



Registered Testing Authority - CSIRO

24 April 2017

Our Ref: EN13 / 2499 03/0211

TEST REPORT No. 8061.2
[Supersedes Report No. 7861.2]

Requested by: Wet-seal Management Pty Ltd
6 Forge Drive
Coffs Harbour
NSW 2450

On (date): 20 February 2017
Product Descriptions: Wet-seal Enviro-coat Waterproofing Membrane - Below Ground GS 211

Manufacturer: UREKA

Sampling Details
Date: 20 February 2017
How (methods): Delivered to Clayton

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This test report consists of 11 pages.

SUMMARY OF ASSESSMENTS REPORTED

AS/NZS 4858:2004	Appendix A, Durability of waterproof membranes	Pass
AS/NZS 4858:2004	Appendix B, Resistance of Waterproofing Membranes to Cyclic Movement	Pass
AS 3558.-1999	Water Absorption	6.27%
ASTM E96	Moisture Vapour Transmission	Pass

TERM OF VALIDITY

This CSIRO wet area membrane report will lapse three years after the initial date of issue and assessment unless revalidation has been requested and granted.

The validity date for report 8061.2 is 24 April 2020



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MANUFACTURER: Wet-seal Management Pty Ltd
PRODUCT DESC: Wet-seal Enviro-coat Waterproofing Membrane - Below Ground GS 211

SUMMARY OF RESULTS

AS4858:2004 Wet Area Membranes

Appendix A: Assessment of Durability of waterproof membranes

The sample requires an elongation at break strain percentage greater than 37% at 56 days.

Note: (37% equates to 50% of control elongation at break strain percentage).

Durability of membranes: Elongation to break	Strain %	
Control	74%	Class II
Water Immersion	65%	PASS
Bleach Immersion	67%	PASS
Detergent Immersion	53%	PASS
Heat Ageing @ 50 °C	70%	PASS

Wet-seal Management Pty Ltd test sample, Wet-seal Enviro-coat Waterproofing Membrane - Below Ground GS 211 achieves the performance requirements of AS/NZS 4858: 2004 Durability of Membranes for Class II membrane installation.

Appendix B: Assessment of resistance of waterproofing membranes to cyclic movement

Class II type membrane: 2mm gauge length for a 0.37mm extension, repeated 50 cycles.

Requirement: No fatigue cracking exhibited.

Result: **PASS**

The Water Vapour Transmission (WVT) in accordance to ASTM E96: 1.21g/m²/24h

Appendix C: Suitability of waterproofing membranes when used over particle board

Appendix C will not be required as the Wet-seal Enviro-coat Waterproofing Membrane - Below Ground GS 211 has a water vapour transmission below 8g/m²/24h.

AS 3558.1 Methods of testing plastics & composite materials sanitary plumbing fixtures:

Method 1: Determination of water absorption characteristics

Water absorption:	Sample 1	5.95%	
	Sample 2	6.27%	
	Sample 3	3.67%	Maximum 6.27%

Conclusion: Wet-seal Enviro-coat Waterproofing Membrane - Below Ground GS 211 does not require a 'Suitability over particleboard' to pass the requirements of AS/NZS 4858 Wet area membranes.



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TEST CARRIED OUT IN ACCORDANCE WITH AS4858:2004 Wet Area Membranes Test Date: 10 March 2017
Appendix A: Assessment of Durability of waterproof membranes

RESULTS: Location: Ceramic Tile Laboratory
Conditions: 7 days at 23°C 50%RH
Sample Number: 8061.2 - 1 (Numbered 1 to 5)
Samples: Average of 5 samples
Load rate: 50mm/min

Elongation at Break

CONTROL SET

Sample Number	Sample Thickness Mean (mm)	Maximum Load (N)	Maximum Extension (mm)	Maximum Stress MPa	Maximum Strain %
8061.2 – 1 1 to 5	0.90	29.57	24.51	5.48	74

Requirement for Class II: The specimens have an average percentage strain of $\geq 60\%$ & $\leq 299\%$

Classification: Class II (Medium extensibility)



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TEST CARRIED OUT IN ACCORDANCE WITH Test Date: 24 April 2017
AS4858:2004 Wet Area Membranes
Appendix A: Assessment of Durability of waterproof membranes

RESULTS: Location: Ceramic Tile Laboratory
Conditions: 7 days at 23°C 50%RH
Sample Number: 8061.2 - 3 (Numbered 1 to 9)
Samples: Average of 3 samples
Load rate: 50mm/min
Solution: 1L of deionised water

Elongation at Break

WATER IMMERSION

Period & Sample Number	Sample Thickness Mean (mm)	Maximum Load (N)	Maximum Extension (mm)	Maximum Stress MPa	Maximum Strain %
7 Days 8061.2 – 3 1 to 3	0.61	35.70	18.21	9.75	55
28 Days 8061.2 – 3 4 to 6	0.65	24.31	22.11	6.23	67
56 Days 8061.2 – 3 7 to 9	0.69	29.90	21.49	7.22	65

Requirement: The sample requires an elongation at break strain greater than 37% at 56 days without additional bond relief. Between 37% and 19% additional bond strength is required. Less than 19% - fail.

