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TEST REPORT

DC3004-011

TESTING OF 1.5 MM ARDEX WPM 715 G MEMBRANE TO THE REQUIREMENTS OF AS4654.1 2012

CLIENT

Ardex New Zealand Limited
32 Lane Street
Woolston
Christchurch

PROJECT NUMBER:

DC3004

ISSUE DATE:

23 July 2018

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TEST SUMMARY

Objective

Testing was completed to show 1.5 mm ARDEX WPM 715 G membrane will meet the requirements of AS4654.1 2012 *Waterproofing membranes for external above-ground use Part 1: Materials*.

Summary

Passing results were obtained where requirements are stated in the AS4654.1 2012 Standard. The 1.5 mm ARDEX WPM 715 G will meet the requirements to be classified as Class III (high extensibility).

Test sponsor

Ardex New Zealand Limited
32 Lane Street
Woolston
Christchurch

Description of test specimen

The client supplied sheet membrane samples to be tested.

LIMITATION

The results reported here relate only to the items 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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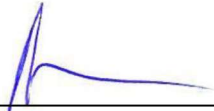
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DOCUMENT REVISION STATUS

ISSUE NO.	DATE ISSUED	DESCRIPTION
1	13 July 2018	Initial Issue
2	23 July 2018	Corrected Summary Table



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1. SUMMARY

AS4654.1 Table 2.1 Requirements – Fully Bonded Membranes – 1.5 mm ARDEX WPM 715 G

Note : #Results from testing 1.0mm ARDEX WPM 710 B

PROPERTY REQUIRED	METHOD	RESULTS	
#Abrasion resistance	AS1580.403.2	Regular vehicle traffic	
#Bond strength	ASTM C794	Concrete 25 N Plywood 18 N	
#Cyclic movement	CSIRO Moving Joint Test		Pass
#Dimensional stability	ASTM D6207	Maximum length change < 1 mm	
#Elongation at break	AS4654.1 Appendix A	>3.93 MPa >500 % Elongation	Class III
Field seam strength	N/A	N/A - achieved by the overlap and the method of adhesion	
#Heat ageing	AS/NZS4858	>6.33 MPa >500 % Elongation	
#Temperature resistance	AS4654.1 Clause 2.6		Pass
Ultraviolet resistance	AS4654.1 Table A4	After 4224 hours QUV exposure	Pass
#Tensile strength	AS4654.1 Table A4	>3.93 MPa >500 % Elongation	
Thickness	Various methods	1.50 mm (mean of sample supplied)	
#Durability	AS4654.1 Table A4	See Note 1	
#Water vapour transmission rate	ASTM E96	0.07 g/m ² /24 hours	

Notes:

1. Durability of membranes is a combined group of assessments as detailed in AS4654.1 Appendix A, Table A4.

#Control >3.93 MPa >500% Elongation

#Water immersion >3.99 MPa >500% Elongation

#Detergent immersion >3.80 MPa >500% Elongation

#Heat ageing >6.33 MPa >500% Elongation

Ultra violet >6.95 MPa >500% Elongation

Bioresistance Manufacturing guidelines for bioresistance to be followed



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2. ABRASION RESISTANCE

2.1 Testing

Testing carried out in accordance with AS 1580.403.2 using H22 wheels for 1000 cycles. 1000g load on each wheel.

2.2 Results

Results are an average of 6 measurements.

Note : Results from testing 1.0mm ARDEX WPM 710 B

Specimen	Average abraded depth (mm)
#1	0.03
#2	0.04

Max Loss: 0.04 mm

Clause 2.3.2 Trafficable

Pedestrian traffic only – abrasion depth less than 0.2 mm

Occasional service vehicle traffic – abrasion depth less than 0.1 mm

Regular vehicle traffic – abrasion depth less than 0.05 mm

Classification:

Regular vehicle traffic

3. BOND STRENGTH

3.1 Testing

Testing carried out in accordance with ASTM C794.

3.2 Results

Results are an average of 8 samples.

Note : Results from testing 1.0mm ARDEX WPM 710 B

Substrate	Average peel strength (N)
Concrete	25 N
Plywood	18 N



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4. CYCLIC MOVEMENT

4.1 Testing

Testing carried out in accordance with AS4654.1 Appendix B Assessment of resistance of waterproofing membranes to cyclic movement.

