SOUTH QUALITY

PROFICIENCY TESTING PROVIDER

REPORT No 11406

Date of issue: *October 16, 2025*

Status: FINAL REPORT

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ASTM E96

WATER VAPOR TRANSMISSION OF MATERIALS

Program: SQ-6026

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Prepared by:	Reviewed by:	Approved by:
cn=BERENICE C. FERREL, o=PT SOUTH QUALITY SAS, ou=SOUTH QUALITY, email=tech@ptsouthquality.com, c=AR 2025.10.16 14:17:51 -03'00'	cn=ESTHER CASAS, o=PT SOUTH QUALITY SAS, ou=SOUTH QUALITY, email=ecasas@ptsouthquality.com, c=AR 2025.10.17 16:41:38 -03'00'	cn=Emiliano Medina, o=SOUTH QUALITY, ou=PT SOUTH QUALITY SAS, email=quality@ptsouthquality.com, c=ES 2025.10.20 15:33:49 -03'00'
Berenice Ferrel Assistant Technician	**Lic. Esther Casas** Physics expert	**Eng. Emiliano Medina** Quality Assurance Lead

TABLE OF CONTENTS

1. FOREWORD

This report summarizes the results of the **SQ-6026** proficiency testing program on the water vapor transmission (WVT) of materials. This program is carried out under a Bilateral format, according to the A.3.3 classification of the ISO 17043 standard ("Split-sample testing schemes").

South Quality conducted the testing program in September 2025 with the aim of assessing the laboratory's ability to competently perform the designated tests.

2. ORGANIZATION

Program Coordinator:	Lic. Esther Casas
Assistant Technicians:	Berenice Ferrel
Statistic:	Lic. Manuel Tozaki
Supervision:	Eng. Emiliano Medina

3. OBJECTIVE

The objective of this proficiency testing program is to determine water vapor transmission of materials using the following standard:

Standard
ASTM E96/E96M-24

To verify this, batches of films have been selected.

Participants in this program have not been previously informed about the expected values or value ranges of the samples they receive.

4. PARTICIPANT

Company:	**XTec Gen Pty Ltd.**
Laboratory:	**XTec Gen**
Country:	Australia
Client ID:	M133
Contact person:	Michael Bakanyozo Quality Manager michael.b@xtecgen.com

5. HOMOGENEITY

Several batches were prepared identically by the staff at South Quality.

Subsequently, a homogeneity study was conducted with an ISO 17025 accredited laboratory.

The control process followed ISO Guide 35: 2017, clause 7.4.1.2. Stratified random sampling was employed, and samples were chosen using random number generation software.

The results of this test are presented below:

Size of each batch: **100 units** Tested samples from each batch: **10 units**

DETERMINATION	HOMOGENEITY OF RESULTS IN THE ANALYZED SAMPLES		
	BATCH: LMI2161	BATCH: LMI2162	BATCH: LMI2163
PERMEANCE (Dessicant method)	NO	YES	YES

DETERMINATION	HOMOGENEITY OF RESULTS IN THE ANALYZED SAMPLES		
	BATCH: LMI2261	BATCH: LMI2262	BATCH: LMI2263
PERMEANCE (Dessicant method)	NO	YES	NO

Samples for this program are taken from selected batches identified as **LMI2162** and **LMI2262.**

For the indicated batches, the values determined in the homogeneity study are utilized as the assigned values.

The analysis of the test data indicated that the selected samples exhibited sufficient homogeneity for the program. Therefore, the results of participants identified as outliers cannot be attributed to sample variability.

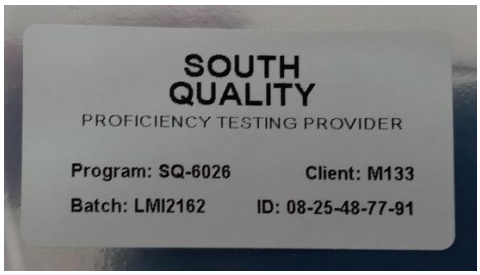
6. SAMPLE INFORMATION

The following samples were sent for testing:

Batch:	LMI2162
Sample ID:	08 - 25 - 48 - 77 - 91
Characteristics:	BOPET film/Aluminum foil - 22 x 15.5 cm

Batch:	LMI2262
Sample ID:	06 - 24 - 48 - 70 - 90
Characteristics:	PVdC film - 21 x 19 cm

7. IMAGES

SAMPLES
   

8. ASSIGNED VALUES

BATCH	PERMEANCE	
	(g/m²/24 h)	SD
LMI2162	0	-
LMI2262	197.51	5.25

9. PARTICIPANT RESULTS (SEE APPENDIX)

BATCH	PERMEANCE AVG (g/m²/24 h)
LMI2162	0
LMI2262	200.20

10. STATISTICS

The results must be treated as qualitative and quantitative.

