

TEST REPORT



Accredited for compliance with ISO/IEC 17025 – Testing
20678

TEST SUMMARY

Objective

Assessment of ACTFLEX 929 SPU AS 4654.1-2012

Project

Assessment of ACTFLEX 929 SPU to AS/NZS 4858:2004

Report Number

242-3 AS 4654.1-2012

Customer

NAME	Actech Protective Coatings
ADDRESS	22/872 Canterbury Road Roselands, Sydney 2196
CONTACT PERSON	James Gilto
EMAIL	admin@actechpc.com.au
TELEPHONE	02 8021 3517

Name of test material

Actflex 929 SPU

Description of test material

Moisture Cured Polyurethane

Date of receipt of test material

30/05/2023

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Testing Facility and Location

NAME	XTec Gen Pty Ltd
ADDRESS	30-32 Park Avenue Woodville North 5012
ABN	22634729294

LIMITATION

The test results reported here relate only to the items tested.

CUSTOMER SUPPLIED INFORMATION & DATA

2 coats @ 0.7mm. expected dry film 1.2mm

Dry film supplied

TERMS AND CONDITIONS

This report is issued in accordance with the Terms and Conditions as detailed and agreed in the *XTecGen Test Request and Sample Submission Form*.

SIGNATORIES

Author

Ruby Scardigno

Laboratory Technician

Reviewer

Eric Scardigno

Laboratory Manager

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Laboratories"*

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SUMMARY OF TESTS

AS4654.1 Requirements:

PROPERTY	METHOD	RESULT	ASSESSMENT CRITERIA	ASSESSMENT
Bond Strength	ASTM C794	30.76 N	State result	
Acceptance of Cyclic movement	AS 4654.1 Appendix B	Failure not observed	AS 4654.1 Appendix B, Paragraph B4	PASS
Durability: Control Elongation at Break	AS1145.3	511%	AS 4654.1 Appendix A, Table A1	CLASS III
Durability: Control Tensile Strength		3.17 MPa	State result	
Durability: Water Immersion Elongation at Break	AS 4654.1 Appendix A	744 %	AS 4654.1 Appendix A, Table A4	PASS
Durability: Water Immersion Tensile Strength		3.06 MPa	State result	
Durability: Detergent Immersion Elongation at Break		781 %	AS 4654.1 Appendix A, Table A4	PASS
Durability: Detergent Immersion Tensile Strength		2.88 MPa	State result	
Durability: Heat Aging Elongation at Break	N/A	504 %	AS 4654.1 Appendix A, Table A4	PASS
Durability: Heat Aging Tensile Strength		3.78 MPa	State result	
Temperature Resistance	AMTM004	7.76 g/m ² /24 hours	State result	
Water Vapour Transmission	ASTM E96	7.76 g/m ² /24 hours	State result	

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BOND STRENGTH

Date of test: 21/09/2023

Testing

Testing carried out in accordance with ASTM C794.

Additions, deviations and/or exclusions from ASTM C794:

Nil

Specimen Preparation:

PARAMETER	VALUE
Substrate	Concrete block
Substrate preparation	Wiped with damp cloth, then primed
Substrate primer	EP250
Mesh preparation	n/a
Mesh primer	n/a

Test Results:

READING	PEAK PEEL FORCE (N)	MODE OF FAILURE			
		SUBSTRATE FAILURE (%)	ADHESIVE FAILURE (%)	COHESIVE FAILURE (%)	SCREEN DELAMINATION (%)
Specimen 1 Reading 1	28.10	95	0	5	0
Specimen 1 Reading 2	38.23	95	0	5	0
Specimen 1 Reading 3	29.58	95	0	5	0
Specimen 1 Reading 4	52.94	90	0	10	0
Specimen 2 Reading 1	31.26	100	0	0	0

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Specimen 2 Reading 2	6.85	100	0	0	0
Specimen 2 Reading 3	4.41	100	0	0	0
Specimen 2 Reading 4	17.56	95	0	5	0
Specimen 3 Reading 1	47.13	95	0	5	0
Specimen 3 Reading 2	55.22	90	0	10	0
Specimen 3 Reading 3	33.52	90	0	10	0
Specimen 3 Reading 4	24.31	95	0	5	0
Average	30.76				
Std Dev	16.27				

