TEST REPORT

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TEST SUMMARY

Objective

Assessment of supplied sample to AS4654.1

Project

***Assessment* of FORZAFLEX BASE to AS 4654.1**

Report Number

597-1 AS4654.1

Customer

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

Name of test material

FORZAFLEX BASE

Description of test material

3mm sand finish bitumen torch on

Date of receipt of test material

30/03/2026

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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

N/A

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
Ruby Scardigno	*Eric Scardigno*
Head Laboratory Technician	*Laboratory Manager*

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SUMMARY OF TESTS

AS4654.1 Requirements:

PROPERTY	METHOD	RESULT	ASSESSMENT CRITERIA	ASSESSMENT
Bond Strength	ASTM C794	**22.63 N**	State result	
Acceptance of Cyclic movement	AS 4654.1 Appendix B	**Failure not observed**	AS 4654.1 Appendix B, Paragraph B4	**PASS**
Dimensional Stability	*†ASTM D6207*	***No changes observed***	*State result*	
Durability: Control Elongation at Break	*AS1145.3*	***35 %***	*AS 4654.1 Appendix A, Table A1*	**CLASS I**
Durability: Control Tensile Strength		***2.53 MPa***	*State result*	
Durability[1]: Water Immersion Elongation at Break	*AS 4654.1 Appendix A*	***43 %***	*AS 4654.1 Appendix A, Table A4*	**PASS**
Durability: Water Immersion Tensile Strength		***2.86 MPa***	*State result*	
Durability: Detergent Immersion Elongation at Break		***49 %***	*AS 4654.1 Appendix A, Table A4*	**PASS**
Durability: Detergent Immersion Tensile Strength		***2.39 MPa***	*State result*	
Durability: Heat Aging Elongation at Break	*N/A*	***37 %***	*AS 4654.1 Appendix A, Table A4*	**PASS**
Durability: Heat Aging Tensile Strength	*UV Lamp*	***1.92 MPa***	*State result*	
Field Seam Strength	*AMTM005*	***Seam not supplied***	*State result*	
Temperature Resistance	*AMTM004*	***-0.14 g/m²/24 hours***	*State result*	

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Water Vapour Transmission	*ASTM E96*	***0.07 g/m²/24 hours***	*State result*	[redacted]

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BOND STRENGTH

Date of test: 1/06/2026

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
Substrate 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	23.36	50	0	50	0
Specimen 1 Reading 2	24.88	50	0	50	0
Specimen 1 Reading 3	18.67	0	0	100	0
Specimen 1 Reading 4	22.86	50	0	50	0
Specimen 2 Reading 1	18.20	50	0	50	0
Specimen 2 Reading 2	30.52	50	0	50	0

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Specimen 2 Reading 3	19.64	50	0	50	0
Specimen 2 Reading 4	27.18	50	0	50	0
Specimen 3 Reading 1	21.89	0	0	0	100
Specimen 3 Reading 2	21.69	0	0	0	100
Specimen 3 Reading 3	20.49	0	0	0	100
Specimen 3 Reading 4	22.21	0	0	0	100
Average	22.63				
Std Dev	3.55				

Result: 22.63N

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CYCLIC MOVEMENT

Date of test: 28/05-2/06/2026

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	I
Number of cycles	50
Cycle time	2 Hours
Cycle expansion	0.35 mm
Sample Size	65 mm x 25 mm
Sample span	2 mm between plates
Sample thickness	3.08 mm

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	28/05/2026	0	☐Yes	☒No	
2	29/05/2026	12	☐Yes	☒No	
3	30/05/2026	25	☐Yes	☒No	
4	1/06/2026	36	☐Yes	☒No	
5	2/06/2026	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 4654.1 Appendix B.

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DIMENSIONAL STABILITY

Date of test: 20-23/04/2026

Testing:

Testing carried out in accordance with ASTM D6207 "Standard Test Method for Dimensional Stability of Fabrics to Changes in Humidity and Temperature"

Additions, deviations and/or exclusions from ASTM D6207:

Nil

Test Parameters:

PARAMETER	MEASUREMENT INSTRUMENT	
Preconditioning temperature at 24Hrs	32°C	AMTE042A
Precondition humidity at 24Hrs	15%RH	AMTE042A
Method of sampling used	Test Specimens 150 by 800mm from lengthwise direction and width wise direction of the roll	

MEASUREMENT

			Cycle 1				*Cycle 2*			
	Initial Pointer Setting	*Date*	*Pointer Reading at 95% RH & 20°C*	*Date*	*Pointer Reading at 15% RH & 32°C*	*Date*	*Pointer Reading at 95% RH & 20°C*	*Date*	*Pointer Reading at 15% RH & 32°C*	*Date*
Width wise	*150*	*20/04*	*150*	*21/04*	*150*	*22/04*	*150*	*22/04*	*150*	*23/04*
Length wise	*800*	*20/04*	*800*	*21/04*	*800*	*22/04*	*800*	*22/04*	*800*	*23/04*

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DURABILITY OF MEMBRANE

CONTROL SET

Date of test: 10/04/2026

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)	23.4-24.3°C
Ambient humidity (conditioning)	50.2-56.8% RH
Ambient temperature (testing)	23.0°C
Ambient humidity (testing)	48.9% RH
Accuracy grading of test machine	A
Specimen type	Type 2
Elongation measurement type:	Video Extensometer
Clamping device:	Pneumatic jaws
Testing speed:	50mm/min

Test Results:

Replicate	Sample thickness (mm)	Maximum Extension (mm)	Tensile Strength (MPa)	Elongation at Break (%)
1	3.09	19.6	2.78	39
2	3.08	13.7	2.54	27
3	3.08	20.9	2.44	42
4	3.06	12.1	2.36	24
5	2.99	20.6	2.52	40
Mean	3.06	17.4	2.53	35
Std Deviation	0.04	4.1	0.16	8

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 I

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DURABILITY OF MEMBRANE

WATER IMMERSION

Date of test: 17/04-5/06/2026

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)	23.4-24.3°C
Ambient humidity (conditioning)	50.2-56.8% RH
Ambient temperature (testing)	22.5-23.5°C
Ambient humidity (testing)	42.3-51.8% RH
Minimum accuracy grading of test machine	A
Specimen type	Type 2
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	3.26	19.3	1.96	39
2	3.19	20.0	2.27	40
3	3.19	20.6	2.17	41
7 Day Means	3.21	20.0	2.13	40
7 Day Std Devs	0.04	0.7	0.16	1
4	3.24	21.8	2.29	44
5	3.20	27.3	2.61	55
6	3.19	22.5	1.71	45
28 Day Means	3.21	23.9	2.20	48
28 Day Std Devs	0.03	3.0	0.46	6
7	3.15	22.4	2.76	45
8	3.23	22.6	3.05	45

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9	3.19	19.9	2.77	40
56 Day Means	3.19	21.6	2.86	43
56 Day Std Devs	0.04	1.5	0.16	3

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 9% or greater is required.

Result: 43% PASS

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DURABILITY OF MEMBRANE

DETERGENT IMMERSION

Date of test: 17/04-5/06/2026

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)	23.4-24.3°C
Ambient humidity (conditioning)	50.2-56.8% RH
Ambient temperature (testing)	22.5-23.5°C
Ambient humidity (testing)	42.3-51.8% RH
Minimum accuracy grading of test machine	A
Specimen type	Type 2
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	3.28	28.2	1.84	56
2	3.26	23.4	2.20	47
3	3.21	19.5	2.33	39
7 Day Means	3.25	23.7	2.12	47
7 Day Std Devs	0.04	4.3	0.26	9
4	3.27	19.5	2.11	39
5	3.26	20.9	2.42	42
6	3.22	22.6	2.21	45
28 Day Means	3.25	21.0	2.25	42
28 Day Std Devs	0.03	1.5	0.16	3
7	3.27	24.2	2.13	48
8	3.20	25.5	2.56	51

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9	3.27	23.1	2.47	46
56 Day Means	3.25	24.3	2.39	49
56 Day Std Devs	0.04	1.2	0.23	2

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 9% or greater is required.

Result: 49% PASS

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DURABILITY OF MEMBRANE

HEAT AGING

Date of test: 29/04/2026

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)	23.4-24.3°C
Ambient humidity (conditioning)	50.2-56.8% RH
Ambient temperature (testing)	23.1°C
Ambient humidity (testing)	47.4% RH
Accuracy grading of test machine	A
Specimen type	Type 2
Elongation measurement type:	Electronic internal measurement
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	3.13	19.6	1.84	39
2	3.13	13.2	1.74	26
3	3.12	22.7	2.19	45
Mean	3.13	18.5	1.92	37
Std Deviation	0.01	4.8	0.24	10

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 18% or greater is required.

Result: 37% PASS

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TEMPERATURE RESISTANCE

Date of test: 28/04-12/05/2026

Testing:

Test carried out in accordance with AMTM004.

Additions, deviations and/or exclusions from AMTM004: Nil

Test Parameters:

PARAMETER	VALUE
Cold exposure: 20-22/04/2026	-16.1 / -14.6°C
Heat exposure: 22-24/04/2026	85°C
WVT: Test temperature	22.9-23.7°C
WVT: Test humidity	45.2-50.4% RH
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 TRANSMISSON RATE (g/m^2/24 hours)
			EQUATION	r^2 VALUE	
1	3.19	Side A, top of cast film	$Mass_{(g)}=0.000004(Time_{hr})+182.71$	0.2068	0.03
2	3.18	Side A, top of cast film	$Mass_{(g)}=0.000004(Time_{hr})+197.8$	0.2521	0.03
3	3.21	Side B, bottom of cast film	$Mass_{(g)}=-0.00008(Time_{hr})+182.44$	0.0091	-0.58
4	3.27	Side B, bottom of cast film	$Mass_{(g)}=-0.000003(Time_{hr})+182.78$	0.2159	-0.02
Mean	3.21				-0.14
Std Deviation	0.04				0.30

Result: -0.14 g/m^2/24 hours.

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WATER VAPOUR TRANSMISSION RATE

Date of test: 23/04-7/05/2026

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:	22.9-23.7°C
Test humidity:	45.2-50.4% 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 TRANSMISSION RATE (g/m^2/24 hours)
			EQUATION	r^2 VALUE	
1	3.29	Side A, top of cast film	$Mass_{(g)}=0.00001(Time_{hr})+182.14$	0.5149	0.07
2	3.19	Side A, top of cast film	$Mass_{(g)}=0.00001(Time_{hr})+181.51$	0.635	0.07
3	3.09	Side B, bottom of cast film	$Mass_{(g)}=0.000007(Time_{hr})+180.93$	0.4935	0.05
4	3.02	Side B, bottom of cast film	$Mass_{(g)}=0.00001(Time_{hr})+197.16$	0.7826	0.07
Mean	3.15				0.07
Std Deviation	0.12				0.01

Result: 0.07 g/m^2/24 hours.

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