

PERFORMANCE TESTS IN ACCORDANCE WITH
AAMA/WDMA/CSA 101/I.S.2/A440-08



Report No.:
AI-03681-Z1

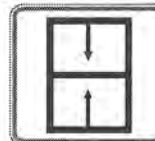
Product Manufacturer:

PH TECH INC.
8650 DE LA RIVE-SUD BLVD.
LÉVIS, QUEBEC
G6V 6N8
418-833-3231

Test Report Summary:

Product type:
Product series/model:

PVC Hung Window- Vertical Sliding
S-5350 Series Double Hung Window (Primera sash)
Without reinforcement and with sill adaptor 5880



Primary product designator:

Class R-PG55-H Size tested 1000 x 1600 (39 x 63)

Optional secondary designator:

Positive Design pressure (DP) = 2880 Pa (60.0 psf)
Negative design pressure (DP) = -2880 Pa (-60.0 psf)
Water penetration resistance test pressure = 400 Pa (8.25 psf)
Canadian air infiltration / exfiltration level = A3 Level

Test completion date:

08/26/2011

Report date:

10/19/2011

Revision date:

-

Number of pages:

7

CAN/CSA A440-00 ratings:

A3 / B4 / C4 / F20 / S1

Note: Reference must be made to Air-Ins Inc. complete report for test specimen description and detailed test results.

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5.0 RESULTS OF PERFORMANCE TESTS

5.1 TEST SPECIMEN PRIMARY TESTING

TEST	<div style="border: 1px solid black; padding: 5px; display: inline-block; font-size: 2em; font-weight: bold; margin-right: 10px;">R</div> CLASS SPECIFICATIONS	TEST RESULTS	GRADE OR COMMENT
Operating Force Test	<p><u>U.S. (only) requirements:</u> Force to initiate motion: Reported only Force to maintain motion < 155 N (35 lbf) Force to latch < 100 N (22.5 lbf)</p> <p><u>Canadian (only) requirements:</u> Force to initiate motion: (normal use) < 200N (45 lbf) (cleaning/maintenance) < 230 N (50 lbf) Force to maintain motion: (normal use) < 100 N (22.5 lbf) (cleaning/maintenance) < 200 N (45 lbf) Force to latch < 100 N (22.5 lbf) AAMA/WDMA/CSA 101/1.S.2/A440-08 par. 5.3.1.1 & ASTM-E2068-00 (2008)</p>	<p>Measured to initiate = 111.2 N (25 lbf) Measured to maintain = 89 N (20 lbf) Measured to latch = 13.3 N (3.0 lbf)</p>	<p>Passed</p>
Air Leakage Resistance Test	<p>$Q_{inf} \leq 1.5 \text{ l/s-m}^2 @ 75 \text{ Pa}$ ($\leq 0.3 \text{ cfm/ft}^2 @ 1.57 \text{ psf}$) AAMA/WDMA/CSA 101/1.S.2/A440-08 par. 5.3.2.1 & ASTM-E283-04</p> <p><u>Canadian air infiltration/exfiltration level:</u> A2: $Q_{inf} \& \text{ exf} \leq 1.5 \text{ l/s-m}^2 @ 75 \text{ Pa}$ ($\leq 0.3 \text{ cfm/ft}^2 @ 1.57 \text{ psf}$) A3: $Q_{inf} \& \text{ exf} \leq 0.5 \text{ l/s-m}^2 @ 75 \text{ Pa}$ ($\leq 0.1 \text{ cfm/ft}^2 @ 1.57 \text{ psf}$) AAMA/WDMA/CSA 101/1.S.2/A440-08 par. 5.3.2.2 & ASTM-E283-04</p>	<p>Surface: 1.60 m² (17.22 ft²) $Q_{inf} = 0.42 \text{ l/s-m}^2 @ 75 \text{ Pa}$ (0.08 cfm/ft² @ 1.57 psf)</p> <p>$Q_{inf} = 0.42 \text{ l/s-m}^2 @ 75 \text{ Pa}$ (0.08 cfm/ft² @ 1.57 psf) $Q_{exf} = 0.44 \text{ l/s-m}^2 @ 75 \text{ Pa}$ (0.09 cfm/ft² @ 1.57 psf) $Q_{avg} = 0.43 \text{ l/s-m}^2 @ 75 \text{ Pa}$ (0.08 cfm/ft² @ 1.57 psf)</p>	<p>Passed</p> <p>A3 level</p>
Water Resistance Test	<p>No water infiltration under a minimum pressure differential of 140 Pa (2.90 psf) AAMA/WDMA/CSA 101/1.S.2/A440-08 par. 5.3.3.2 & ASTM-E547-00 (2009)</p>	<p>No water infiltration under a pressure differential of 400 Pa (8.25 psf) with and without insect screen.</p>	<p>55</p>
Uniform Load Deflection Test	<p>Deflection at 720 Pa (15.00 psf) minimum class level and at optional Design Pressure (DP) performance level. AAMA/WDMA/CSA 101/1.S.2/A440-08 par. 5.3.4.2 & ASTM-E330-02 (2010)</p>	<p>Net deflection measured on the meeting rail: 2.33 mm @ -720 Pa (0.09 " @ -15.00 psf) 2.33 mm @ +720 Pa (0.09 " @ +15.00 psf) 11.51 mm @ -2880 Pa (0.45 " @ -60.00 psf) 11.35 mm @ +2880 Pa (0.44 " @ +60.00 psf)</p> <p>Net deflection measured on the stile: 0.21 mm @ -720 Pa (0.01 " @ -15.00 psf) 1.25 mm @ +720 Pa (0.05 " @ +15.00 psf) 0.70 mm @ -2880 Pa (0.02 " @ -60.00 psf) 5.02 mm @ +2880 Pa (0.19 " @ +60.00 psf)</p> <p>Allowed: Not applicable for this performance class</p>	<p>Reported only</p>

