

TEST REPORT



Accredited for compliance with ISO/IEC 17025 – Testing
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TEST SUMMARY

Objective

Assessment of Supplied Sample AS 4654.1-2012

Project

Assessment of Actflex 989 to AS/NZS 4654.1-2012

Report Number

374-5 AS 4654.1-2012

Customer

NAME	Forspec Protective Coatings
ADDRESS	22/872 Canterbury Road, Roselands 2196 NSW
CONTACT PERSON	James Gilto
EMAIL	Info@forspec.com.au
TELEPHONE	02 8021 3517

Name of test material

Actflex 989

Description of test material

2 Part flexible cementitious membrane

Date of receipt of test material

2/10/2024

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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

Number of Coats: 2

Wet film thickness per coat: 1mm

Expected dry film thickness: 0.65mm per coat total 1.2mm (dried 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

AS4654.1 Requirements:

PROPERTY	METHOD	RESULT	ASSESSMENT CRITERIA	ASSESSMENT
Bond Strength	ASTM C794	47.03N	State result	
Durability: Control Elongation at Break	AS1145.3	394 %	AS 4654.1 Appendix A, Table A1	CLASS III
Durability: Control Tensile Strength	AS1145.3	1.23 MPa	State result	
Durability: Water Immersion Elongation at Break	AS 4654.1 Appendix A	338 %	AS 4654.1 Appendix A, Table A4	PASS
Durability: Water Immersion Tensile Strength	AS 4654.1 Appendix A N/A	0.43 MPa	State result	
Durability: Detergent Immersion Elongation at Break		353 %	AS 4654.1 Appendix A, Table A4	PASS
Durability: Detergent Immersion Tensile Strength		0.40 MPa	State result	
Durability: Heat Aging Elongation at Break		369 %	AS 4654.1 Appendix A, Table A4	PASS
Durability: Heat Aging Tensile Strength	N/A	1.68 MPa	State result	
Temperature Resistance	AMTM004	1.45 g/m²/24 hours	State result	
Water Vapour Transmission	ASTM E96	0.90 g/m²/24 hours	State result	

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BOND STRENGTH

Date of test: 10/12/2024

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	Actflex EP250
Mesh preparation	Wiped with damp cloth
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	59.56	0	0	0	100
Specimen 1 Reading 2	39.44	0	0	0	100
Specimen 1 Reading 3	37.27	0	0	0	100
Specimen 1 Reading 4	37.21	0	0	0	100
Specimen 2 Reading 1	68.54	0	0	0	100

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Specimen 2 Reading 2	49.87	0	0	0	100
Specimen 2 Reading 3	44.72	0	0	0	100
Specimen 2 Reading 4	39.02	0	0	0	100
Specimen 3 Reading 1	56.94	0	0	0	100
Specimen 3 Reading 2	41.11	0	0	0	100
Specimen 3 Reading 3	51.74	0	0	0	100
Specimen 3 Reading 4	38.93	0	0	0	100
Average	47.03				
Std Dev	10.30				

Result: 47.03N

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DURABILITY OF MEMBRANE

CONTROL SET

Date of test: 23/10/2024

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)	23.3-24.2°C
Ambient humidity (conditioning)	32.2-44.0%RH
Ambient temperature (testing)	24.3°C
Ambient humidity (testing)	44.2%RH
Accuracy grading of test machine	A
Specimen type	Type 2
Elongation measurement type:	Electronic internal measurement
Method of preparation of specimens	Dry film provided
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	1.32	174.4	1.24	349
2	1.34	180.9	1.10	362
3	1.36	213.0	1.20	426
4	1.35	219.4	1.33	439
5	1.35	198.3	1.26	396
Mean	1.34	197.2	1.23	394
Std Deviation	0.02	19.6	0.09	39

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: 31/10-19/12/2024

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)	23.3-24.2°C
Ambient humidity (conditioning)	32.2-44.0%RH
Ambient temperature (testing)	23.9-24.7°C
Ambient humidity (testing)	38-45.1% 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 provided
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	1.42	111.3	0.43	222
2	1.43	181.6	0.43	363
3	1.42	154.3	0.44	308
7 Day Means	1.42	149.1	0.43	298
7 Day Std Devs	0.00	35.4	0.01	71
4	1.50	123.6	0.40	247
5	1.52	121.1	0.38	242
6	1.50	111.0	0.38	222
28 Day Means	1.51	118.6	0.39	237
28 Day Std Devs	0.01	6.7	0.01	13
7	1.48	181.9	0.44	364

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8	1.48	163.1	0.44	326
9	1.50	162.2	0.41	324
56 Day Means	1.49	169.1	0.43	338
56 Day Std Devs	0.01	11.1	0.02	22

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 99% or greater is required.