Result: 30.76N

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CYCLIC MOVEMENT

Date of test: 12/06-16/06/2023

Testing:

Testing carried out in accordance with AS 4654.1 Appendix B “Assessment of resistance of waterproofing membranes to cyclic movement”

Additions, deviations and/or exclusions from AS 4654.1 Appendix B:

Nil

Test Parameters:

PARAMETER	VALUE
Membrane class	III
Number of cycles	50
Cycle time	2 Hours
Cycle expansion	4 mm
Sample Size	65 mm x 25 mm
Sample span	2 mm between plates
Sample thickness	1.351mm

Test Results:

TEST RESULT	VALUE
Number of cycles completed	50
Surface crazing	Nil
Surface tears	Nil
Membrane rupture	Nil

Test Observations:

DAY	DATE	NUMBER OF CYCLES	Failure Observed	
			RUPTURE/HOLING	OTHER
1	12/06/2023	0	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
2	13/06/2023	9	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
3	14/06/2023	21	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
4	15/06/2023	33	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5	16/06/2023	50	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

Passing requirement: “Any rupture holing the specimen or extending through the thickness for more than 1mm in from the edge of the specimen shall be taken as a failure and the number of cycles to failure shall be reported. If failure does not occur after 50 cycles it shall be reported together with the

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types of any surface defects that have been induced and the number of cycles at which onset of the defect occurred”

Result: Pass. Meets the requirement for CSIRO moving joint test as per AS 4654.1 Appendix B.

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DURABILITY OF MEMBRANE

CONTROL SET

Date of test: 7/06/2023

Testing: Test carried out in accordance with AS 1145.3.

Additions, deviations and/or exclusions from AS 1145.3: Nil

Test Parameters:

PARAMETER	VALUE
Ambient temperature (conditioning)	23.0-23.8°C
Ambient humidity (conditioning)	52.8-54.8%
Ambient temperature (testing)	22.8°C
Ambient humidity (testing)	51.6% RH
Accuracy grading of test machine	A
Specimen type	Type 2
Elongation measurement type:	Electronic internal measurement
Method of preparation of specimens	Dry Film Supplied
Orientation of specimens to direction of cast	Parallel to direction of casting blade
Clamping device:	Pneumatic jaws
Testing speed:	50mm/min

Test Results:

Replicate	Sample thickness (mm)	Maximum Extension (mm)	Tensile Strength (MPa)	Elongation at Break (%)
1	1.256	523.459	3.268	785.666
2	1.394	529.738	3.032	401.621
3	1.257	344.844	2.929	367.318
4	1.253	424.331	3.082	446.233
5	1.231	581.495	3.517	555.974
Mean	1.28	480.8	3.17	511
Std Deviation	0.07	94.9	0.23	169

Requirement for Class III (high extensibility): $\geq 300\%$ elongation at break

Requirement for Class II (medium extensibility) 60-299% elongation at break

Requirement for Class I (low extensibility) $< 60\%$ elongation at break.

Classification: Class III

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DURABILITY OF MEMBRANE

WATER IMMERSION

Date of test: 13/07-31/08/2023

Testing:

Test carried out in accordance with AS 4654.1 Appendix A.

Additions, deviations and/or exclusions from AS 4654.1 Appendix A:

Nil

Test Parameters:

PARAMETER	VALUE
Ambient temperature (conditioning)	23.0-23.8°C
Ambient humidity (conditioning)	52.8-54.8%
Ambient temperature (testing)	22.0-26.4°C
Ambient humidity (testing)	29.2-48.8% RH
Minimum accuracy grading of test machine	A
Specimen type	Type 2
Elongation measurement type:	Electronic internal measurement
Method of preparation of specimens	Dry Film Supplied
Orientation of specimens to direction of cast	Parallel to direction of casting blade
Clamping device:	Pneumatic jaws
Testing speed:	50mm/min

