

POLYTECH PRODUCTS LTD.

TEST REPORT

TEST REPORT ISSUED TO

PolyTech Products Ltd.
R.R.#3 8819 Highway 105
Baddeck, NS B0E 1B0
Canada

SPECIFICATION

AAMA/WDMA/CSA 101/I.S.2/A440-17
CSA A440S1-19

PRODUCT SERIES & TYPE

Vinyl Low Profile Fixed

PRIMARY DESIGNATION

Class LC – PG25 – Size Tested 1524 x 2438 mm (60 x 96 in) – Type FW

SECONDARY DESIGNATION

Positive Design Pressure = 1200 Pa (25.06 psf)
Negative Design Pressure = 1200 Pa (25.06 psf)
Water Penetration Resistance = 180 Pa (3.76 psf)
Canadian Air Leakage Resistance = Fixed

REPORT NUMBER

104638027TOR-002

TEST DATE(S)

09/29/21 - 10/05/21

ISSUE DATE

03/31/22

REVISION DATE

03/31/22

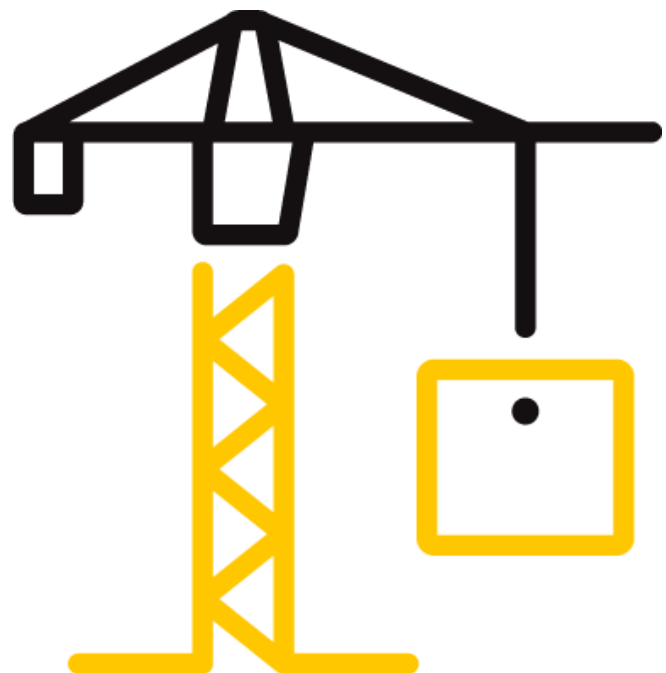
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TEST REPORT FOR POLYTECH PRODUCTS LTD.

Report No.: 104638027TOR-002

Date: 03/31/22

SECTION 1 SCOPE

Intertek Building & Construction (B&C) was contracted by PolyTech Products Ltd. to perform testing on a 1524 mm (60") x 2438 mm (96") Vinyl Low Profile Fixed System in accordance with the following standard/specifications:


- AAMA/WDMA/CSA 101/I.S.2/ A440-17 "Standard/Specification for windows, doors, and unit skylights" (NAFS-17)
- CSA A440S1-19 "Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440, NAFS – North American Fenestration Standard/Specification for windows, doors, and skylights" (A440S1-19)


Testing was conducted at the Intertek test facility in Mississauga, ON.

Intertek B&C will service this report for the entire test record retention period. The test record retention period ends four years after the test date. Test records, such as detailed drawings, datasheets, representative samples of test specimens or other pertinent project documentation, will be retained for the entire test record retention period

Unless differently required, Intertek reports apply the "Simple Acceptance" rule also called "Shared Risk approach," of ILAC-G8:09/2019, Guidelines on Decision Rules and Statements of Conformity.

For INTERTEK B&C:

| | |
|----------------------|---|
| COMPLETED BY: | Bryan Wall |
| TITLE: | Technician – Building Products |
| SIGNATURE: |  |
| DATE: | 05/05/22 |

| | |
|---------------------|--|
| REVIEWED BY: | Jason Kamorski |
| TITLE: | Reviewer – Building Products |
| SIGNATURE: |  |
| DATE: | 05/05/22 |

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6225 Kenway Drive
Mississauga, Ont.L5T 2L3

Telephone: 905 678 7820
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SECTION 2

SUMMARY OF TEST RESULTS

A summary of results are as indicated in the table below:

| Evaluation Property | Results |
|--|------------------------|
| Air Leakage Resistance @ 75 Pa (1.6 psf) | US – Pass; Can – Fixed |
| Water Penetration Resistance | 180 Pa (3.76 psf) |
| Uniform Load – Deflection | 1200 Pa (25.06 psf) |
| Uniform Load – Structural | 1800 Pa (37.59 psf) |
| Forced Entry Resistance | Gr.10 |
| Thermoplastic Corner Weld Test | Pass |

Details of the tested results can be found in Section 7 of this report.

