

**Test Report No. 7191009313-MEC11/01A-ED**  
dated 28 Sep 2011



PSB Singapore

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**SUBJECT:**

Testing of liquid-applied polyurethane waterproofing membrane

**TESTED FOR:**

Maris Polymers S.A.  
Industrial Area Of Inofita  
32011 Inofita  
Greece

Attn: Mr Lance Khoo

**SAMPLE DESCRIPTION:**

The following items were received on 26 May 2011 as shown:

Sample	Size	Quantity
'Mariseal 250 Aqua'	560 mm x 380 mm	1 pc
	1 L	1 tub

The test sample was prepared by TÜV SÜD PSB Pte Ltd.

Substrate	Area of application	Quantity
200 mm x 200 mm x 50 mm concrete slab	200 mm x 200 mm	1 pc

**TEST METHODS:**

Material Identification/Verification

1. Material Identification/Verification By Fourier Transform Infra-Red Spectrometric Analysis (FTIR)

Water Tightness

2. Adopted DIN EN 1928 : 2000 Flexible Sheets For Waterproofing - Bitumen, Plastic And Rubber Sheets For Roof Waterproofing - Determination Of Water Tightness  
Cross-reference : ASTM C1185 : 2008 Standard Test Methods For Sampling And Testing Non-Asbestos Fibre-Cement Flat Sheet, Roofing And Siding Shingles, And Clapboards  
Section 11 Water Tightness

Substrate : 200 mm x 200 mm x 50 mm concrete slab  
Test condition : 50 mm height of water at 23°C for 24 hours  
No. of determination : 1



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Tensile Properties

3. ASTM D412 : 2006 Standard Test Method For Vulcanized Rubbers And Thermoplastic Elastomers-Tension

Test Conditions:

a. 20°C	:	
b. -25°C	:	
Test specimen	:	Dumbbell shape, die C
Gauge length	:	25 mm
Grip length	:	64 mm
Crosshead speed	:	500 mm/min
No. of determinations	:	3 per test condition

Tear Strength

4. ASTM D624 : 2000 Standard Test Method For Tear Strength Of Conventional Vulcanized Rubber And Thermoplastic Elastomers

Test specimen	:	Tear test specimen
Grip length	:	25.4 mm
Crosshead speed	:	51 mm/min
No. of determinations	:	3

Water Vapour Transmission

5. ASTM E96/E96M : 2010 Standard Test Methods For Water Vapour Transmission Of Materials

Method	:	Desiccant
Test conditions	:	38°C and 90% relative humidity
No. of determinations	:	3

UV Exposure

6. ASTM G 154 : 2006 Standard Practice For Operating Fluorescent Light Apparatus For UV Exposure Of Non-Metallic Materials

Test size	:	150 mm x 80 mm
Light designation	:	Fluorescent UVA 340 nm
Test period	:	2000 hours
Test condition	:	8 hours UV exposure at 55°C and 4 hours condensation at 45°C
Reference standard	:	BS 2662 : 1961 Grey Scale For Assessing Change In Colour
No. of determination	:	1

CONDITIONING:

Unless otherwise specified, all test specimens were conditioned at  $23 \pm 2^\circ\text{C}$ ,  $70 \pm 15\%$  relative humidity and tested at  $23 \pm 2^\circ\text{C}$ ,  $65 \pm 5\%$  relative humidity. The tensile properties test was conducted at  $23 \pm 2^\circ\text{C}$  and  $50 \pm 5\%$  relative humidity.

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TEST RESULTS:

Test	Unit	'Mariseal 250 Aqua'
1. Material Identification/Verification By FTIR	-	Polyurethane-based material. No presence of acrylates (refer to figure 1)
2. Water Tightness	-	No water droplets at underside of substrate
3.		
a. Maximum Tensile Strength, median	N/mm <sup>2</sup>	
i. 20°C		5.0
ii. -25°C		4.2
b. Elongation At Break, median	%	
i. 20°C		1985.5
ii. -25°C		1914.5
c. Tensile Modulus Of Elasticity, median	N/mm <sup>2</sup>	
i. 20°C		1.5
ii. -25°C		1.3
4. Tear Resistance, average	N/mm	29.3
5. Water Vapour Transmission, average	g/m <sup>2</sup> .day	130.9
6. UV Exposure 2000 hours	-	No blistering, peeling, cracking, crazing, swelling or disintegration