Test Results:

Sample Number	Sample thickness (mm)	Maximum Extension (mm)	Tensile strength (MPa)	Elongation at break (%)
1	1.29	385.8	3.49	772
2	1.08	335.3	3.75	670
3	1.28	391.1	3.63	782
7 Day Means	1.22	370.8	3.62	741
7 Day Std Devs	0.12	30.8	0.13	62
4	1.27	399.3	3.18	798
5	1.24	387.3	3.25	774
6	1.22	317.9	3.16	636
28 Day Means	1.24	368.2	3.20	736
28 Day Std Devs	0.03	44.0	0.04	88
7	1.32	344.1	2.93	688

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8	1.29	370.6	3.09	741
9	1.30	400.8	3.17	801
56 Day Means	1.30	371.8	3.06	744
56 Day Std Devs	0.01	28.4	0.12	57

Passing Requirement: *“Elongation at break shall not be less than 25% retention of elongation at break of the controls”* [58] Table 6.1. A failure is for less than 25% retention of elongation at break of the controls”.

To pass this condition an elongation at break value of 128% or greater is required.

Result: 744% PASS

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DURABILITY OF MEMBRANE

DETERGENT IMMERSION

Date of test: 13/07-31/08/2023

Testing:

Test carried out in accordance with AS 4654.1 Appendix A.

Additions, deviations and/or exclusions from AS 4654.1 Appendix A:

Nil

Test Parameters:

PARAMETER	VALUE
Ambient temperature (conditioning)	23.0-23.8°C
Ambient humidity (conditioning)	52.8-54.8%
Ambient temperature (testing)	22.0-26.4°C
Ambient humidity (testing)	29.2-48.8% RH
Minimum accuracy grading of test machine	A
Specimen type	Type 2
Elongation measurement type:	Electronic internal measurement
Method of preparation of specimens	Dry Film Supplied
Orientation of specimens to direction of cast	Parallel to direction of casting blade
Clamping device:	Pneumatic jaws
Testing speed:	50mm/min

Test Results: Detergent Immersion

Sample Number	Sample thickness (mm)	Maximum Extension (mm)	Tensile strength (MPa)	Elongation at break (%)
1	1.16	398.7	3.72	797
2	1.32	378.6	3.57	757
3	1.17	347.8	3.56	695
7 Day Means	1.22	375.0	3.62	750
7 Day Std Devs	0.09	25.7	0.09	51
4	1.23	466.3	3.10	933
5	1.21	410.8	3.06	822
6	1.24	426.8	3.02	854
28 Day Means	1.23	434.7	3.06	869
28 Day Std Devs	0.01	28.6	0.04	57
7	1.23	400.4	2.88	801

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8	1.26	399.5	2.89	799
9	1.22	371.2	2.88	742
56 Day Means	1.24	390.3	2.88	781
56 Day Std Devs	0.02	16.6	0.01	33

Passing Requirement: *“Elongation at break shall not be less than 25% retention of elongation at break of the controls”.*

To pass this condition an elongation at break value of 128% or greater is required.

Result: 781% PASS

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DURABILITY OF MEMBRANE

HEAT AGING

Date of test: 12/07/2023

Testing:

Test carried out in accordance with AS 4654.1 Table A4.

Additions, deviations and/or exclusions from AS 4654.1 Table A4:

Nil

Test Parameters:

PARAMETER	VALUE
Ambient temperature (conditioning)	23.1-24.8°C
Ambient humidity (conditioning)	50.5-54.2% RH
Ambient temperature (testing)	25.4°C
Ambient humidity (testing)	31.7% RH
Accuracy grading of test machine	A
Specimen type	Type 2
Elongation measurement type:	Electronic internal measurement
Method of preparation of specimens	Dry Film Supplied
Orientation of specimens to direction of cast	Parallel to direction of casting blade
Clamping device:	Pneumatic jaws
Testing speed:	50mm/min

Test Results:

Number of replicates	Sample thickness (mm)	Maximum Extension (mm)	Tensile strength (MPa)	Elongation at break (%)
1	1.28	271.6	3.85	543
2	1.33	236.4	3.65	473
3	1.28	247.8	3.85	496
Mean	1.29	251.9	3.78	504
Std Deviation	0.03	18.0	0.11	36

Passing Requirement: "Elongation at break shall be not less than 50% of the result recorded for the controls".