Primary and Secondary Designations are as indicated below:

Vinyl Low Profile Fixed

Class LC – PG25 – Size Tested 1524 x 2438 mm (60 x 96 in) – Type FW

Secondary Designator

Positive Design Pressure = 1200 Pa (25.06 psf)

Negative Design Pressure = 1200 Pa (25.06 psf)

Water Penetration Resistance = 180 Pa (3.76 psf)

Canadian Air Leakage Resistance = Fixed

SECTION 3

TEST METHOD(S)

The specimen was tested and evaluated in accordance with the following:

- **AAMA/WDMA/CSA 101/I.S.2/A440-17**, *Standard/Specification for windows, doors, and unit skylights*
- **CSA A440S1-19**, *Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440, NAFS – North American Fenestration Standard/Specification for windows, doors, and skylights*

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EQUIPMENT**

| ASSET # | DESCRIPTION | CAL DUE DATE |
|----------------|-------------------------|---------------------|
| 280-01-0957 | Laminar Flow Element | 04/20/22 |
| 280-01-0961 | Pressure Transducer | 03/11/22 |
| 273-01-0974 | Water Spray Assembly | 04/10/22 |
| 280-01-0956A | 20" Linear Transducer | 06/14/22 |
| 280-01-0956B | 20" Linear Transducer | 06/14/22 |
| 280-01-0956C | 20" Linear Transducer | 06/14/22 |
| 278-01-0730 | Lufkin 26' Tape Measure | 11/16/21 |
| 273-02-0028 | 0-6" Caliper | 08/19/22 |

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SECTION 5

TEST PROCEDURE

AIR LEAKAGE RESISTANCE

The Air Leakage Resistance test was performed in accordance with ASTM E283-04(2012), *“Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen”*. Air infiltration and exfiltration tests were performed using a test pressure of 75 Pa (1.57 psf). The maximum air leakage rate was calculated and compared to the allowable air leakage.

CYCLIC WATER PENETRATION RESISTANCE

A four-cycle Water Penetration Resistance test was performed in accordance with ASTM E547-00(2016) *“Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference”* (ASTM E547). The test was performed using the specified pressure differential and a water spray rate of at least 204 L/m² per hour (5.0 U.S. gal/ft² per hour). Each cycle consisted of five minutes with the pressure applied and one minute with the pressure released, during which the water spray was continuously applied.

UNIFORM LOAD DEFLECTION

The Uniform Load Deflection tests were conducted in accordance with ASTM E330/E330M-14 *“Standard Test Method for Structural Performance of Exterior Windows, Skylights, Doors and Curtain Walls by Uniform Static Air Pressure Difference”* (ASTM E330), Procedure A. The tests were performed in both the positive and negative directions. After a 10 second preload (50% of the test load), followed by 1 minute with the pressure released, the tests were conducted at the specified test pressure for a period of 10 seconds. Deflections were measured at the mid-span and at the ends. The end deflections were averaged and subtracted from the mid-span deflection (to eliminate deflections caused by movement at the ends of the structural supporting members). Polyethylene film was used during the positive wind pressure sequences.

UNIFORM LOAD STRUCTURAL

The Uniform Load Structural tests were conducted in accordance with ASTM E330/E330M-14 *“Standard Test Method for Structural Performance of Exterior Windows, Skylights, Doors and Curtain Walls by Uniform Static Air Pressure Difference”* (ASTM E330), Procedure A. After a 10 second preload (50% of test load), followed by 1 minute with the pressure released, the sample was subjected to a Uniform Load Structural test using a specified test pressure for a time of 10 seconds. The test was performed in both the positive and negative directions. After the test loads were released, the permanent deflections were recorded, and the specimen was inspected for failure or permanent deformation of any part of the system that would cause any operational malfunction. Polyethylene film was used during the positive wind pressure sequences.

FORCED ENTRY RESISTANCE

Window Type

The Forced-entry Resistance Test was conducted in accordance with ASTM F588-17 *“Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact”*. This included the Disassembly test.

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THERMOPLASTIC CORNER WELD TEST

The Thermoplastic Corner Weld Test was performed in accordance with Section 9.3.6.2 of NAFS-17. After the sample was deglazed a corner section of the frame was cut out and fastened to a test fixture, a load was gradually applied until breakage of the corner occurred.

DEVIATION FROM STANDARD METHOD

No deviations noted.