For qualitative results (Results equal to zero), the comparison will be made directly against the assigned values, so any difference will be evaluated as **Unsatisfactory**.

For quantitative results, the comparison is made according B.3.1.3 of ISO 17043 and the appropriate technique is to compare participant results with the assigned values. The results can be compare using percent difference ***z score.***

$$z = \frac{x - X}{\hat{\sigma}}$$

x is the participant's result

X is the assigned value

$\hat{\sigma}$ is the standard deviation

The performance evaluation of each sample is carried out with the following criteria:

$|z| \leq 2.0$ indicates "satisfactory" performance and generates no signal;

$2.0 < |z| < 3.0$ indicates "questionable" performance and generates a warning signal;

$|z| \geq 3.0$ indicates "unsatisfactory" performance and generates an action signal;

11. EVALUATION OF PERFORMANCE

BATCH	PERMEANCE ($g/m^2/24$ h)		PERFORMANCE RESULT
	PARTICIPANT RESULT	ASSIGNED VALUE	
LMI2162	0	0	SATISFACTORY

BATCH	PERMEANCE ($g/m^2/24$ h)		| z score |	PERFORMANCE RESULT
	PARTICIPANT RESULT	ASSIGNED VALUE		
LMI2262	200.20	197.51	0.5	SATISFACTORY

12. CONCLUSIONS

The overall performance on this **SQ-6026** program from the participant laboratory **XTec Gen Pty Ltd. - XTec Gen**, is **SUFFICIENT** based on expected results.

The criteria used for the evaluation of the overall performance is the following:

- **SUFFICIENT** performance: No unsatisfactory/questionable results were obtained.
- **ALMOST SUFFICIENT** performance: No unsatisfactory results were recorded, with one result being questionable.
- **INSUFFICIENT** performance: An unsatisfactory result was obtained.

APPENDIX A

INSTRUCTIONS

INSTRUCTIONS
&
RESULTS FORM

PROGRAM:	Water vapor transmission of materials
CODE:	SQ-6026
VERSION:	-
STANDARD:	ASTM E96
COORDINATOR:	Lic. Esther Casas (ecasas@ptsouthquality.com)

DSQ-012 - REV 06 - SQ-6026 1 de 4

1 - General

This document serves as a guide for managing the results of the **SQ-6026** program.

Results must be typed, not handwritten.

2 - Standard

ASTM E96/E96M-24

3 - Tests involved

TEST
Determination of water vapor transmission (WVT) of materials

4 - Samples

CODE	SAMPLE	QUANTITY
LMI2162-XX	BOPET film/Aluminum foil - 22 x 15.5 cm	5
LMI2262-XX	PVdC film - 21 x 19 cm	5

5 - Notes

a) Being a bilateral program, there is no deadline for submitting results.
b) The tables in this document may be modified by the participant, if desired, to include data or observations.
c) The samples are to be handled as routine lab samples, with all testing, documentation, and reporting adhering to **ASTM E96/E96M**.
d) Samples must be retained until the end of the program, which concludes with the submission of the final report.
e) To review the results, test images would be appreciated. Images can be attached at the end of this document or sent by email.
f) Once this document is completed, it must be converted into a PDF file and sent to the program coordinator.

