TEST REPORT

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TEST SUMMARY

Objective

Assessment of supplied sample to AS/NZS 4858:2004

Project

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

Report Number

429-1 AS/NZS 4858:2004

Customer

NAME	**Forspec Protective Coatings**
ADDRESS	**22/872 Canterbury Rd, Roselands**
CONTACT PERSON	**James Gilto**
EMAIL	**info@forspec.com.au**
MOBILE	**02 8021 3517**

Name of test material

ACTFLEX 929 SL

Description of test material

Self-Levelling Polyurethane Membrane

Date of receipt of test material

24/02/2025

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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

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	Reviewer
Michael Bakanyozo	*Eric Scardigno*
Head Laboratory Technician	*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*	***477%***	*AS 4858 Table 5.1*	**Class III**
Durability[1]: Control Tensile Strength		***5.11MPa***		
Durability[1]: Water Immersion Elongation at break	*N/A*	***442%***	*AS 4858 Table A1*	PASS
Durability[1]: Water immersion Tensile Strength		***2.98MPa***		
Durability[1]: Bleach Immersion Elongation at break		***473%***		PASS
Durability[1]: Bleach Immersion Tensile Strength		***2.96MPa***		
Durability[1]: Detergent Immersion Elongation at break		***431%***		PASS
Durability[1]: Detergent Immersion Tensile Strength		***2.58MPa***		
Durability[1]: Heat aging Elongation at break	*N/A*	***501%***	*AS 4858 Table A1*	**PASS**

Durability[1]: Heat aging Tensile Strength		***5.15MPa***		[redacted]
Water Absorption	*AS 3558.1 (with sample size modified to be 50mm x 50mm by the thickness used in practice).*	***0.82%***	*AS 4858 Table 8.1*	
Moisture vapour transmission rate	*ASTM E96 Desiccant method*	**4.88g/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.

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CYCLIC MOVEMENT

Date of test: 14-18/04/2025

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	1.049mm

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	14/04/2025	0	☐Yes	☑No	
2	15/04/2025	11	☐Yes	☑No	
3	16/04/2025	23	☐Yes	☑No	
4	17/04/2024	33	☐Yes	☑No	
5	18/04/2025	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*

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: 6/03/2025

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)	23.7-24.4°C
Ambient humidity (conditioning)	45.4-55.5%RH
Ambient temperature (testing)	23.8°C
Ambient humidity (testing)	53.0% RH
Accuracy grading of test machine	A
Specimen type	Type 5
Elongation measurement type:	Video Extensometer
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	1.06	118.1	5.36	473
2	1.033	113.4	4.50	454
3	1.122	122.6	5.49	490
4	1.08	118.6	4.79	474
5	1.082	124.1	5.43	496
Mean	1.08	119.4	5.11	477
Std Deviation	0.03	4.2	0.44	17

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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DURABILITY OF MEMBRANE

WATER IMMERSION

Date of test: 24/03-12/05/2025

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)	23.7-24.4°C
Ambient humidity (conditioning)	45.4-55.5%RH
Ambient temperature (testing)	22.8-24.1°C
Ambient humidity (testing)	34.7-45.8% RH
Minimum accuracy grading of test machine	A
Specimen type	Type 5
Elongation measurement type:	Video Extensometer
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	1.03	124.2	3.50	497
2	1.14	131.8	3.79	527
3	1.11	122.9	3.32	492
7 Day Means	1.09	126.3	3.54	505
7 Day Std Devs	0.06	4.8	0.24	19
4	1.04	111.0	2.80	444
5	1.06	105.5	2.60	422
6	1.08	117.6	3.43	470
28 Day Means	1.06	111.4	2.94	446
28 Day Std Devs	0.02	6.1	0.43	24
7	1.08	116.3	3.30	465

8	1.09	117.8	3.56	471
9	1.08	89.8	2.07	389
56 Day Means	1.08	108.0	2.98	442
56 Day Std Devs	0.00	15.7	0.79	46

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 120% or greater is required.