To pass this condition an elongation at break value of 256% or greater is required.

Result: 504% PASS

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TEMPERATURE RESISTANCE

Date of test: 27/06-11/07/2023

Testing:

Test carried out in accordance with AS 4654.1 Clause 2.6.

Additions, deviations and/or exclusions from with AS 4654.1 Clause 2.6.

TR rate carried out in accordance with ASTM E96 Desiccant Method after exposure.

Test Parameters:

PARAMETER	VALUE
Cold exposure: Immersion date	21/06/2023 09:00Hrs
Cold exposure: Removal date	23/06/2023 09:00Hrs
Cold exposure: Temperature range	-15.5 - -16°C
Heat exposure: Immersion date	23/06/2023 09:00Hrs
Heat exposure: Removal date	25/06/2023 09:00Hrs
Heat exposure: temperature range	85°C
WVT: Date of test	27/06-11/07/2023
WVT: Test temperature	23.8-25.6°C
WVT: Test humidity	46.9-53.3% RH
WVT: Cup design	Round cup with sealing flange
WVT: Cup sealant	Paraffin Wax
WVT: Desiccant	Anhydrous Calcium Chloride

Test Results- Temperature Resistance

SAMPLE	THICKNESS (mm)	SIDE OF SPECIMEN HIGHER VAPOUR PRESSURE WAS APPLIED TO	REGRESSION		WATER VAPOUR TRANSMISSION RATE (g/m ² /24 hours)
			EQUATION	r ² VALUE	
1	1.12	Side A, top of cast film	Mass _(g) =0.0011(Time _{hr})+191.79	0.9999	7.95
2	1.18	Side A, top of cast film	Mass _(g) =0.0011(Time _{hr})+190.93	0.9997	7.95
3	1.09	Side B, bottom of cast film	Mass _(g) =0.0011(Time _{hr})+198.29	0.9998	7.95

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4	1.15	Side B, bottom of cast film	$Mass_{(g)}=0.0001(Time_{hr})+168.01$	1	7.21
Mean	1.13				7.76
Std Deviation	0.04				0.37

Result: 7.76 g/m²/24 hours.

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WATER VAPOUR TRANSMISSION RATE

Date of test: 12/07-26/07/2023

Testing:

Test carried out in accordance with ASTM E96 Desiccant Method.

Additions, deviations and/or exclusions from ASTM E96 Desiccant Method:

Nil

Test Parameters:

PARAMETER	VALUE
Test temperature:	23.8-25.7°C
Test humidity:	47.2-53.3% RH
Cup design:	Round cup with sealing flange
Sealant:	Paraffin Wax
Desiccant:	Anhydrous Calcium Chloride

Test Results

SAMPLE	THICKNESS (mm)	SIDE OF SPECIMEN HIGHER VAPOUR PRESSURE WAS APPLIED TO	REGRESSION		WATER VAPOUR TRANSMISSION RATE (g/m ² /24 hours)
			EQUATION	r ² VALUE	
1	1.10	Side A, top of cast film	Mass _(g) =0.0011x(Time _{hr})+190.4	0.9999	7.95
2	1.13	Side A, bottom of cast film	Mass _(g) =0.001x(Time _{hr})+163.16	0.9999	7.20
3	1.10	Side B, top of cast film	Mass _(g) =0.0011x(Time _{hr})+190.84	0.9999	7.95
4	1.16	Side B, bottom of cast film	Mass _(g) =0.0011x(Time _{hr})+163.75	0.9999	7.93
Mean	1.12				7.76
Std Deviation	0.03				0.37

Result: 7.76 g/m²/24 hours.