REMARKS:

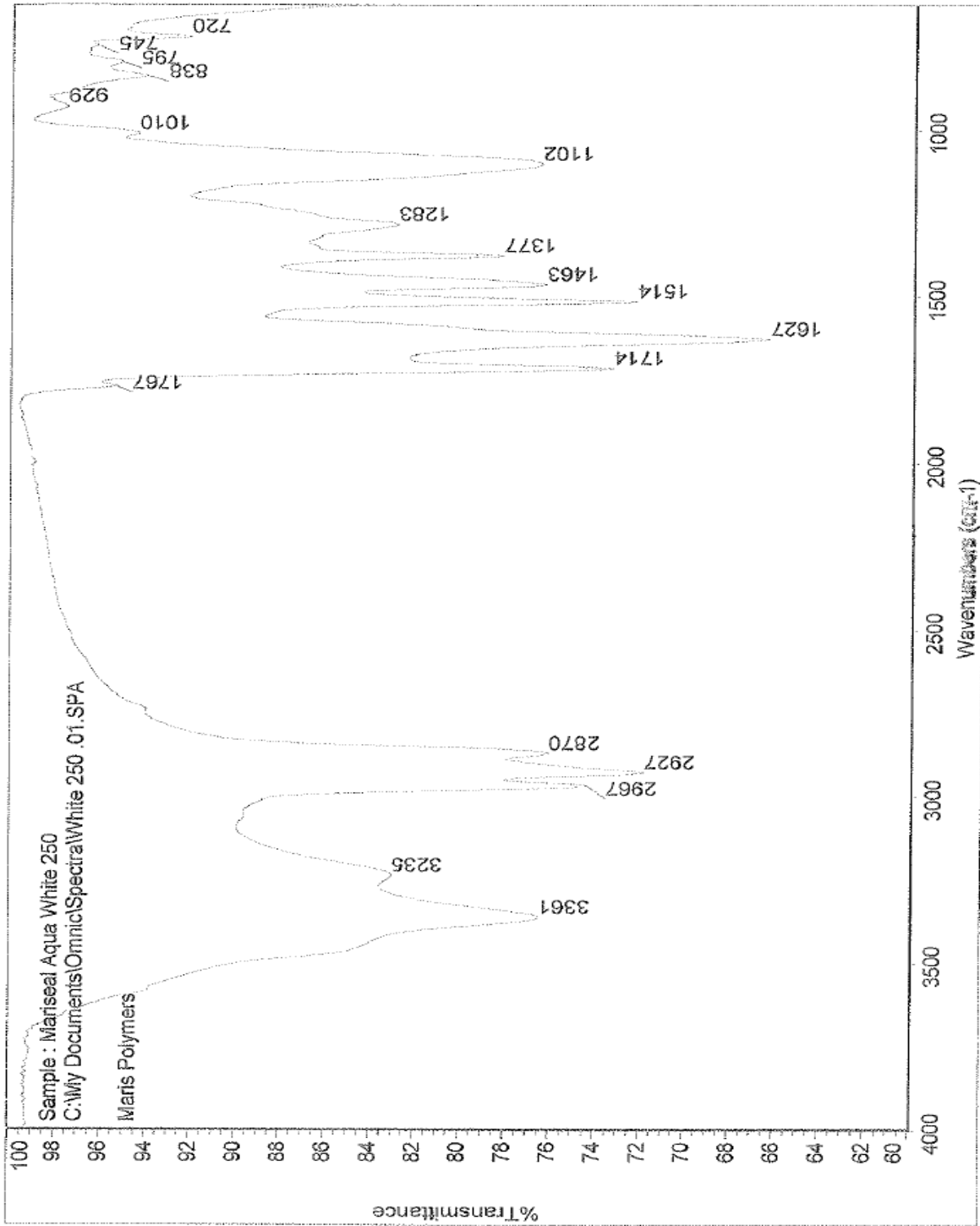
Test age :

- a. The cured sheets were said to be fully cured upon receipt.
- b. 14-day cure in air minimum prior to test.

Eddie Suwand  
Associate Engineer

Wong Mun Hong  
Engineer  
Building & Acoustics  
Mechanical Centre

Figure 1 : IR spectrum of 'Mariseal 250 Aqua'





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July 2011

