

TEST REPORT

DC13540-28-1

REPORT ON TESTING OF AQUAPROOF 110 MEMBRANE TO THE REQUIREMENTS OF AS/NZS 4858-2004

CLIENT
Pasco Construction Solutions Pty Ltd
241 Ingles St
Port Melbourne
VIC 3207
Australia

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TEST SUMMARY

Objective

Testing was completed to the requirements of AS/NZS 4858-2004 *Wet Area Membranes.*

Summary

Passing results were obtained for the 1.17 mm thick Aquaproof 110 membrane where requirements are stated in the AS/NZS 4858-2004 Standard. The Aquaproof 110 membrane samples supplied met the requirements to be classified as Class III (High Extensibility).

Test sponsor

Pasco Construction Solutions Pty Ltd
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Description of test specimen

The client supplied sheet membrane samples to be tested. The samples were received on 11 October 2021 and assigned the BRANZ Sample Reference 21/712.

LIMITATION

The results reported here relate only to the item/s tested.

TERMS AND CONDITIONS

This report is issued in accordance with the Terms and Conditions as detailed and agreed in the BRANZ Services Agreement for this work.

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SIGNATORIES

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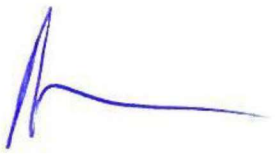

Reviewer

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DOCUMENT REVISION STATUS

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1	1 April 2022	Initial Issue

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1. SCOPE

The client requested testing of the Aquaproof 110 waterproofing membrane to the requirements of AS/NZS 4858-2004 *Wet area membranes.* Samples were prepared under specified conditions and testing was completed to AS/NZS 4858-2004 *Wet area membranes* and references the following standards: cyclic movement (CSIRO Moving Joint Test), water absorption (AS 3558.1), and water vapour transmission (ASTM E96). Tensile testing was completed on an Instron 5569 Universal testing machine and a 10 kN load cell was used to provide a constant rate of elongation. Testing commenced on 27 October 2021 and all testing was carried out on BRANZ premises.

2. SUMMARY

Table 1: Test result summary for Aquaproof 110 membrane based on AS/NZS 4858-2004 specifications.

TEST		SPECIFICS	RESULTS
(a) Moisture Vapour Transmission Rate[1]		ASTM E96 Desiccant method	6.62 g/m^2/d
(b) Water absorption (maximum)		AS 3558.1	0.48 %
(c) Resistance to Cyclic Movement		No fatigue cracking exhibited	Pass
Thickness[2]		Various methods	N/A
(d) Durability[3]		Average elongation at break.	
7 days	Deionised water at 23 ± 2°C	1159%	Pass
28 days		1087%	Pass
56 days		997%	Pass
7 days	Bleach at 23 ± 2°C	786%	Pass
28 days		851%	Pass
56 days		689%	Pass
7 days	Detergent at 23 ± 2°C	1161%	Pass
28 days		1124%	Pass
56 days		1140%	Pass
Heat Ageing 14 days at 80 ± 2°C & 2 days at 23 ± 2°C and 65 ± 15% RH		495%	Pass

Notes:

1. AS/NZS 4858-2004 Table 8.1 criteria states the product will be suitable for use over particle board as the WVTR is less than 8 g/m^2/d.
2. Thickness measurement – the product is a liquid applied waterproofing membrane. The thickness of the membrane will be determined by application.
3. Durability of membranes is a combined group of assessments as detailed in AS/NZS 4858-2004 Appendix A, Table A1.
4. Heat ageing to the requirements of AS 4654.1:2012 was conducted as that Standard states the heat ageing testing it requires is deemed to meet the requirements of AS/NZS 4858.

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3. MOISTURE VAPOUR TRANSMISSION RATE

3.1 Testing

Two samples were tested following the desiccant method of ASTM E96.

3.2 Results

Results are an average of 2 samples.