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END OF REPORT

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TEST SUMMARY

Objective

Assessment of ACTFLEX 929 SPU to AS/NZS 4858:2004

Project

Assessment of ACTFLEX 929 SPU to AS/NZS 4858:2004

Report Number

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Customer

NAME	Actech Protective Coatings
ADDRESS	22/872 Canterbury Road Roselands, Sydney 2196
CONTACT PERSON	James Gilto
EMAIL	admin@actechpc.com.au
TELEPHONE	02 8021 3517
MOBILE	02 8021 3517

Name of test material

Actflex 929 SPU

Description of test material

Moisture Cured Polyurethane

Date of receipt of test material

30/05/2023

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Testing Facility and Location

NAME	XTec Gen Pty Ltd
ADDRESS	30-32 Park Avenue Woodville North 5012
ABN	22634729294

LIMITATION

The test results reported here relate only to the items tested.

CUSTOMER SUPPLIED INFORMATION & DATA

2 coats @ 0.7mm. expected dry film 1.2mm

Dry film supplied

TERMS AND CONDITIONS

This report is issued in accordance with the Terms and Conditions as detailed and agreed in the *XTecGen Test Request and Sample Submission Form*.

SIGNATORIES

Author

Ruby Scardigno

Laboratory Technician

Reviewer

Eric Scardigno

Laboratory Manager

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SUMMARY OF TESTS

AS4858 Requirements:

PROPERTY	METHOD	RESULT	ASSESSMENT CRITERIA	ASSESSMENT		
Acceptance of Cyclic movement	AS4858 Appendix B	No failures observed	AS 4858 Appendix B Paragraph B4	PASS		
Durability ¹ : Control Elongation at break	AS1145.3	547 %	AS 4858 Table 5.1	Class III		
Durability ¹ : Control Tensile Strength		4.15 MPa				
Durability ¹ : Water Immersion Elongation at break	N/A	474 %	AS 4858 Table A1	PASS		
Durability ¹ : Water immersion Tensile Strength		3.88 MPa				
Durability ¹ : Bleach Immersion Elongation at break		435 %		PASS		
Durability ¹ : Bleach Immersion Tensile Strength		3.21MPa				
Durability ¹ : Detergent Immersion Elongation at break		601 %		PASS		
Durability ¹ : Detergent Immersion Tensile Strength		3.84MPa				
Durability ¹ : Heat aging Elongation at break		N/A		341 %	AS 4858 Table A1	PASS

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Durability ¹ : Heat aging Tensile Strength		4.41MPa		
Water Absorption	AS 3558.1 (with sample size modified to be 50mm x 50mm by the thickness used in practice).	0.79%	AS 4858 Table 8.1	
Moisture vapour transmission rate	ASTM E96 Desiccant method	7.76g/m ² /24 hours	AS 4858 Table 8.1	Additional testing as per AS4858.1 Table 8.1 (e) is not required to establish suitability for use over particleboard.
†Suitability for use over particleboard	AS4858 Appendix C	Test not performed	AS 4858 Appendix C Paragraph C5	Test not performed

¹Durability of membranes is a combined group of assessments as detailed in AS4858 Appendix A, Table A4.

†This symbol indicates tests for which XTecGen Laboratory was not NATA accredited for at time of testing.

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CYCLIC MOVEMENT

Date of test: 12/06-16/06/2023

Testing:

Testing carried out in accordance with AS 4858 Appendix B “Assessment of resistance of waterproofing membranes to cyclic movement”

Additions, deviations and/or exclusions from AS 4858 Appendix B:

Nil

Test Parameters:

PARAMETER	VALUE
Membrane class	III
Number of cycles	50
Cycle time	2 Hours
Cycle expansion	4 mm
Sample Size	65 mm x 25 mm
Sample span	2 mm between plates
Sample thickness	1.351mm

Test Results:

TEST RESULT	VALUE
Number of cycles completed	50
Surface crazing	Nil
Surface tears	Nil
Membrane rupture	Nil

Test Observations:

DAY	DATE	NUMBER OF CYCLES	Failure Observed	
			RUPTURE/HOLING	OTHER
1	12/06/2023	0	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
2	13/06/2023	9	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
3	14/06/2023	21	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
4	15/06/2023	33	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5	16/06/2023	50	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

Passing requirement: “Any rupture holing the specimen or extending through the thickness for more than 1mm in from the edge of the specimen shall be taken as a failure and the number of cycles to failure shall be reported. If failure does not occur after 50 cycles it shall be reported together with the

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types of any surface defects that have been induced and the number of cycles at which onset of the defect occurred”

Result: Pass. Meets the requirement for CSIRO moving joint test as per AS 4858.1 Appendix B.

