weight, average 2c. % Soluble Matter Loss, average	0.06 0.03 0.03	Shall not absorb water in excess of 0.58% in 24h
3. Barcol Hardness, average	63	40minimum
4. Oven test for Cracking or Crazing	No visible cracks was observed	Should not show evidence of cracking or crazing
5. Stain a) Coffee b) Detergent c) Acetone d) Olive Oil e) Lipstick f) Fly spray g) 6.6% Urea h) Alcohol (Methanol, Ethanol, Isopropanol) i) Shoe Polish j) 10% Household Ammonia Solution k) 10% Citric Acid Solution l) Amyl Acetate m) Trisodium Phosphate n) Gasoline	 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 unaffected
a) Tea b) ink, Washable c) 1% Iodine d) Vinegar	No effect No effect ** Noticeable mark was observed. No effect	Shall be unaffected (except for superficial stains which are easily removed by a light application of a mild abrasive)
6. Cigarette Test	No stain was observed	-
7. Scrub Test (Washability)	Slight brush marks were observed on the two tested panels	Shall withstand 40000cycles in the scrub test. (Only slight brush marks are allowable).
8a. Specific Gravity, average 8b. Density (kg/m^3), average	1.76 1.75	- -
9a. Maximum Tensile Strength (MPa), average 9b. Modulus of Elasticity (MPa), average	43.6 10057	- -

TEST RESULTS: (CONT'D)

Characteristics	Results / Observations	PS 18 : 1966 Requirements
10. Izod Impact Strength (J/m), average	17.5	-
11. Coefficient of Thermal Expansion a) α1 (50 to 85°C), µm/m°C b) α2 (140 to 180°C), µm/m°C	72.8 158	-

NOTES:

1. TMA thermograms were showed in Figure 1. The instrument is calibrated with Indium and Zinc as standard reference materials.

2. "*" denotes that noticeable mark was observed but the stain was able to be removed by dry or wet tissue paper.

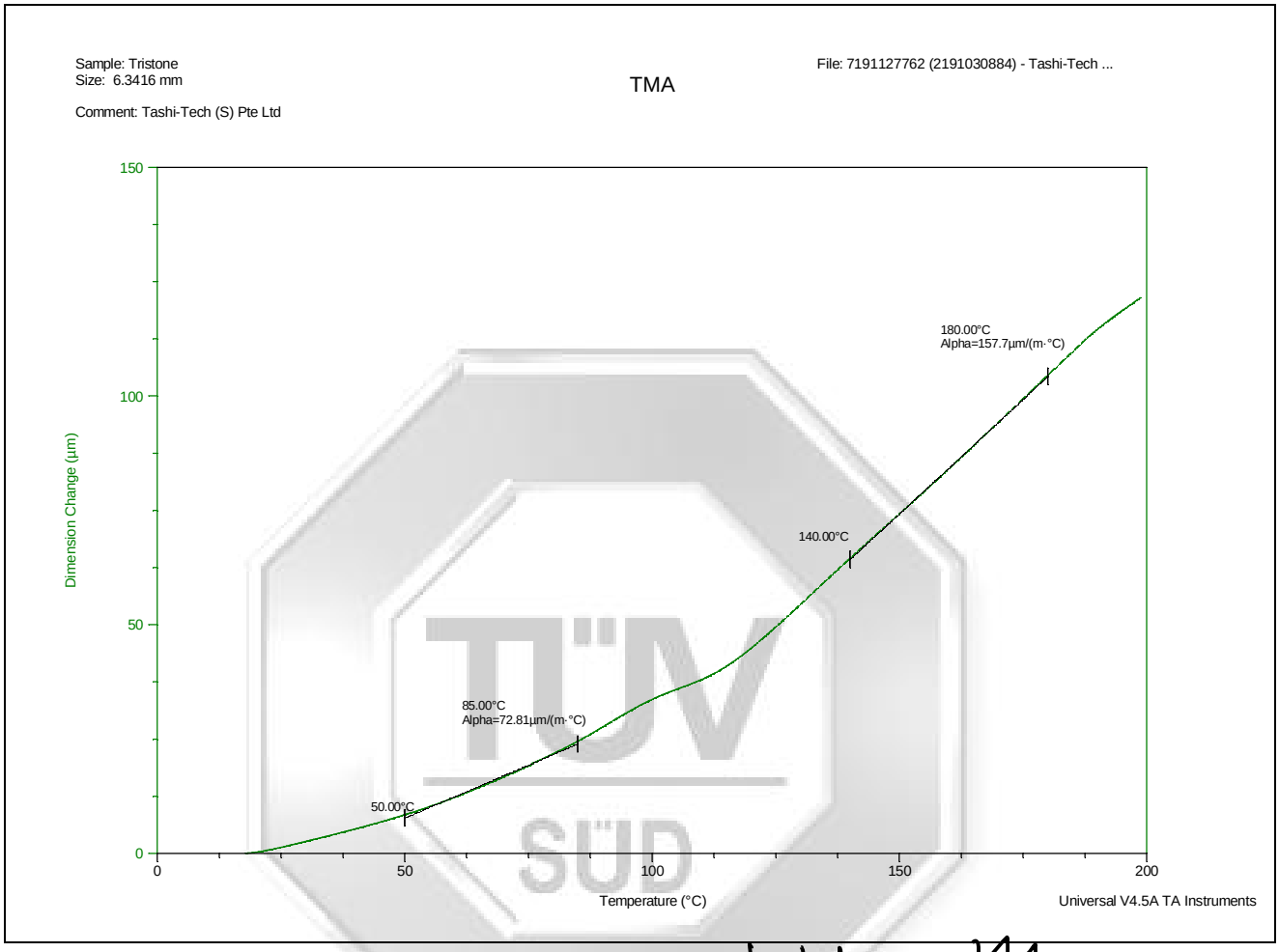
3. "**" denotes that the stain was easily removed by a light application of a mild abrasive.

Ting Yeow Wah
Higher Associate Engineer

Kong Siew Yong
Product Manager
Polymer Products
Mechanical Centre

PSB Singapore

Figure 1: TMA Thermogram of “Lion Chemtech Tristone” Acrylic Solid Surface



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July 2011