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Crest Showers Ltd

BTS2217 CERTIFICATE OF TEST: TR220803-1

An Assessment of the Resistance of the "aquamox tile backer board"to Compression

1. Objective:

1.1 BEAL Testing Services were contracted by Crest Group Ltd to verify that the Crest Shower "aquamox hob" will meet the performance requirements of the New Zealand Building Code.

1.2 Testing was carried out to assess the ability of the product to meet the requirement of load resistance and durability after being waterproofed, tiled and stood on by users.

1.3 ASTM D1667-05 is an established method for the measurement of compression resistance of flexible cellular materials, which includes the aquamox tile backer board.

2. Methodology:

2.1 This method is based on a test procedure that is commonly used for the measurement of compression resistance of foam board products.

2.2 Test specimens were prepared from material supplied by Crest Group Ltd.

2.3 Seven 50mm x 50mm specimens were prepared and each identified with a label S1196-1 to 7.

3. Test Equipment:

3.1 Use was made of the Timius Olsen H5KS Universal Testing Machine together with compression platens (50mm x 50mm). See attached photos.

4. Criteria:

4.1 Acceptance of performance shall be based on the results of compression being comparable or better than similar XPS board already in use in the market.

4.2 Interpretation shall be undertaken by an expert from BEAL.

5. Condition of Samples

5.1 Samples are typically prepared at room conditions.

6. Sample Preparation:

6.1 Specimens shall be prepared (usually cut) to an accurate square 50mm x 50mm, ideally the maximum thickness should be approximately 10mm.

7. Test Conditions:

7.1 Testing is conducted at room conditions.

8. Result:

8.1 For aquamox tile backer board

Compression (mm)	Force after 60s (N)	Pressure (MPa)
3.18	886	0.335
3.18	423	0.160
3.18	845	0.320
3.18	873	0.330
3.18	861	0.326
Average:	**778**	**0.294**
SD:	199	0.075

8.2 For a similar product (XPS alone)

Compression (mm)	Force after 60s (N)	Pressure (MPa)
2.50	286	0.114
2.50	307	0.123
2.50	105	0.042
2.50	188	0.075
2.50	317	0.127
Average:	**241**	**0.096**
SD:	91	0.037

9. Comment:

9.1 The figures above indicate a much greater compression resistance for the aquamox tile backer board.

10. Attachments:

10.1 Relevant Photos.

Colin Prouse – Building Scientist
Authorised signatory
Building Element Assessment Laboratory Limited

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BUILDING ELEMENT ASSESSMENT LABORATORY LIMITED

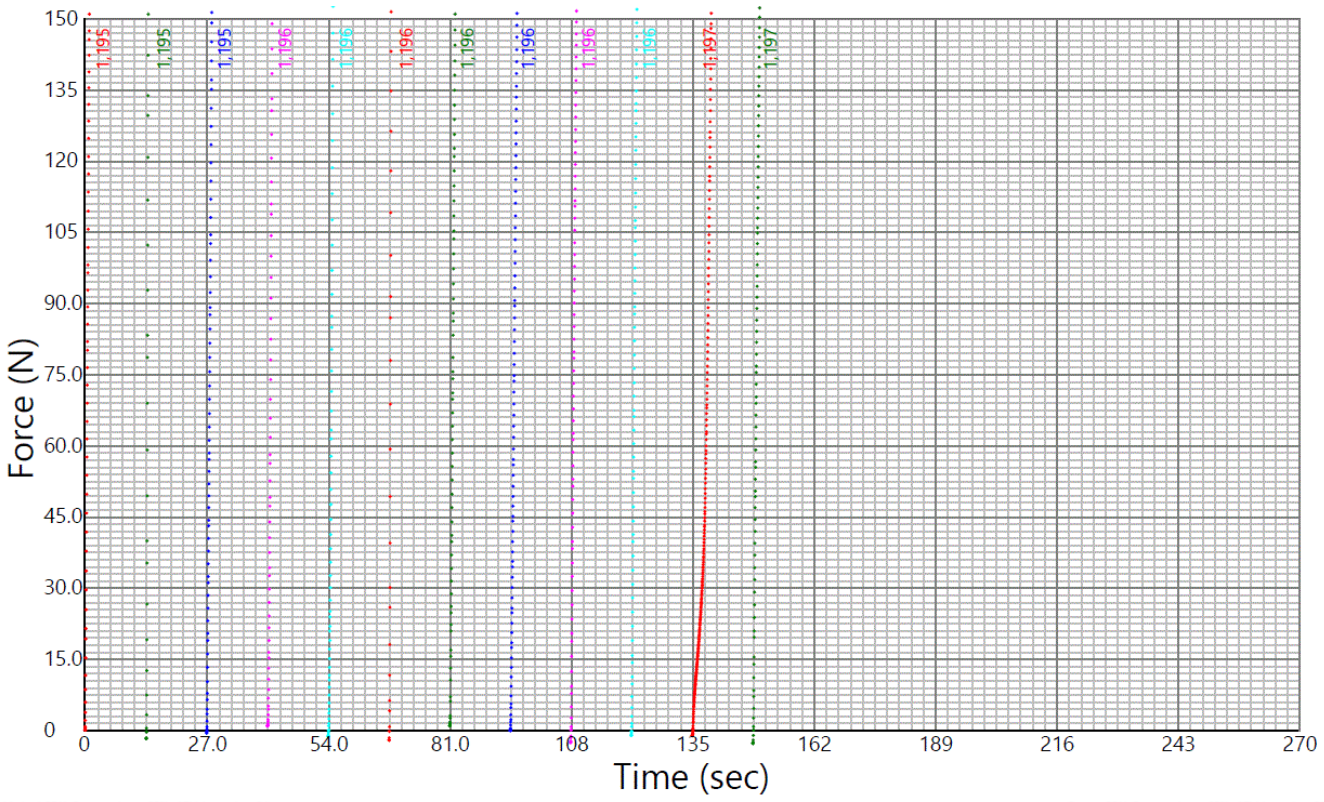
Mechanical Testing
Using a Tinius Olsen Universal Testing Machine
H5KS Machine Output