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DURABILITY OF MEMBRANE

CONTROL SET

Date of test: 7/06/2023

Testing: Test carried out in accordance with AS 1145.3.

Additions, deviations and/or exclusions from AS 1145.3: Nil

Test Parameters:

PARAMETER	VALUE
Ambient temperature (conditioning)	23.0-23.8°C
Ambient humidity (conditioning)	52.8-54.8%
Ambient temperature (testing)	22.8°C
Ambient humidity (testing)	51.6% RH
Accuracy grading of test machine	A
Specimen type	Type 5
Elongation measurement type:	Electronic internal measurement
Method of preparation of specimens	Dry Film supplied
Orientation of specimens to direction of cast	Parallel to direction of casting blade
Clamping device:	Pneumatic jaws
Testing speed:	50mm/min

Test Results:

Replicate	Sample thickness (mm)	Maximum Extension (mm)	Maximum Stress (MPa)	Maximum Strain (%)
1	1.253	258.634	4.304	539.287
2	1.27	215.969	4.083	414.754
3	1.322	222.76	4.047	459.78
4	1.289	249.237	4.215	648.1
5	1.236	210.583	4.107	672.43
Mean	1.27	231.4	4.15	547
Std Deviation	0.03	21.2	0.11	113

Requirement for Class III (high extensibility): $\geq 300\%$ elongation at break

Requirement for Class II (medium extensibility) 60-299% elongation at break

Requirement for Class I (low extensibility) $< 60\%$ elongation at break.

Classification: Class III

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DURABILITY OF MEMBRANE

WATER IMMERSION

Date of test: 13/07-31/08/2023

Testing:

Test carried out in accordance with AS 4858 Table A1.

Additions, deviations and/or exclusions from AS 4858 Table A1:

Nil

Test Parameters:

PARAMETER	VALUE
Ambient temperature (conditioning)	23.0-23.8°C
Ambient humidity (conditioning)	52.8-54.8%
Ambient temperature (testing)	22.0-26.4°C
Ambient humidity (testing)	29.2-48.8% RH
Minimum accuracy grading of test machine	A
Specimen type	Type 5
Elongation measurement type:	Electronic internal measurement
Method of preparation of specimens	Dry Film Supplied
Orientation of specimens to direction of cast	Parallel to direction of casting blade
Clamping device:	Pneumatic jaws
Testing speed:	50mm/min

Test Results:

Sample Number	Sample thickness (mm)	Maximum Extension (mm)	Tensile strength (MPa)	Elongation at break (%)
1	1.15	228.1	4.58	649
2	1.09	235.5	4.67	684
3	1.07	196.7	4.21	481
7 Day Means	1.10	220.1	4.49	605
7 Day Std Devs	0.04	20.6	0.24	109
4	1.14	241.7	4.08	519
5	1.21	252.0	4.02	504
6	1.21	176.2	3.70	344
28 Day Means	1.19	223.3	3.93	456
28 Day Std Devs	0.04	41.1	0.20	97
7	1.10	235.3	3.93	491

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8	1.14	239.8	3.90	526
9	1.06	182.2	3.82	405
56 Day Means	1.10	219.1	3.88	474
56 Day Std Devs	0.04	32.0	0.06	62

Passing Requirement: *“Elongation at break shall not be less than 50% of that of the controls for the bond breakers given in Table 6.1 [AS4848]. For an elongation between 50% and 25% of the controls the membrane requires additional bond relief above that given in [AS4858] Table 6.1. A failure is for less than 25% retention of elongation at break of the controls”.*

To pass this condition an elongation at break value of 137% or greater is required.