Result: 338% PASS

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DURABILITY OF MEMBRANE

DETERGENT IMMERSION

Date of test: 31/10-19/12/2024

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)	23.3-24.2°C
Ambient humidity (conditioning)	32.2-44.0%RH
Ambient temperature (testing)	23.9-24.7°C
Ambient humidity (testing)	38-45.1% 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 provided
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	1.39	178.3	0.40	356
2	1.39	162.7	0.38	325
3	1.38	144.6	0.40	289
7 Day Means	1.38	161.9	0.39	324
7 Day Std Devs	0.00	16.9	0.01	34
4	1.42	133.6	0.36	267
5	1.43	121.5	0.39	243
6	1.42	113.7	0.38	227
28 Day Means	1.43	122.9	0.38	246
28 Day Std Devs	0.01	10.1	0.01	20
7	1.47	192.4	0.38	385

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8	1.43	183.8	0.39	367
9	1.42	153.8	0.43	308
56 Day Means	1.44	176.7	0.40	353
56 Day Std Devs	0.02	20.3	0.03	41

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 99% or greater is required.

Result: 353% PASS

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DURABILITY OF MEMBRANE

HEAT AGING

Date of test: 6/11/2024

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)	23.3-24.2°C
Ambient humidity (conditioning)	32.2-44.0%RH
Ambient temperature (testing)	24.3°C
Ambient humidity (testing)	49.4% RH
Accuracy grading of test machine	A
Specimen type	Type 2
Elongation measurement type:	Electronic internal measurement
Method of preparation of specimens	Dry film provided
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	1.31	182.6	1.73	365
2	1.30	184.0	1.65	368
3	1.31	187.0	1.65	374
Mean	1.31	184.5	1.68	369
Std Deviation	0.00	2.3	0.04	5

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 198% or greater is required.

Result: 369% PASS

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TEMPERATURE RESISTANCE

Date of test: 11/11-25/11/2024

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.

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

Test Parameters:

PARAMETER	VALUE
Cold exposure: Immersion date	4/11/2024 09:00Hrs
Cold exposure: Removal date	6/11/2024 09:00Hrs
Cold exposure: Temperature range	-21.5- -22.5°C
Heat exposure: Immersion date	6/11/2024 10:00Hrs
Heat exposure: Removal date	8/11/2024 10:00Hrs
Heat exposure: temperature range	85°C
WVT: Date of test	23.6-24.9°C
WVT: Test temperature	37.9-56.9% RH
WVT: Test humidity	23.6-24.9°C
WVT: Cup design	Round, anodised aluminium cup
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	1.32	Side A, top of cast film	Mass _(g) =0.0002(Time _{hr})+174.77	0.9952	1.45
2	1.37	Side A, top of cast film	Mass _(g) =0.0002(Time _{hr})+176.81	0.9885	1.45
3	1.29	Side B, bottom of cast film	Mass _(g) =0.0002(Time _{hr})+176.19	0.9949	1.45

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4	1.31	Side B, bottom of cast film	$\text{Mass}_{(g)} = 0.0002(\text{Time}_{\text{hr}}) + 176.99$	0.9949	1.45
Mean	1.32				1.45
Std Deviation	0.03				0.00

Result: 1.45 g/m²/24 hours.

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WATER VAPOUR TRANSMISSION RATE

Date of test: 21/10-4/11/2024

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:	23.1-25.0°C
Test humidity:	39.2-44.8% RH
Cup design:	Round, anodised aluminium cup
Sealant:	Paraffin Wax
Desiccant:	Anhydrous Calcium Chloride

Test Results

SAMPLE	THICKNESS (mm)	SIDE OF SPECIMEN HIGHER VAPOUR PRESSURE WAS APPLIED TO	REGRESSION		WATER VAPOUR TRANSMISS ON RATE (g/m ² /24 hours)
			EQUATION	r ² VALUE	
1	1.29	Side A, top of cast film	Mass _(g) =0.0001(Time _{hr})+176.40	0.9980	0.72
2	1.20	Side A, top of cast film	Mass _(g) =0.0002(Time _{hr})+175.32	0.9984	1.45
3	1.37	Side B, bottom of cast film	Mass _(g) =0.0001(Time _{hr})+176.20	0.9975	0.72
4	1.42	Side B, bottom of cast film	Mass _(g) =0.0001(Time _{hr})+177.31	0.9976	0.72
Mean	1.32				0.90
Std Deviation	0.10				0.36

Result: 0.90 g/m²/24 hours.

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