

FUGRO TECHNICAL SERVICES LIMITED

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MaterialLab

Report No. : 040123CH40701

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Test Report on Analysis of Waterproofing Membrane**Information Supplied by Client**

Client : Master Proofer Co., Ltd.
Client's address : Unit I, 8/F, On Ho Ind. Bldg., 17-19 Shing Wan Road,
Tai Wan, Shatin
Project : Material Testing
Sample description : One sample of "LABOND THANECOAT W300" one component
liquid applied polyurethane waterproofing membrane
Sample identification : ST 40693
Test required : Resistance to neutral salt spray for 48 hours

Laboratory Information

Date of receipt of sample : 15/04/2004
Date test completed : 10/05/2004
Test method used : BS 3900 : F12 : 1997

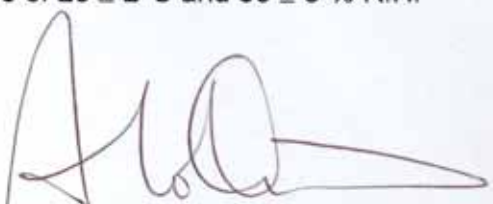
Results :

Viscosity		Result
Duration : 48 hours	Observation	Pass. No corrosion was observed
Average dry film thickness of test specimen, μm		680

Remarks : 1. Thinning ratio – No dilution
2. Single coating of sample was applied manually to 150 x 100 x 1mm burnished steel panel using a block applicator with a gap of 1.5mm for the test.
3. The dry film thickness was measured with reference to BS 3900 : C5 : 1997 Method 6.
4. The coated test panel was dried at a temperature of $23 \pm 2^\circ\text{C}$ and $50 \pm 5\%$ R.H. for 8 days before testing.

Supervised by : K.F. Wong

Certified by :


Approved Signatory : K.M. Ho

Date :

 12/5/2004 *Note : This report refers only to the sample(s) tested.*

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MateriaLab

Client Ref. : MKT/F/04-0010
Report No. : 040123ST40693

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REPORT ON ADHESION OF WATERPROOFING MEMBRANE TO CONCRETE**Information Supplied by Client**

Client : Master Proofer Company Limited
Project : Material Testing
Sample Description : "LABOND THANECOAT W300"
One Component Liquid Applied Polyurethane Waterproofing Membrane
Substrate : Concrete Cube
Size : 150 x 150 x 150mm

Laboratory Information

Lab. Sample I.D. : ST40693/1a-1c
Date Received : 15 April 2004
Date of Application : 28 April 2004
Date Tested : 04 May 2004
Test Method : ASTM D4541 : 1995

Test Results

Lab. Sample I.D.	Bond Strength (MPa)	Failure Mode
ST40693/1a	1.25	80% Failure at the Membrane / Concrete interface, 20% Failure of the Membrane
ST40693/1b	1.50	60% Failure at the Membrane / Concrete interface, 40% Failure of the Membrane
ST40693/1c	1.25	80% Failure at the Membrane / Concrete interface, 20% Failure of the Membrane

Remarks : 1.) The test results relate only to the sample tested.
2.) The failure modes are shown in the photographs on page 6 of this report.

Checked by :  Date : 9/6/04 Certified by :  Date : 9/6/04
Gary Winstanley

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Client Ref. : MKT/F/04-0010
Report No. : 040123ST40693

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REPORT ON HARDNESS TEST OF WATERPROOFING MEMBRANE

Information Supplied by Client

Client : Master Proofer Company Limited
Project : Material Testing
Sample Description : "LABOND THANECOAT W300"
One Component Liquid Applied Polyurethane Waterproofing Membrane



Laboratory Information

Lab. Sample I.D. : ST40693/2
Date Received : 15 April 2004
Date Tested : 18 April 2004
Test Method : ASTM D2240 : Shore A

Test Results

Test Point No.	Reading of Hardness Tester
a	47
b	46
c	46
d	46
e	47
Average	46

Remark : The test results relate only to the sample tested.

Checked by :  Date : 9/6/04 Certified by :  Date : 9/6/04
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Client Ref. : MKT/F/04-0010
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REPORT ON WATER ABSORPTION OF WATERPROOFING MEMBRANE**Information Supplied by Client**

Client : Master Proofer Company Limited
Project : Material Testing
Sample Description : "LABOND THANECOAT W300"
One Component Liquid Applied Polyurethane Waterproofing Membrane



Laboratory Information

Lab. Sample I.D. : ST40693/3-5
Date Received : 15 April 2004
Date Test Started : 18 May 2004
Date Test Completed : 20 May 2004
Test Method : ASTM D570-81 (By 24 hours immersion)

Test Results

Lab. Sample I.D.	Mass of Sample		Water Absorption (%)
	After Dried in Oven for 24 h at 50°C (g)	After Immersion in Water for 24h at 23°C (g)	
ST40693/3	8.609	8.671	0.72
ST40693/4	8.712	8.780	0.78
ST40693/5	9.117	9.185	0.75
		Average	0.75

Remark : 1.) The test results relate only to the samples tested.

