

Test Report No. 7191002877-MEC11-ED
dated 20 Jun 2011



PSB Singapore

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SUBJECT:

Testing of 'Sera Fiber Cement Wood Substitution Products'

TESTED FOR:

Mahaphant Fibre Cement Public Co., Ltd
59 Moo 12
Saraburi-Lomsak Road
K.M. 16
Chongsarika District
Pattanakom
Lopburi 15220
Thailand

Attn: Ms Thanaporn Poonsukcharoen

SAMPLE DESCRIPTION:

The following items were received on 8 Feb 2011 as shown:

Sample	Size	Quantity
'Sera Fiber Cement Wood Substitution Products'	3000 mm x 200 mm x 25 mm	4 pcs
	305 mm x 152 mm x 25 mm	12 pcs
	305 mm x 152 mm x 25 mm	12 pcs
	305 mm x 76 mm x 25 mm	6 pcs
	100 mm x 100 mm x 25 mm	6 pcs
	600 mm x 500 mm x 25 mm	5 pcs
	250 mm x 200 mm x 25 mm	20 pcs

TEST METHODS:

Adopted ASTM C1185 : 2008 Standard Test Methods For Sampling And Testing Non-Asbestos Fibre-Cement Flat Sheet, Roofing And Siding Shingles, And Clapboards

Bending Strength (Modulus Of Rupture)

1. Section 5 Bending Strength (Modulus Of Rupture)

Test size : 305 mm x 152 mm x 25 mm
Span length : 254 mm
Crosshead speeds : 10 mm/min
No. of determinations : 6



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Density

2. Section 6 Density

Test size : 305 mm x 152 mm x 25 mm
No. of determinations : 5

Dimensional Measurements

3. Section 7 Dimensional Measurements

Test size : 3000 mm x 200 mm x 25 mm

Moisture Movement

4. Section 8 Moisture Movement

Test size : 305 mm x 76 mm x 25 mm
Test conditions : a. 23°C and 30% relative humidity for 24 hours
b. 23°C and 90% relative humidity for 24 hours
No. of determinations : 2

Water Absorption

5. Section 9 Water Absorption

Test size : 100 mm x 100 mm x 25 mm
Pre-condition : 90 ± 2°C to constant mass
Test condition : Immersion at 23 ± 4°C for 48 ± 8 hours
No. of determinations : 5

Moisture Content

6. Section 10 Moisture Content

Test size : 305 mm x 152 mm x 25 mm
Test conditions : a. 23 ± 2°C to constant mass
b. 90 ± 2°C to constant mass
No. of determinations : 5

Water Tightness

7. Section 11 Water Tightness

Test size : 610 mm x 508 mm x 12 mm
Test condition : 50 mm height of water at 23°C for 24 hours
No. of determinations : 3



Bending Strength After Warm Water

8. Section 13 Warm Water

Test size : 305 mm x 152 mm x 25 mm
Test condition and duration : 60°C in water for 56 days
Span length : 254 mm
Crosshead speed : 8 mm/min
No. of determinations : 12

Bending Strength After Freeze/Thaw

9. Section 12 Freeze-Thaw Cladding Products

Test size : 305 mm x 152 mm x 25 mm
Test condition and duration : 50 cycles of freeze-thaw :
a. Freezing at $-20^{\circ}\text{C} \pm 2^{\circ}\text{C}$ within 1-2 hours and held for 1 hour
b. Thawing at $20^{\circ}\text{C} \pm 2^{\circ}\text{C}$ within 1-2 hours and held for 1 hour
c. Freezing and thawing between 4 and 6 hours with 72 hours maximum interval between cycles
Span length : 254 mm
Crosshead speed : 12 mm/min
No. of determinations : 12

Adopted BS EN 12467 : 2004 Fibre-Cement Flat Sheet - Product Specifications And Test Methods

Bending Strength Before And After Soak-Dry

10. Section 7.3.5 Soak-Dry

Test size : 250 mm x 200 mm x 25 mm
Test condition and duration : a. Before soak-dry
b. 50 cycles of soak-dry : immersion in water at 23°C for 18 hours and drying at 60°C for 6 hours
Span length : 200 mm
Crosshead speed : 12 mm/min
No. of determinations : 10 per test condition

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 bending strength tests were tested at $23 \pm 2^{\circ}\text{C}$ and $50 \pm 5\%$ relative humidity.

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TEST RESULTS:

Test	Unit	'Sera Fiber Cement Wood Substitution Products'
1. Bending Strength, average	N/mm ²	17.2
2. Density, average	kg/m ³	1336.0
3.		
i. Dimensional Measurement	mm	
a. Length		3000
b. Width		199.7
c. Thickness		25.4
ii. Measurement Of Squareness	m	
a. Length of diagonals, both sides		3.05
b. Edge length, both sides		3.0
iii. Measurement Of Edge Straightness, both sides	mm	
a. Lengthwise		0
b. Widthwise		0
4. Moisture Movement, average	%	+0.02
5. Water Absorption, average	%	27.4
6. Moisture Content, average	%	8.9
7. Water Tightness	-	No water droplets on underside of test samples
8. Bending Strength After Warm Water 60°C For 56 days, average	N/mm ²	20.1
9. Bending Strength After Freeze-Thaw 50 cycles, average	N/mm ²	16.6
10. Bending Strength Before And After Soak-Dry 50 cycles, average	N/mm ²	
a. Before		20.3
b. After		21.9

REMARKS:

1. The density was tested based on mass divided by volume.
2. The number of cycles for freeze-thaw and soak dry test conditions were specified by the client.
3. Each test piece for freeze-thaw test condition was individually sealed in plastic bag as specified by the test method.

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Product Manager
Building & Acoustics
Mechanical Centre

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