Result: 442% PASS

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DURABILITY OF MEMBRANE

BLEACH IMMERSION

Date of test: 24/03-12/05/2025

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)	23.7-24.4°C
Ambient humidity (conditioning)	45.4-55.5%RH
Ambient temperature (testing)	22.8-24.1°C
Ambient humidity (testing)	34.7-45.8% RH
Minimum accuracy grading of test machine	A
Specimen type	Type 5
Elongation measurement type:	Video Extensometer
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	1.07	120.9	2.80	483
2	1.10	113.8	3.33	455
3	1.03	125.2	2.84	501
7 Day Means	1.07	120.0	2.99	480
7 Day Std Devs	0.04	5.8	0.30	23
4	0.98	124.5	3.26	498
5	0.98	120.5	3.22	482
6	0.92	115.0	3.13	460
28 Day Means	0.96	120.0	3.20	480
28 Day Std Devs	0.04	4.8	0.07	19
7	0.95	112.8	2.96	451

8	0.87	118.5	2.78	474
9	1.00	123.3	3.14	493
56 Day Means	0.94	118.2	2.96	473
56 Day Std Devs	0.07	5.3	0.18	21

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 120% or greater is required.

Result: 473% PASS

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DURABILITY OF MEMBRANE

DETERGENT IMMERSION

Date of test: 24/03-12/05/2025

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)	23.7-24.4°C
Ambient humidity (conditioning)	45.4-55.5%RH
Ambient temperature (testing)	22.8-24.1°C
Ambient humidity (testing)	34.7-45.8% RH
Minimum accuracy grading of test machine	A
Specimen type	Type 5
Elongation measurement type:	Video Extensometer
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	1.03	127.3	4.00	509
2	1.21	120.3	3.41	481
3	1.20	96.8	1.85	387
7 Day Means	1.15	114.8	3.09	459
7 Day Std Devs	0.10	16.0	1.11	64
4	1.06	95.6	2.56	382
5	1.00	107.9	2.91	432
6	1.01	95.4	2.12	382
28 Day Means	1.02	99.6	2.53	399
28 Day Std Devs	0.03	7.2	0.39	29
7	1.04	114.9	2.86	460

8	1.02	111.5	2.84	446
9	1.05	96.5	2.03	386
56 Day Means	1.03	107.7	2.58	431
56 Day Std Devs	0.02	9.8	0.48	39

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 120% or greater is required.

Result: 431% PASS

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DURABILITY OF MEMBRANE

HEAT AGING

Date of test: 27/03/2025

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)	23.7-24.4°C
Ambient humidity (conditioning)	45.4-55.5%RH
Ambient temperature (testing)	24.3°C
Ambient humidity (testing)	51.3% RH
Accuracy grading of test machine	A
Specimen type	Type 5
Elongation measurement type:	Video Extensometer
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	1.10	110.3	3.71	442
2	1.08	131.1	5.82	525
3	1.08	134.1	5.92	537
Mean	1.08	125.2	5.15	501
Std Deviation	0.01	13.0	1.25	51

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 239% or greater is required.

Result: 501% PASS

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WATER ABSORPTION

Date of test: 18-19/03/2025

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	1.07	4.241	4.2773	0.86
2	1.09	4.2981	4.3341	0.84
3	1.11	4.3369	4.3702	0.77
Mean	1.09	4.29	4.33	0.82
Std Deviation	0.02	0.05	0.05	0.05

Result: 0.82%

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WATER VAPOUR TRANSMISSION RATE

Date of test: 25/03-8/04/2025

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:	23.3.-24.2°C
Test humidity:	48.4-51.4% 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	1.10	Side A, top of cast film	$Mass_{(g)}$= 0.0007x($Time_{hr}$)+165.42	0.9992	5.05
2	1.07	Side A, bottom of cast film	$Mass_{(g)}$= 0.0007x($Time_{hr}$)+ 172.68	0.9992	5.06
3	1.15	Side B, top of cast film	$Mass_{(g)}$= 0.0007x($Time_{hr}$)+174.38	0.9992	5.06
4	1.19	Side B, bottom of cast film	$Mass_{(g)}$= 0.0006x($Time_{hr}$)+172.55	0.9992	4.34
Mean	1.13				4.88
Std Deviation	0.05				0.36

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: 4.88g/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