Checked by :  Date : 7/16/04 Certified by :  Date : 9/16/04
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REPORT ON THE DETERMINATION OF TENSILE STRENGTH OF WATERPROOFING MEMBRANE**Information Supplied by Client**

Client : Master Proofer Company Limited
Project : Material Testing
Sample Description : "LABOND THANECOAT W300"
One Component Liquid Applied Polyurethane Waterproofing Membrane



Laboratory Information

Lab. Sample I.D. : ST40693/6-10
Date Received : 15 April 2004
Date Tested : 28 May 2004
Loading Rate : 100 mm/min
Gauge Length : 25 mm
Test Method : BS 2782 : Part 3 : Method 320A to 320F : 1976

Test Results

Lab. Sample I.D.	Width of Sample (mm)	Thickness of Sample (mm)	Maximum Force (N)	Tensile Strength (MPa)	Elongation at Break (%)
ST40693/6	6.52	4.88	48.5	1.524	410.0
ST40693/7	6.57	4.50	46.5	1.573	415.0
ST40693/8	6.67	4.70	45.0	1.435	344.8
ST40693/9	6.7	4.19	43.5	1.550	396.0
ST40693/10	6.61	4.35	46.5	1.617	468.0
		Average	46.0	1.540	406.8
		Standard Deviation	1.9	0.068	44.1

Remark : The test results relate only to the samples tested

Checked By :  Date : 9/6/04 Certified By :  Date : 9/6/04
Gary Winstanley

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Client Ref. : MKT/F/04-0010
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REPORT ON DETERMINATION OF DENSITY OF WATERPROOFING MEMBRANE**Information Supplied by Client**

Client : Master Proofer Company Limited
Project : Material Testing
Sample Description : "LABOND THANECOAT W300"
One Component Liquid Applied Polyurethane Waterproofing Membrane



Laboratory Information

Lab. Sample I.D. : ST40947/1-3
Date Received : 25 May 2004
Date Tested : 27 May 2004
Mass of Sinkers : 44.6913 g
Water Temperature : 23°C
Test Method : ISO 1183 : 1987

Test Results

Lab. Sample I.D.	Mass of Specimen in Air (g)	Mass of Specimen and Sinkers in Water (g)	Density (kg/m ³)
ST40693/11	4.8720	46.3231	1500
ST40693/12	4.9855	46.3771	1507
ST40693/13	4.9816	46.3863	1512
		Average	1506

Remark : The test results relate only to the samples tested.

Checked by :  Date : 9/6/04 Certified by :  Date : 9/6/04
Gary Winstanley

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Failure Mode
Sample I.D. : ST40693/1a-1c

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Report No. : 081976CH81101



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Test Report on Analysis of Paint

Information Supplied by Client

Client : Master Proofer Co. Ltd.

Client's address : Flat I, 8/F, On Ho Industrial Building, 17-19 Shing Wan Road,
Tai Wai, Shatin, New Territories, Hong Kong

Project : VOC Test

Sample description : One sample of Labond Thanecoat W300

Sample identification : (P08-17: Non-exposed Roof Coating)

Test required : VOC content for solvent-borne coating other than multicomponent
or UV radiation-cured coating

Laboratory Information

Lab sample I.D. : CH81101/1

Date of receipt of sample : 28/08/2008

Date test completed : 12/09/2008

Test method used : USEPA Method 24 & SCAQMD Method 303-91
Calculated based on results of

- a) Volatile content – USEPA Method 24 Section 11.3.1 & ASTM D2369-98
- b) Water content – USEPA Method 24 Section 11.3.2 & ASTM D4017-96a
- c) Coating density – USEPA Method 24 Section 11.3.3 & ASTM D1475-96
- d) Exempted compounds – SCAQMD Method 303-91

Dilution ratio : No dilution

Note : This report refers only to the sample(s) tested.

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Results :

	Result
Volatile content (W_v), %wt	5.58
Water content (W_w), %wt	0.40
Exempted compound (W_{ex}), %wt	0.33
Coating density (D_c) @ 25°C, g/ml	1.476
VOC content, g/L	72

Note:

Equation for calculation of VOC:

$$\begin{aligned} \text{VOC} &= (W_a - W_b - W_c - W_d) / (V_e - V_f - V_g) \\ &= (W_a - W_b - W_c) / (V_e) \\ &= [(W_a / W) - (W_b / W) - (W_c / W)] * (W / V_e) \\ &= [(W_v - W_w - W_{ex}) / 100] * (D_c * 1000) = (W_v - W_w - W_{ex}) * D_c * 10 \end{aligned}$$

where

W_a is weight of volatile compounds in grams (per unit of sample)

W_b is weight of water in grams (per unit of sample)

W_c is weight of exempt compounds in grams (per unit of sample)

W_d is weight of VOCs in grams of any colourant added to tint base (per unit of sample) and is taken as zero

W is weight of paint material in grams (per unit of sample)

V_e is volume of paint material in litres (per unit of sample)

V_f is volume of water in litres (per unit of sample) and is taken as zero

V_g is volume of exempt compounds in litres (per unit of sample) and is taken as zero

Supervised by : K.F. Wong

Certified by 

Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 18/9/2008

Note : This report refers only to the sample(s) tested.