Performance Evaluation: Hung Window Vertical Sliding



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<p>Uniform Load Structural Test</p>	<p>Permanent deformation $\leq 0.4\%$ of the member span at minimum class level of 1080 Pa (22.5 psf) and at optional Structural Test Pressure (STP) levels. <i>AAMA/WDMA/CSA 101/1.S.2/A440-08 par. 5.3.4.3 & ASTM-E330-02 (2010)</i></p>	<p>Permanent deformation measured on the meeting rail: 0.02 mm @ -1080 Pa (0.00 " @ -22.5 psf) 0.44 mm @ +1080 Pa (0.01 " @ +22.5 psf) 0.86 mm @ -4320 Pa (0.03 " @ -90.00 psf) 0.51 mm @ +4320 Pa (0.02 " @ +90.00 psf) Allowed ≤ 3.54 mm (0.14 ")</p> <p>Permanent deformation measured on the stile: 0.03 mm @ -1080 Pa (0.00 " @ -22.5 psf) 0.11 mm @ +1080 Pa (0.00 " @ +22.5 psf) 0.05 mm @ -4320 Pa (0.00 " @ -90.00 psf) 0.06 mm @ +4320 Pa (0.00 " @ +90.00 psf) Allowed ≤ 2.86 mm (0.11 ")</p>	<p>60</p>
<p>Forced-Entry Resistance Test</p>	<p>All windows shall be tested according to ASTM F588-07 performance level 10. <i>AAMA/WDMA/CSA 101/1.S.2/A440-08 par. 5.3.5</i></p>	<p>Grade 40 of ASTM F588-07 $T_1=10$ min., $L_1=1334$ N (300 lbf), $L_2=667$ N (150 lbf) & $L_3=267$ N (60 lbf)</p>	<p>Passed</p>

5.2 TEST SPECIMEN AUXILIARY TESTING

TEST	<div style="border: 1px solid black; padding: 5px; display: inline-block; font-size: 2em; font-weight: bold; margin-right: 10px;">R</div> CLASS SPECIFICATIONS	TEST RESULTS	GRADE OR COMMENT
<p>Welded Corner Test</p>	<p>When loaded to failure, the break shall not extend along the entire weld line. <i>AAMA/WDMA/CSA 101/1.S.2/A440-08 par. 5.3.6.2</i></p>	<p>For each corner detail (sash and frame) the breakage does not extend along the entire weld line.</p>	<p>Passed</p>
<p>Deglazing Test</p>	<p>Deglazing $< 90\%$ of original glazing bite. The load for horizontal sash members is 320 N (70 lbf) and 230 N (50 lbf) for all other rails. <i>AAMA/WDMA/CSA 101/1.S.2/A440-08 par. 5.3.6.3 & ASTM E987-88 (2009)</i></p>	<p>Allowed: 12.47 mm (0.49") / 90 % Measured: 1.26 mm (0.05") / 9 % for stiles Measured: 0.22 mm (0.01") / 1.5 % for rails</p>	<p>Passed</p>
<p>Insect Screen Test</p>	<p><u>Canadian (only) requirements:</u> Insect screens shall be tested in accordance with ASTM E1748 in the outward direction only under a load of 60 N (13 lbf). <i>A440S1-09 Canadian Supplement to AAMA/WDMA/CSA 101/1.S.2/A440 par. 5.1</i></p>	<p>No screen disengagement or permanent deformation under a 60 N (13 lbf) load.</p>	<p>Passed</p>

Performance Evaluation: Hung Window Vertical Sliding



6.0 CONCLUSION

Based on the tests results, the window described in this report meets the requirements of the AAMA/WDMA/CSA 101/I.S. 2/A440-08 Standard regarding performance testing (article 5.0).

Detailed assembly drawings showing wall thickness of all members, corner construction and hardware application are on file and have been compared to the sample submitted.

The above results were secured by using the designated test methods and they indicate compliance with the performance requirements of the referenced specification. The test records from this evaluation will be retained for a minimum of four (4) years from the date of report issuance. This report does not constitute certification of this product, which may only be granted by a certification agency.

Note on the Limitation of Liability:

Due care was taken in performing the testing sequence and in reporting the results related to the test specimen received for evaluation. Through acceptance of this report, the Client agrees to exempt Air-Ins Inc. employees and owners from all liability claims and demands arising from any matter related to or concerning the quality and execution of the performance evaluation contained in this report.

7.0 REVISION LOG

Rev. #	Date	Page(s)	Revision(s)