TEST REPORT

Accredited for compliance with ISO/IEC 17025 – Testing
20678

TEST SUMMARY

Objective

Assessment of supplied sample to AS/NZS 4858:2004

Project

Assessment of *ACTFLEX 906 WPU* to AS/NZS 4858:2004

Report Number

251-5 AS/NZS 4858:2004

Customer

NAME	FORSPEC Protective
ADDRESS	Coatings 22/872
	Canterbury Road
	Roselands, NSW, 2196
CONTACT PERSON	James Gilto
EMAIL	admin@actechpc.com.au
TELEPHONE	0424424178
MOBILE	

Name of test material

ACTFLEX 906 WPU

Description of test material

Water based polyurethane

Date of receipt of test material

18/07/2023

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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 @ 0.9mm expected dry film thickness 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

Michael Bakanyozo

Head 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*	*517 %*	*AS 4858 Table 5.1*	Class III
Durability[1]: Control Tensile Strength		*4.26 MPa*		[redacted]
Durability[1]: Water Immersion Elongation at break	*N/A*	*558 %*	*AS 4858 Table A1*	PASS
Durability[1]: Water immersion Tensile Strength		*1.78 MPa*		[redacted]
Durability[1]: Detergent Immersion Elongation at break		*510%*		PASS
Durability[1]: Detergent Immersion Tensile Strength		*1.75MPa*		[redacted]
Durability[1]: Heat aging Elongation at break	*N/A*	*300 %*	*AS 4858 Table A1*	PASS
Durability[1]: Heat aging Tensile Strength		*4.60 MPa*		[redacted]
Water Absorption	*AS 3558.1 (with sample size modified to be 50mm x 50mm by*	4.35%	*AS 4858 Table 8.1*	[redacted]

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	the thickness used in practice).			
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

[1]Durability 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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20678

CYCLIC MOVEMENT

Date of test: 31/07-04/08/2023

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	1.288

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	31/07	0	☐Yes	☒No	
2	1/08	13	☐Yes	☒No	
3	2/08	25	☐Yes	☒No	
4	3/08	37	☐Yes	☒No	
5	4/08	50	☐Yes	☒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: 26/07/2023

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)	24.0-25.8°C
Ambient humidity (conditioning)	47.3-49.0% RH
Ambient temperature (testing)	25.4°C
Ambient humidity (testing)	30.9% RH
Accuracy grading of test machine	A
Specimen type	Type 5
Elongation measurement type:	Electronic internal measurement
Method of preparation of specimens	Dry Film
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	1.19	232.9	4.31	592
2	1.21	197.8	4.31	489
3	1.23	209.4	4.28	572
4	1.24	187.9	4.06	495
5	1.24	187.9	4.33	436
Mean	1.22	203.2	4.26	517
Std Deviation	0.02	18.8	0.11	64

Requirement for Class III (high extensibility): ≥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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20678

DURABILITY OF MEMBRANE

WATER IMMERSION

Date of test: 17/08-5/10/2023

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)	24.0-25.8°C
Ambient humidity (conditioning)	47.3-49.0% RH
Ambient temperature (testing)	21.9-25.4°C
Ambient humidity (testing)	47.3-49.0% 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
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	1.37	198.2	1.75	404
2	1.35	213.3	1.80	435
3	1.31	200.2	1.87	431
7 Day Means	1.34	203.9	1.80	423
7 Day Std Devs	0.03	8.2	0.06	17
4	1.54	258.6	1.57	549
5	1.44	221.4	1.66	542
6	1.39	247.5	1.75	532
28 Day Means	1.46	242.5	1.66	541
28 Day Std Devs	0.08	19.1	0.09	8
7	1.37	261.6	1.77	532

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8	1.37	270.6	1.78	561
9	1.36	284.8	1.82	580
56 Day Means	1.37	272.3	1.79	558
56 Day Std Devs	0.01	11.7	0.03	25

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 130% or greater is required.

Result: 558% PASS

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DURABILITY OF MEMBRANE

DETERGENT IMMERSION

Date of test: 17/08-5/10/2023

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)	24.0-25.8°C
Ambient humidity (conditioning)	47.3-49.0% RH
Ambient temperature (testing)	21.9-25.4°C
Ambient humidity (testing)	47.3-49.0% 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
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	1.36	159.7	1.63	346
2	1.37	137.1	1.63	307
3	1.38	146.7	1.65	325
7 Day Means	1.37	147.8	1.64	326
7 Day Std Devs	0.01	11.3	0.01	20
4	1.46	211.1	1.53	518
5	1.48	194.7	1.52	423
6	1.28	200.8	1.72	455
28 Day Means	1.41	202.2	1.59	465
28 Day Std Devs	0.11	8.3	0.11	49
7	1.28	249.7	1.72	537

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8	1.26	231.6	1.74	480
9	1.23	229.1	1.79	514
56 Day Means	1.26	236.8	1.75	510
56 Day Std Devs	0.03	11.2	0.04	29

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 130% or greater is required.

Result: 510% PASS

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NATA WORLD RECOGNISED ACCREDITATION

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DURABILITY OF MEMBRANE

HEAT AGING

Date of test: 23/08/2023

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)	24.0-25.8°C
Ambient humidity (conditioning)	47.3-49.0% RH
Ambient temperature (testing)	24.9°C
Ambient humidity (testing)	33.4% RH
Accuracy grading of test machine	A
Specimen type	Type 5
Elongation measurement type:	Electronic internal measurement
Method of preparation of specimens	Dry film
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	1.39	110.2	4.69	261
2	1.37	115.2	4.55	288
3	1.39	144.9	4.57	351
Mean	1.38	123.4	4.60	300
Std Deviation	0.01	18.7	0.08	46

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 259% or greater is required.

Result: 300% PASS

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WATER ABSORPTION

Date of test: 17-18/08/2023

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	1.33	6.2244	6.5297	4.90
2	1.44	6.6722	6.9211	3.73
3	1.34	6.2856	6.5635	4.42
Mean	1.37	6.39	6.67	4.35
Std Deviation	0.06	0.24	0.22	0.59

Result: 4.35%

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WATER VAPOUR TRANSMISSION RATE

Date of test: 13/09-27/09/2023

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:	21.9-24.6°C
Test humidity:	35.0-45.5% 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 TRANSMISSON RATE (g/m^2/24 hours)
			EQUATION	r^2 VALUE	
1	1.31	Side A, top of cast film	$Mass_{(g)}=0.0012x(Time_{hr})+193.44$	0.9996	8.67
2	1.25	Side B, bottom of cast film	$Mass_{(g)}=0.0014x(Time_{hr})+169.22$	0.9997	10.09
3	1.35	Side A, top of cast film	$Mass_{(g)}=0.0008x(Time_{hr})+166.32$	0.9993	5.76
4	1.33	Side B, bottom of cast film	$Mass_{(g)}=0.0009x(Time_{hr})+194.93$	0.9993	6.51
Mean	1.31				7.76
Std Deviation	0.04				1.99

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Passing requirement: If>8g/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: 7.76g/m^2/24 hours Additional testing as per AS4858.1 Table 8.1 (e) is not required to establish suitability for use over particleboard.

END OF REPORT

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