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SECTION 6

TEST SPECIMEN DESCRIPTION

| | |
|---------------------------------|--|
| Manufacturer Information | <p>PolyTech Products Ltd. R.R.#3 8819 Highway 105 Baddeck, NS B0E 1B0 Canada</p> |
| Model Name | <ul style="list-style-type: none">• Vinyl Low Profile Fixed |
| Installation | <ul style="list-style-type: none">• Test Buck: 2x10, #2 & better spf, box, butt joints secured with 5x #10 x 3.5" deck screws.• Specimen to Buck: Through the 2 x 10 test buck and into the frame using #10 x 3" flat-head deck screws, 4x through the jambs spaced approximately 650mm (25.5") apart, 3x through the sill and header, spaced approximately 610mm (24") apart.• Silicone was used to seal all screw heads. Silicone was used to seal all joints of the test buck as well as the rough opening of the buck on the exterior. |
| Size | <ul style="list-style-type: none">• Overall Size:<ul style="list-style-type: none">• Width: 1524 mm (60")• Height: 2438 mm (96") |
| Frame | <ul style="list-style-type: none">• Material: Vinyl• Corners: Frame corners are mitred 45 degrees and welded.• Reinforcement: 30mm x 25mm x 1.5mm thick galvanized steel box channel |
| Drainage | <ul style="list-style-type: none">• 2x 6mm x 23mm (0.25 x 1") slots drilled into the sill, under the glazing unit, approximately 150mm (6") from the inside edge of either jamb drained to corresponding holes on the exterior side of the frame, covered.• 3x 6mm x 23mm (0.25 x 1") slots drilled into the header, one centred and one approximately 150mm from each jamb respectively that drain to the drainage cavity and out the weep holes. |
| Glazing (all) | <ul style="list-style-type: none">• IGU specification – Fixed:<ul style="list-style-type: none">• 6 mm / 6 mm clear annealed with a 10 mm Warm Edge Spacer sealed together using hot melt poly butyl.• Overall thickness, 22 mm (~7/8")• Laid-in, interior glazed on top of silicone heel bead extending 300mm (12") up each jamb.• Setting Blocks: 4x at 6mm thick plastic setting blocks on each jamb spaced approximately 650mm apart, held in place on the setting block cavity spacer with a dab of silicone. 3x at 4mm thick plastic setting blocks in the sill and header, spaced 75mm from each jamb and one in the centre. |

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| | |
|-----------------|---|
| | <ul style="list-style-type: none">• Glazing Stops: Vinyl stops pressed into kerf of exterior. Mitre cut at the corners. Sealed with rubber, kerf-inserted dual-fin seal.• The glazing leg perimeter has a rubber kerf-inserted finned bulb-seal. Corners are continuous with a glued butt-joint centre header. |
| Drawings | <ul style="list-style-type: none">• A copy of the drawing package supplied by PolyTech Products Ltd. is included in Section 10 of this report. |

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SECTION 7

TEST RESULTS

AIR LEAKAGE RESISTANCE

Air test data is indicated in the following table:

| Specimen | Area m ² (ft ²) | Infiltration Rate L/s*m ² (cfm/ft ²) | Exfiltration Rate L/s*m ² (cfm/ft ²) | Compliance US (CAN) |
|---|---|--|--|------------------------|
| Vinyl Fixed | 3.72 (40.04) | 0.02 (0.00) | 0.00 (0.00) | Pass (Fixed) |
| Allowable Leakage Rates | | | | |
| Maximum allowable air leakage rate (US): | | | 1.5 L/s*m ² , 0.3 cfm/ft ² | |
| Maximum allowable air leakage rate (CAN – Fixed): | | | 0.2 L/s*m ² , 0.04 cfm/ft ² | |

The overall system **met** the US and Canadian performance requirements as reported above when evaluated under NAFS-17 and A440S1-19.

WATER PENETRATION RESISTANCE

During the 24-minute test period, using a pressure differential of 180 Pa (3.76 psf), there was no water leakage observed. The system met the **(CAN) PG25** Water Penetration Resistance performance requirements under NAFS-17 and A440S1-19.

UNIFORM LOAD – DEFLECTION & STRUCTURAL

Fixed Window Uniform Load Data:

Locking stile span, L = 2370 mm (93.3")

Deflection limit, L/175 = N/A

Residual deflection limit, L*0.4% = 9.48 mm (0.37")

| Test Pressure, Pa (psf) | Deflection Measurements, mm (in.) | | | | Compliance |
|----------------------------|-----------------------------------|-------------|-------------|-------------|------------------|
| | Positive | | Negative | | |
| | Deflection | Residual | Deflection | Residual | |
| 1200 (25.06) | 0.86 (0.03) | 0.03 (0.00) | 1.39 (0.05) | 0.06 (0.00) | Pass DP25 |
| 1800 (37.59) | 1.26 (0.05) | 0.01 (0.00) | 2.21 (0.09) | 0.06 (0.00) | |

After the test loads were released, the specimen was inspected and there was found to be no failure or permanent deformation of any part of the window system that would cause any operational malfunction. The system met the overall **DP25** Uniform Load performance requirements under NAFS-17.

FORCED ENTRY RESISTANCE

Attempts to gain entry by opening the glazing panel, in accordance with the Disassembly, tests for a Type D assembly, were unsuccessful. The system met the **Grade 10** Forced-entry Resistance performance requirements of NAFS-17.

THERMOPLASTIC CORNER WELD TEST

The sample was loaded until the point of failure. The break line did not extend along the entire weld line. The system **met** the Thermoplastic Corner Weld Test performance requirements of NAFS-17.

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SECTION 8

CONCLUSION

The test specimen met the specified performance requirements as described in Section 7.