Result: 474% PASS

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DURABILITY OF MEMBRANE

BLEACH IMMERSION

Date of test: 13/07-31/08/2023

Testing:

Test carried out in accordance with AS 4858 Table A1.

Additions, deviations and/or exclusions from AS 4858 Table A1:

Nil

Test Parameters:

PARAMETER	VALUE
Ambient temperature (conditioning)	23.0-23.8°C
Ambient humidity (conditioning)	52.8-54.8%
Ambient temperature (testing)	22.0-26.4°C
Ambient humidity (testing)	29.2-48.8% RH
Minimum accuracy grading of test machine	A
Specimen type	Type 5
Elongation measurement type:	Electronic internal measurement
Method of preparation of specimens	Dry Film Supplied
Orientation of specimens to direction of cast	Parallel to direction of casting blade
Clamping device:	Pneumatic jaws
Testing speed:	50mm/min

Test Results:

Sample Number	Sample thickness (mm)	Maximum Extension (mm)	Tensile strength (MPa)	Elongation at break (%)
1	1.41	223.8	4.02	487
2	1.19	187.3	4.21	477
3	1.21	197.1	4.26	519
7 Day Means	1.27	202.7	4.16	494
7 Day Std Devs	0.12	18.9	0.12	22
4	1.21	151.9	3.22	317
5	1.10	202.6	3.73	385
6	1.12	226.4	3.75	469
28 Day Means	1.14	193.6	3.57	390
28 Day Std Devs	0.06	38.1	0.30	76
7	1.09	204.0	3.19	426

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8	1.08	191.6	3.27	417
9	1.12	200.8	3.16	461
56 Day Means	1.10	198.8	3.21	435
56 Day Std Devs	0.02	6.5	0.06	24

Passing Requirement: *“Elongation at break shall not be less than 50% of that of the controls for the bond breakers given in Table 6.1 [AS4848]. For an elongation between 50% and 25% of the controls the membrane requires additional bond relief above that given in [AS4858] Table 6.1. A failure is for less than 25% retention of elongation at break of the controls”.*

To pass this condition an elongation at break value of 137% or greater is required.

Result: 435% PASS

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DURABILITY OF MEMBRANE

DETERGENT IMMERSION

Date of test: 13/07-31/08/2023

Testing:

Test carried out in accordance with AS 4858 Table A1.

Additions, deviations and/or exclusions from AS 4858 Table A1:

Nil

Test Parameters:

PARAMETER	VALUE
Ambient temperature (conditioning)	23.0-23.8°C
Ambient humidity (conditioning)	52.8-54.8%
Ambient temperature (testing)	22.0-26.4°C
Ambient humidity (testing)	29.2-48.8% RH
Minimum accuracy grading of test machine	A
Specimen type	Type 5
Elongation measurement type:	Electronic internal measurement
Method of preparation of specimens	Dry Film Supplied
Orientation of specimens to direction of cast	Parallel to direction of casting blade
Clamping device:	Pneumatic jaws
Testing speed:	50mm/min

Test Results: Detergent Immersion

Sample Number	Sample thickness (mm)	Maximum Extension (mm)	Tensile strength (MPa)	Elongation at break (%)
1	1.33	233.1	4.18	521
2	1.29	251.9	4.35	605
3	1.18	269.0	4.66	640
7 Day Means	1.26	251.3	4.40	588
7 Day Std Devs	0.08	18.0	0.24	61
4	1.37	271.0	3.91	491
5	1.38	258.2	3.84	530
6	1.22	293.7	4.08	563
28 Day Means	1.32	274.3	3.94	528
28 Day Std Devs	0.09	18.0	0.13	36
7	1.18	279.6	3.78	568

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8	1.16	314.2	3.94	628
9	1.27	304.6	3.81	607
56 Day Means	1.21	299.5	3.84	601
56 Day Std Devs	0.06	17.9	0.09	30

Passing Requirement: *“Elongation at break shall not be less than 50% of that of the controls for the bond breakers given in Table 6.1 [AS4848]. For an elongation between 50% and 25% of the controls the membrane requires additional bond relief above that given in [AS4858] Table 6.1. A failure is for less than 25% retention of elongation at break of the controls”.*

To pass this condition an elongation at break value of 137% or greater is required.