4.2 Results

Number of cycles:	50
Cycle Time:	2 hours
Cycle expansion:	50% of control elongation at break
Sample size:	65 mm x 25 mm
Sample span:	4 mm between plates
Sample thickness:	1.00 mm

The test sample achieved a control elongation at break of >500% as per AS4654 Appendix A. For a Class III membrane the extension movement used for cycling is 4mm.

Number of cycles completed:	50
Surface crazing:	Nil
Surface tears:	Nil
Membrane rupture:	Nil
Result:	Meets the requirement for the Moving Joint Test

Note : Results from testing 1.0mm ARDEX WPM 710 B

5. DIMENSIONAL STABILITY

5.1 Testing

Test carried out in accordance with D6207-03.



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5.2 Results

Note : Results from testing 1.0mm ARDEX WPM 710 B

Orientation	Length measurements (mm)				Initial - Final readings (mm)	Max change in length (mm)	
	Initial Dry reading	Cycle 1 readings		Cycle 2 readings			
		Wet	Dry	Wet			Dry
Lengthwise	900	900	900	900	900	0	0
Widthwise	900	900	900	900	900	0	0

6. ELONGATION AT BREAK

6.1 Testing

Test carried out in accordance with AS4654.1 Appendix A.

6.2 Results

Results are an average of 6 samples.

Note : Results from testing 1.0mm ARDEX WPM 710 B

Mean sample thickness (mm)	Tensile strength (MPa)	Elongation at break (%)
1.00	>3.93	>500

Requirement for Class III: The specimens have an elongation at break of >300%

Classification: Class III (high extensibility)

7. HEAT AGEING

7.1 Testing

Testing carried out in accordance with AS4654.1 Appendix A.

7.2 Results

Results are an average of 6 samples.

Note : Results from testing 1.0mm ARDEX WPM 710 B

Mean sample thickness (mm)	Tensile strength (MPa)	Elongation at break (%)
1.00	>6.33	>500



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Requirement: The specimens require an elongation at break greater than 50% of the control sample. There was no deterioration in the elongation at break performance.

Result: Pass

8. TEMPERATURE RESISTANCE

8.1 Testing

Testing carried out in accordance with AS4654.1 Appendix A. Samples were exposed for 2 days at 85°C and 2 days at -15°C.

8.2 Results

Results are an average of 5 samples.

Note : Results from testing 1.0mm ARDEX WPM 710 B

Mean sample thickness (mm)	Tensile strength (MPa)	Elongation at break (%)
1.00	>6.68	>500

Requirement: The membrane shall remain waterproof when subjected to temperatures likely to be encountered in use: for Australia these would be within the range -15°C to 85°C.

Samples shall exhibit no cracking, fractures or surface defects after exposure.

Result : Pass

9. ULTRA VIOLET RESISTANCE

9.1 Testing

Testing carried out in accordance with AS4654.1 Table A4, 4224 hours in a QUV.

9.2 Results

Note : Results from testing 1.0mm ARDEX WPM 710 G

Mean sample thickness (mm)	Tensile strength (MPa)	Elongation at break (%)
1.00	>6.95	>500



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10. TENSILE STRENGTH

10.1 Testing

Testing carried out in accordance with AS4654.1 Appendix A.

10.2 Results

Results are an average of 6 samples.

Note : Results from testing 1.0mm ARDEX WPM 710 B

Mean sample thickness (mm)	Tensile strength (MPa)	Elongation at break (%)
1.00	>3.93	>500

11. DURABILITY

11.1 Testing

Testing carried out in accordance with AS4654.1 Appendix A.

11.2 Results

Note : Results from testing 1.0mm ARDEX WPM 710 B, UV testing on WPM710 G

	Tensile Strength	Elongation at break	Pass / Fail
Control	>3.93 MPa	>500 % Elongation	N/A
Water immersion	>3.99 MPa	>500 % Elongation	Pass
Detergent immersion	>3.80 MPa	>500 % Elongation	Pass
Heat ageing	>6.33 MPa	>500 % Elongation	Pass
Ultra violet*	>6.95 MPa	>500 % Elongation	Pass
Bioresistance	Manufacturing guidelines for bioresistance to be followed		

*Mean of 3 results only

12. WATER VAPOUR TRANSMISSION RATE

12.1 Testing

Testing carried out in accordance with ASTM E96 desiccant method.



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12.2 Results

Note : Results from testing 1.0mm ARDEX WPM 710 B

Thickness (mm)	Mean WVTR (g/m ² /24 hours)
1.00	0.07



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