Table 2: Moisture Vapour Transmission Results

Thickness (mm)	WVTR (g/m2/24 hours)	Minimum result (g/m2/24 hours)	Maximum result (g/m2/24 hours)
1.05	6.62	6.1	7.13

AS/NZS 4858-2004 Table 8.1 criteria states the product will be suitable for use over particle board as the WVTR is less than 8 g/m^2/d.

4. WATER ABSORPTION

4.1 Testing

Test carried out in accordance with AS 3558.1, with a modified sample size of 50 mm x 50 mm by the thickness used in practice.

4.2 Results

Table 3: Water absorption

Sample no.	% water absorption
1	0.47
2	0.48
3	0.35

5. CYCLIC MOVEMENT

5.1 Resistance to Cyclic Movement AS/NZS 4858-2004 Appendix B

Samples of approximate dimensions 65 mm x 25 mm were subjected to 50 cycles whereby a gauge length of 2 mm was extended at a constant strain rate to 4 mm extension.

Observations were made when fully extended to examine for grazing, surface tears or membrane rupture.

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5.2 Testing

Testing carried out in accordance with AS/NZS 4858-2004 Appendix B Assessment of resistance of waterproofing membranes to cyclic movement.

Sample	Aquaproof 110
Sample code	21/712
Material class	III
Test time	2 hours
Cyclic extension	4 mm
Rate of extension	3.34 mm/min

5.3 Results

The test sample achieved a control elongation at break of % as per AS/NZS 4858-2004 Appendix B. For a Class III membrane the extension movement used for cycling is 4 mm.

Number of cycles completed:	50
Surface crazing:	Nil
Surface tears:	Nil
Membrane Rupture:	Nil
Results:	Pass

For Class III high extensibility membranes, the minimum bond breaker/tape width to bridge joints opening up by 5 mm is 12 mm as per AS/NZS 4858-2004 Table 6.1.

6. DURABILITY

6.1 Durability Testing

Test specimens were prepared in accordance with AS 1145.3 (type 5 specimen) and were conditioned for 7 days at 23 ± 2°C and 65 ± 15% relative humidity prior to being tested. Testing was then carried out in accordance with AS/NZS 4858-2004 Appendix A.

6.2 Results

Table 4: Control results

Thickness (mm)	Max Load (N)	Max Stress (MPa)	Elongation at break (%)	Class
1.17	23.74	3.39	1041	Class III (High Extensibility)

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Table 5: Immersion ageing results

Soultion	Aged Period	Thickness (mm)	Max Load (N)	Max Stress (MPa)	Elongation at break (% of control)
De-ionized water	7 Days	1.21	24.49	3.38	111%
	28 Days	1.19	23.97	3.34	104%
	56 Days	1.20	21.87	3.04	96%
Bleach	7 Days	0.98	6.47	1.08	75%
	28 Days	1.23	17.44	2.36	82%
	56 Days	1.17	9.11	1.29	66%
Detergent	7 Days	1.20	21.72	3.03	112%
	28 Days	1.13	20.18	2.97	108%
	56 Days	1.16	21.16	3.03	110%

Heat ageing to the requirements of AS 4654.1 was conducted as that Standard states the heat ageing testing it requires is deemed to meet the requirements of AS/NZS 4858. This involved conditioning the test specimens (AS 1145.3 type 2 specimens) in an oven set at 80 ± 2°C for a period of 14 days followed by 2 days at 23 ± 2°C and 65 ± 15% relative humidity before being tested for strength and elongation at break.

Table 6: Control results to AS 4654.1:2012 using AS 1145.3 type 2 specimens.

Thickness (mm)	Max Load (N)	Max Stress (MPa)	Elongation at break (%)
1.05	58.67	2.24	560

Table 7: Heat aged test results to AS 4654.1:2012 using AS 1145.3 type 2 specimens

Thickness (mm)	Max Load (N)	Max Stress (MPa)	Elongation at break (%)	Elongation at break (% of control)
1.15	66.2	2.30	496	88%

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