Result: 601% PASS

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DURABILITY OF MEMBRANE

HEAT AGING

Date of test: 28/06/2023

Testing:

Test carried out in accordance with AS 4858 Table A1.

Additions, deviations and/or exclusions from AS 4858 Table A1:

Nil

Test Parameters:

PARAMETER	VALUE
Ambient temperature (conditioning)	23.1-24.8°C
Ambient humidity (conditioning)	50.2-54.2% RH
Ambient temperature (testing)	22.8°C
Ambient humidity (testing)	51.6% RH
Accuracy grading of test machine	A
Specimen type	Type 5
Elongation measurement type:	Electronic internal measurement
Method of preparation of specimens	Dry Film Supplied
Orientation of specimens to direction of cast	Parallel to direction of casting blade
Clamping device:	Pneumatic jaws
Testing speed:	50mm/min

Test Results:

Number of replicates	Sample thickness (mm)	Maximum Extension (mm)	Tensile strength (MPa)	Elongation at break (%)
1	1.40	216.566	4.27	346
2	1.20	165.608	4.31	289
3	1.22	232.888	4.63	387
Mean	1.27	205.0	4.41	341
Std Deviation	0.11	35.1	0.20	49

Passing Requirement: "Elongation at break shall not be less than 50% of the result recorded for the control"

To pass this condition an elongation at break value of 274% or greater is required.

Result: 341% PASS

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WATER ABSORPTION

Date of test: 15/06-16/06/2023

Testing:

Test carried out in accordance with AS 3558.1.

Additions, deviations and/or exclusions from AS 3558.1:

Per AS 4858, sample dimensions modified to be 50mm*50mm.

Test Results:

SAMPLE	THICKNESS (mm)	WATER ABSORPTION		
		MASS (m1) (g)	MASS (m2) (g)	MASS DIFFERENCE (%)
1	1.199	4.6387	4.676	0.80
2	1.216	4.7262	4.7597	0.71
3	1.164	4.2748	4.3115	0.86
Mean	1.19	4.55	4.58	0.79
Std Deviation	0.03	0.24	0.24	0.08

Result: 0.79%

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WATER VAPOUR TRANSMISSION RATE

Date of test: 12/07-26/07/2023

Testing:

Test carried out in accordance with ASTM E96 Desiccant Method.

Additions, deviations and/or exclusions from ASTM E96 Desiccant Method:

Nil

Test Parameters:

PARAMETER	VALUE
Test temperature:	23.8-25.7°C
Test humidity:	47.2-53.3% RH
Cup design:	Round cup with sealing flange
Sealant:	Paraffin Wax
Desiccant:	Anhydrous Calcium Chloride

Test Results

SAMPLE	THICKNESS (mm)	SIDE OF SPECIMEN HIGHER VAPOUR PRESSURE WAS APPLIED TO	REGRESSION		WATER VAPOUR TRANSMISSION RATE (g/m ² /24 hours)
			EQUATION	r ² VALUE	
1	1.10	Side A, top of cast film	Mass _(g) =0.0011x(Time _{hr})+190.4	0.9999	7.95
2	1.13	Side A, bottom of cast film	Mass _(g) =0.001x(Time _{hr})+163.16	0.9999	7.20
3	1.10	Side B, top of cast film	Mass _(g) =0.0011x(Time _{hr})+190.84	0.9999	7.95
4	1.16	Side B, bottom of cast film	Mass _(g) =0.0011x(Time _{hr})+163.75	0.9999	7.93
Mean	1.12				7.76
Std Deviation	0.03				0.37

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Passing requirement: If $>8\text{g}/\text{m}^2/24$ hours, additional testing referred to in [AS 4858.1 Table 8.1] (e) will be required to establish suitability for use over particleboard.

Result: $7.76\text{ g}/\text{m}^2/24$ hours Additional testing as per AS4858.1 Table 8.1 (e) is not required to establish suitability for use over particleboard.

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