

**Test Report No. 719163695-MEC10-ED**  
**dated 13 May 2010**



PSB Singapore

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**SUBJECT:**

Testing of fibre-cement board

**TESTED FOR:**

Everest Industries Ltd  
The Genesis, A-32  
Mohan Cooperative Industrial Estate  
Mathura Road  
110048 New Delhi  
India

Attn: Mr Jasmit Singh/Mr Sumeet Gill

**SAMPLE DESCRIPTION:**

The following items were received on 19 Nov 2009 as shown:

Sample	Nominal Size	Quantity
'Fibre-Cement Board'	250 mm x 250 mm x 12 mm	73 pcs

**TEST METHOD:**

Adopted BS EN 12467 : 2000  
Fibre-Cement Flat Sheet - Product Specifications And Test Methods

Bending Strength (Modulus Of Rupture)

1. Section 7.3.2 Mechanical Characteristics, Bending Strength

Test condition : Before freeze-thaw :  
Immersion in water for 24 hours for thickness  $\leq$  20 mm prior to test

Span length : 200 mm

Crosshead speed : 8 mm/min for grain direction, 1<sup>st</sup> bending  
20 mm/min for grain direction, 2<sup>nd</sup> bending  
6 mm/min for across grain direction, 1<sup>st</sup> bending  
18 mm/min for across grain direction, 2<sup>nd</sup> bending

No. of determinations : 5 per sample, 2 bending directions



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Bending Strength After Warm Water

2. Section 7.3.4 Warm Water

Test condition and duration : 60°C in water for 65 days  
Span length : 200 mm  
Crosshead speed : 6 mm/min for grain direction, 1<sup>st</sup> bending  
10 mm/min for grain direction, 2<sup>nd</sup> bending  
10 mm/min for across grain direction, 1<sup>st</sup> bending  
10 mm/min for across grain direction, 2<sup>nd</sup> bending  
No. of determinations : 5 per sample, 2 bending directions

Bending Strength After Soak-Dry

3. Section 7.3.5 Soak-Dry

Test condition and duration : 50 days of soak-dry cycle : immersion in water at 23°C for 18 hours  
and drying at 60°C for 6 hours  
Span length : 200 mm  
Crosshead speed : 8 mm/min  
No. of determinations : 5 per sample, 2 bending directions

Bending Strength After Freeze And Thaw

4. Section 7.4 Test For Climatic Performance  
Section 7.4.1 Freeze-Thaw

Test condition and duration : 30 days of freeze-thaw cycle :  
a. Freezing at -20°C ± 2°C within 1-2 hours and held for 1 hour  
b. Thawing at 20°C ± 2°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 : 200 mm  
Crosshead speed : 8 mm/min  
No. of determinations : 5 per sample, 2 bending directions

Apparent Density

5. Section 7.3 Test For Physical Performance And Characteristics  
Section 7.3.1 Apparent Density

No. of determinations : 3

CONDITIONING:

Unless otherwise specified, all test specimens were conditioned at 23 ± 2°C, 70 ± 15% relative humidity and tested at 23 ± 2°C, 50 ± 5% relative humidity.

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TEST RESULTS:

Test	Unit	'Fibre-Cement Board'				EN 12467 : R <sub>L</sub> Requirement
		'Grain'		'Across Grain'		
		1 <sup>st</sup> bending	2 <sup>nd</sup> bending	1 <sup>st</sup> bending	2 <sup>nd</sup> bending	
1. Bending Strength, average	MPa	6.2	10.9	6.4	11.0	0.75 minimum
2.						
a. Bending Strength After Warm Water, average	MPa	7.0	12.3	7.0	12.1	
b. Lowest Estimation	R <sub>L</sub>	1.1	1.1	1.0	1.1	
3.						
a. Bending Strength After Soak Dry, average	MPa	7.4	13.0	7.5	13.0	
b. Lowest Estimation	R <sub>L</sub>	1.1	1.2	1.1	1.2	
4.						
a. Bending Strength After Freeze And Thaw, average	MPa	7.7	14.0	7.6	13.9	
b. Lowest Estimation	R <sub>L</sub>	1.2	1.2	1.1	1.2	
5. Apparent Density, average	kg/m <sup>3</sup>	1349.6				

REMARKS:

1. The directions of the test samples were specified by the client.
2. Referenced to the test standard, for square samples, the first bending was conducted on new sample.
3. The sample after first bending was re-assembled and second bending was conducted on opposite direction.

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Mechanical Centre

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