Tinius Olsen

Client:	Crest Showers
Job Number:	BTS2217
TR #:	TR220803-1&2
Product Name:	Aquamox 50mm upstand
Conditioning:	NIL
Tested by:	David Cunningham

Method Name:	BEAL Compression to 25% of Thickness
Standard:	ASTM D1667
Test Speed:	30.0 mm/min
Calibration:	NIL
Batch Start Date and Time:	3/08/2022 1:47 pm
Graph Offset:	5.00 %

Specimen #	Area mm²	Thickness mm	25% Thickness mm	Force at End N	Stress at End MPa	Max Force N	Ultimate Stress kPa
1195/2	2640	12.7	3.18	886	0.335	1170	443
1195/3	2640	12.7	3.18	423	0.160	701	265
1195/4	2640	12.7	3.18	845	0.320	1100	416
1195/5	2640	13.4	3.18	873	0.330	1130	427
1195/6	2640	13.3	3.14	861	0.326	1120	424
1195/7	2640	12.9	3.23	300	0.114	561	212
1196/1	2570	50.6	6.23	626	0.244	803	312
1196/2	2590	50.9	6.48	603	0.233	777	300
1196/3	2580	50.7	6.46	527	0.204	705	273
1196/4	2610	51.0	6.53	572	0.219	744	285
1196/5	2610	50.9	647	1120	0.430	1120	430
1196/6	2610	51.0	6.51	541	0.207	719	275
Average				682	0.260	888	339
SD						221	82.7
CoV						24.9	24.4



BEAL
BUILDING ELEMENT ASSESSMENT LABORATORY LIMITED

Mechanical Testing
Using a Tinius Olsen Universal Testing Machine
H5KS Machine Output

Tinius Olsen

Client:	BEAL
Job Number:	comp-1
TR #:	220815
Product Name:	Thermax-B XPS
Conditioning:	nil
Tested by:	David C

Method Name:	BEAL Compression to 25% of Thickness
Standard:	ASTM D1667
Test Speed:	30.0 mm/min
Calibration:	
Batch Start Date and Time:	15/08/2022 4:24 pm
Graph Offset:	N/F

Specimen #	Area mm²	Thickness mm	25% Thickness mm	Force at End N	Stress at End MPa	Max Force N	Ultimate Stress kPa
1	2500	10.0	2.50	286	0.114	372	149
2	2500	10.0	2.50	307	0.123	396	159
3	2500	10.0	2.50	105	0.0421	134	53.5
4	2500	10.0	2.50	188	0.0751	288	115
5	2500	10.0	2.50	317	0.127	415	166
Average				241	0.0962	321	128
SD						115	46.2
CoV						36.0	36.0