Result: **65%** **PASS**



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TEST CARRIED OUT IN ACCORDANCE WITH Test Date: 24 April 2017
AS4858:2004 Wet Area Membranes
Appendix A: Assessment of Durability of waterproof membranes

RESULTS: Location: Ceramic Tile Laboratory
Conditions: 7 days at 23°C 50%RH
Sample Number: 8061.2 - 5 (Numbered 1 to 9)
Samples: Average of 3 samples
Load rate: 50mm/min
Solution: 1L of 10.5 g/L sodium hypochlorite & 2.25 g/L of sodium hydroxide

Elongation at Break

BLEACH IMMERSION

Period & Sample Number	Sample Thickness Mean (mm)	Maximum Load (N)	Maximum Extension (mm)	Maximum Stress MPa	Maximum Strain %
7 Days 8061.2 – 5 1 to 3	0.74	26.16	26.40	5.89	80
28 Days 8061.2– 5 4 to 6	0.77	30.16	24.59	6.53	75
56 Days 8061.2 – 5 7 to 9	0.78	34.23	22.19	7.31	67

Requirement: The sample requires an elongation at break strain greater than 37% at 56 days without additional bond relief. Between 37% and 19% additional bond strength is required. Less than 19% - fail.

Result: **67%** **PASS**



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TEST CARRIED OUT IN ACCORDANCE WITH AS4858:2004 Wet Area Membranes Test Date: 24 April 2017
Appendix A: Assessment of Durability of waterproof membranes

RESULTS: Location: Ceramic Tile Laboratory
Conditions: 7 days at 23°C 50%RH
Sample Number: 8061.2 - 4 (Numbered 1 to 9)
Samples: Average of 3 samples
Load rate: 50mm/min
Solution: 1L of 2% solution N8 detergent

Elongation at Break

DETERGENT IMMERSION

Period & Sample Number	Sample Thickness Mean (mm)	Maximum Load (N)	Maximum Extension (mm)	Maximum Stress MPa	Maximum Strain %
7 Days 8061.2 – 4 1 to 3	0.81	34.01	25.37	7.00	77
28 Days 8061.2 – 4 4 to 6	0.83	45.93	21.06	9.11	64
56 Days 8061.2 – 4 7 to 9	0.84	41.36	17.62	8.21	53

Requirement: The sample requires an elongation at break strain greater than 37% at 56 days without additional bond relief. Between 37% and 19% additional bond strength is required. Less than 19% - fail.

Result: **53%** **PASS**



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TEST CARRIED OUT IN ACCORDANCE WITH Test Date: 18 April 2017
AS/NZS 4654.1:2012 Wet Area Membranes
Appendix A: Assessment of Durability of waterproof membranes

RESULTS: Location: Ceramic Tile Laboratory
Conditioning: 23°C 50%RH
Sample Number: 8061.2 - 2 (Numbered 1 to 4)
Samples: Average of 4 samples
Load rate: 50mm/min

Elongation at Break

HEAT AGEING @ 50 °C

Sample Number	Sample Thickness Mean (mm)	Maximum Load (N)	Maximum Extension (mm)	Maximum Stress MPa	Maximum Strain %
8061.2- 2 1 to 4	0.94	38.25	23.07	6.78	70

Requirement: The sample requires an elongation at break strain greater than 37% at 7 days. Less than 37% - fail.

Result: **70% PASS**



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TEST CARRIED OUT IN ACCORDANCE WITH Test Date: 31 March 2017
AS4858:2004 Wet Area Membranes
Appendix B: Assessment of Resistance of
Waterproofing Membranes to Cyclic Movement

RESULTS: Location: Laboratory
Test Rig: Applied Test Systems
Series 904 Vertical Sealant Tester
Number of Cycles: 50
Type of Cycle: Full cycle
Cycle Time: 2 hours to complete full cycle
Cycle expansion: 50% of Control elongation at break
Sample Size: 65mm x 25mm
Sample Span: 4mm between header plates
Sample Thickness: 0.95mm

The test sample achieved a control Elongation of Break of 74% as per AS4858 Appendix A. For a Class II membrane type the extension movement used for cycling is 0.37mm extension.

Number of Cycles completed	50
Surface Crazeing	Nil
Surface Tears	Nil
Membrane Rupture	Nil

Result: PASS



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TEST CARRIED OUT IN ACCORDANCE WITH ASTM E96: Moisture Vapour Transmission Rate Test Date: 24 March 2017

RESULTS: Location: Ceramic Tile Laboratory
Open mouth dish: Diameter 100mm
Test Period: 456 hours
Conditions: 23°C / RH 50%
Desiccant: Silica gel

Desiccant Method (Procedure A)

Sample	Thickness (mm)	Water Vapour Tx g/m ² /24hr	Permeance Perms (in. lbs)
Specimen 1	0.81	1.16	22.33
Specimen 2	0.79	1.33	25.62
Specimen 3	0.77	1.14	21.93
Mean	0.79	1.21	23.29

Requirement: If > 8g/m²/24 hours, additional testing referred to in (e) of Table A1 will be required to establish suitability for use over particleboard.

Permeance: 23.29 Perms (in. lbs)

Water Vapour Tx: 1.21g/m²/24 hours

Result: PASS



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TEST CARRIED OUT IN ACCORDANCE WITH AS 3558.1-1999: Water Absorption Test Date: 11 April 2017

RESULTS: Location: Ceramic Tile Laboratory
Test Period: 24 hours
Conditions: 23°C / RH 50%

Sample	Thickness (mm)	Water Absorption		
		Mass (m1)	Mass (m2)	% Mass Difference
Specimen 1	0.87	7.90	8.37	5.95
Specimen 2	0.79	7.98	8.48	6.27
Specimen 3	0.79	8.72	9.04	3.67
Mean	0.82	8.20	8.63	5.30

Requirement: Determine maximum water absorption as mean difference %

Result: 6.27%



Infrastructure Technologies

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Date and Place 24 April 2017 Clayton, Vic

Name, Title and Signature:



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