6 - **Test results**

Procedure:	Desiccant method at 23°C
Side to be exposed to the vapor pressure:	Side with the ID

Test date:	

Dummy specimen used (YES/NO):		**Relative humidity (%):**	

CODE	PERMEANCE (perms)
LMI2162-08	
LMI2162-25	
LMI2162-48	
LMI2162-77	
LMI2162-91	
AVG	

Procedure:	Desiccant method at 23°C
Side to be exposed to the vapor pressure:	Either side

Test date:	

Dummy specimen used (YES/NO):		**Relative humidity (%):**	

CODE	PERMEANCE (perms)
LMI2262-06	
LMI2262-24	
LMI2262-48	
LMI2262-70	
LMI2262-90	
AVG	

OBSERVATIONS

PHOTOGRAPHS

APPENDIX B

PARTICIPANT RESULTS (TEST REPORT)

TEST REPORT

XTecGen
MATERIALS TESTING SERVICES

NATA
WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 – Testing
20678

TEST SUMMARY

Objective

Assessment of supplied samples to conduct proficiency testing in accordance with program SQ-6026 from PT South Quality Proficiency Testing

Project

Assessment of supplied samples to test in accordance with ASTM E96 Water Vapor Transmission

Report Number

459 SQ-6026

Customer

NAME	PT South Quality Proficiency Testing
ADDRESS	Buenos Aires - Argentina
CONTACT PERSON	Lic. Esther Casas
EMAIL	ecasas@ptsouthquality.com
TELEPHONE	+54 11 2299 1954
MOBILE	+54 9 11 2614 6800

Name of test material

LMI2162-XX / LMI2262-XX

Description of test material

BOPET film/Aluminum foil - 22 x 15.5 cm/ PVdC film - 21 x 19 cm

Date of receipt of test material

12/06/2025

Report number	Issue Date	Expiry Date
459 SQ-6026	1/09/2025	1/09/2028

TEST REPORT

XTecGen
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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
Michael Bakanyozo	*Eric Scardigno*
Quality Manager	*Laboratory Manager*

Report number	Issue Date	Expiry Date
459 SQ-6026	**1/09/2025**	**1/09/2028**

TEST REPORT

XTecGen
MATERIALS TESTING SERVICES

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WATER VAPOUR TRANSMISSION RATE - LMI2162-XX

Date of test: 4/08-18/08/2025

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:	23.0-23.9°C
Test humidity:	40.4-44.8% 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/m²/24 hours)
			EQUATION	r^2 VALUE	
1	0.13	Side A, top of cast film	$Mass_{(g)}$= 0.000002x($Time_{hr}$)+157.78	0.0335	0.01
2	0.13	Side A, bottom of cast film	$Mass_{(g)}$= 0.00000006x($Time_{hr}$)+181.48	0.00006	0.00
3	0.13	Side B, top of cast film	$Mass_{(g)}$= -0.000002x($Time_{hr}$)+182.16	0.0722	-0.01
4	0.13	Side B, bottom of cast film	$Mass_{(g)}$= -0.000002x($Time_{hr}$)+183.06	0.1614	0.00
Mean	0.13				0.00
Std Deviation	0.00				0.01

Result: 0.00g/m²/24 hours

Report number	Issue Date	Expiry Date
459 SQ-6026	**1/09/2025**	**1/09/2028**

TEST REPORT

XTecGen
MATERIALS TESTING SERVICES

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WORLD RECOGNISED ACCREDITATION

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WATER VAPOUR TRANSMISSION RATE - LMI2262-XX

Date of test: 4/08-18/08/2025

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:	23.0-23.9°C
Test humidity:	40.4-44.8% 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	0.10	Side A, top of cast film	$Mass_{(g)}$= 0.0280x($Time_{hr}$)+160.03	0.9814	202.09
2	0.10	Side A, bottom of cast film	$Mass_{(g)}$= 0.0267x($Time_{hr}$)+155.53	0.9616	192.36
3	0.10	Side B, top of cast film	$Mass_{(g)}$= 0.0295x($Time_{hr}$)+181.93	0.9810	213.35
4	0.10	Side B, bottom of cast film	$Mass_{(g)}$= 0.0267x($Time_{hr}$)+182.04	0.9665	193.00
Mean	0.10				200.20
Std Deviation	0.00				9.83

Result: 200.20g/m²/24 hours

Report number	Issue Date	Expiry Date
459 SQ-6026	**1/09/2025**	**1/09/2028**

TEST REPORT

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20678

END OF REPORT

Report number	Issue Date	Expiry Date
459 SQ-6026	1/09/2025	1/09/2028

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