



TEST REPORT

DC16981-08-01

REPORT ON TESTING OF WPM 1000 MEMBRANE TO THE REQUIREMENTS OF AS/NZS 4858-2004

CLIENT

Ardex Australia Pty Ltd
PO Box 796
Seven Hills NSW 1730
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 1.25 mm thick WPM 1000 membrane where requirements are stated in the AS/NZS 4858-2004 Standard. The WPM 1000 membrane samples supplied met the requirements to be classified as Class III (High Extensibility).

Test sponsor

Ardex Australia Pty Ltd
PO Box 796
Seven Hills NSW 1730
Australia

Description of test specimen

The client supplied sheet membrane samples to be tested. The samples were received on 8 January 2023 and assigned the BRANZ Sample Reference 23/015.

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



Author

Sarah Cooley
Contract Scientist
BRANZ



Reviewer

Cameron Tristram
Materials Technical Manager
BRANZ
Authorised to review this report.



Authorised by

Cameron Tristram
Materials Technical Manager
BRANZ
Authorised to release this report to the client.

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1. SCOPE

The client requested testing of the WPM 1000 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.

2. SUMMARY

Table 1: Test result summary for WPM 1000 membrane based on AS/NZS 4858-2004 specifications.

TEST	SPECIFICS	RESULTS
(a) Moisture Vapour Transmission Rate ¹	ASTM E96 Desiccant method	0.62 g/m ² /d
(b) Water absorption (maximum)	AS 3558.1	0.91 %
(c) Resistance to Cyclic Movement	No fatigue cracking exhibited	Pass
Thickness	Various methods	N/A
(d) Durability ²	Average retention of elongation at break compared to control elongation of 1271 %	
7 days	96 %	Pass
28 days Deionised water at 23 ± 2°C	96 %	Pass
56 days	97 %	Pass
7 days	93 %	Pass
28 days Bleach at 23 ± 2°C	92 %	Pass
56 days	92 %	Pass
7 days	98 %	Pass
28 days Detergent at 23 ± 2°C	96 %	Pass
56 days	90 %	Pass
Heat Ageing 7 days at 50 ± 2°C & 2 days at 23 ± 2°C and 65 ± 15% RH	101 %	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/m²/d.
2. Durability of membranes is a combined group of assessments as detailed in AS/NZS 4858-2004 Appendix A, Table A1.



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3. MOISTURE VAPOUR TRANSMISSION RATE

3.1 Testing

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

3.2 Results

Results are an average of 3 samples.

Table 2: Moisture Vapour Transmission Results

Thickness (mm)	WVTR (g/m ² /24 hours)	Minimum result (g/m ² /24 hours)	Maximum result (g/m ² /24 hours)
1.25	0.62	0.00	1.74

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/m²/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	Water absorption (%)
1	0.91
2	0.55
3	0.68

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	WPM 1000
Sample code	20/015
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 1271 % 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 $23 \pm 2^\circ\text{C}$ and $65 \pm 15\%$ 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
1.25	66.73	10.03	1271	III (high extensibility)



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Table 5: Immersion ageing results

Solution	Aged period	Thickness (mm)	Max Load (N)	Max Stress (MPa)	Elongation at break (%)
De-ionised water	7 days	1.29	67.67	8.73	1219
	28 days	1.27	68.62	8.98	1217
	56 days	1.29	59.39	7.67	1234
Bleach	7 days	1.21	60.75	8.34	1165
	28 days	1.30	56.72	7.30	1154
	56 days	1.33	49.33	6.19	1147
Detergent	7 days	1.27	68.08	8.91	1242
	28 days	1.29	60.59	7.82	1215
	56 days	1.35	57.15	7.06	1150

After conditioning the test specimens were heat aged in an oven set at $50 \pm 2^\circ\text{C}$ for a period of 7 days followed by 2 days at $23 \pm 2^\circ\text{C}$ and $65 \pm 15\%$ relative humidity before being tested for strength and elongation at break.

Table 6: Heat aged test results to AS/NZS 4858-2004 using AS 1145.3 type 5 specimens.

Thickness (mm)	Max Load (N)	Max Stress (MPa)	Elongation at break (%)
1.2	69.8	10.09	1289