

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



**Report No.:**

AI-03810-V1 Rev.3 (Reissue-56)

**Manufactured under licence by:**

MI WINDOWS AND DOORS  
650 W. MARKET STREET  
GRATZ, PA  
USA, 17030

**Test Report Summary:**

Product type: PVC Sliding Door  
Product series/model: S-7500 Series Patio Door

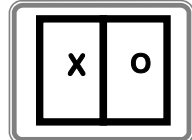
Primary product designator:

**Class R-PG60-SD Size tested 1800 x 2080 (71 x 82)**

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 = 440 Pa (9.00 psf)  
Canadian air infiltration / exfiltration level = A3 Level

Test completion date: 11/12/2012  
Report date: 09/15/2011  
Revision date: 12/20/2012  
Reissue date: 04/11/2017  
Number of pages: 8



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

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

### **1.0 INTRODUCTION**

Air-Ins Inc. laboratory was retained by "**P.H. Tech Inc.**" to test a door according to the performance levels in the AAMA/WDMA/CSA 101/I.S.2/A440-08 Standard. The original report issued to "**PH Tech Inc.**" is hereby reissued to "**MI Windows and Doors**" for their use as an under licence product manufacturer. The sample components and manufacturing are documented in section 2.0.

*Note concerning the use of units of measurement in this report:*

*According to the AAMA/WDMA/CSA 101/I.S.2/A440-08 Standard, the use of SI (metric) units is the standard, while IP (Imperial) values given in parentheses are for reference purposes only, and are inexact rounded values. Section 5.0 contains testing results converted to IP units for the sake of convenience only. The only exception to using Si values is in the Performance Grade (PG) portion of the product designation.*

*Note concerning drawings:*

*The drawings reviewed for the production of this report are stamped and are on file at Air-Ins Inc. The availability of individual drawings will be at the discretion of the client.*

### **2.0 DESCRIPTION OF THE SPECIMEN TESTED**

**Type:** Horizontal Sliding, type A of AAMA/WDMA/CSA 101/I.S. 2/A440-08.  
- Number of sashes: (1) operable sash and (1) fixed sash.

**Model:** S-7500 Series Patio Door

**Assembly drawings:** PVC Frame Patio Door S-7500 (Outside glazing bead welded sashes)

**Drawings reviewed:** - Parts no.: 701, 703, 710, 723, 5771, 7000, 7002, 7003, 7004, 7026, 7523, 7541, 7587, 8842, 8933, 8940, 9598, 9599, 9667, 9732, 9734, 9790, 9808, 9950, and 9991.

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- Drawings no.:
- 701 (Fixed sash support drainage)
- 723 (sill dust cover)
- 7000 (sill drainage)
- 9991 (aluminium clad drainage)
- 2.1.7. glazing
- 1.2.3. Silensia Screen (Extruded Aluminium)

**Date of CSA audit:** None

**Date(s) of sample reception:** 07/22/2011 and 11/07/2012

**Date(s) of testing:** 07/26/2011, 09/15/2011 and 11/12/2012

**For items marked with \*, please refer to Section 3.0, for detailed alterations**

**Test specimen installation (test buck):**

- Material: Eastern White pine (2" x 8")
- Rough opening clearances: None
- Fastening: # 8 x 2" screws: (7) at sill and head, and (7) each jamb, screwed through the PVC frame, into the wood test buck.
- Sealing detail: Sealant between test buck and specimen on exterior and interior perimeters.

**Frame:**

- Material: Extruded PVC
- Joinery type: Mechanical assembly screwed.
- Sill: Part no. 7000
- Sill cladding: Part no. 9991
- Fixed sash support: Part no. 701
- Fixed sash anchor: Part no. 7003
- Jambs: Part no. 7004
- Head: Part no. 7002

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- Sash rolling rail: Part no. 9790
- Fixed sash support cap: Part no. 9670/9671
- Dust plug base: Part no. 703 (head), 710 (sill)
- Reinforcement: None
- Weatherstripping: Sill at sash meeting stiles: Dust plug with base, part no. 710-BLM66. Sill at screen: Insect stop part no. PBAB 8445-270 (Schlegel). Interior-side and exterior-side jamb pockets: pile brush T-slot; PB-8420-270 (Schlegel), pile brush PB-8320-187 (Schlegel) and coextruded compression bulb. Head at sash meeting stiles: Dust plug with base, part no. 703. Head at screen: insect stop foam block 25 mm x 25 mm x 19 mm. Lower rail (both ends fixed panel): foam block; channelled; 25 mm x 25 mm x 19 mm).
- Sealant: Sealant at assembly of the interior and exterior sill before installation. Sealant between sill/head extremities and jambs. Sealant between the fixed sash support and jamb. Sealant along the entire length of the fixed sash support on the interior side (with sealant around the drain hole cover flap). Sealant around the dust plug holder on the sill adjacent to the fixed sash support at the meeting stiles level.
- Drainage: Drawings no. 7000, 701, 723 and 9991
- Overall dimensions: 1800 mm (70.87") W x 2080 mm (81.89") H

**Sashes:**

- Material: Extruded PVC
- Joinery type: Thermally welded mitre joints
- Rails and stiles: Part no. 7587
- Interlocks adaptor: Part no. 7026
- Sliding cap: Part no. 8842
- Glazing stops: Part no. 5771

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- Wheel shim: Part no. 7541
- Sash covering cap: Part no. 7523
- Screw cap: Part no. 9667
- Reinforcement: Part no. 9598 (pull stile) and 9599 (meeting stiles)
- Weatherstripping: Rails: pile brush with fin; T slot; HF-7522-270 (Schlegel). Interlock stile: pile brush with fin; T slot; HF-7522-270 (Schlegel).
- Sealant: Sealant at perimeter beside the co-extrusion fin before laying the sealed unit.
- Drainage: Drawing: 2.1.7. Glazing, Cutting of horizontal glazing bead no. 5771
- Overall dimensions: Active sash: 905 mm (35.63") W x 1971 mm (77.60") H. Fixed sash: 905 mm (35.63") W x 1971 mm (77.60") H

**Hardware:**

- Handle: (1) 9748 (Fasco)
- keeper and lock: (1) 9149 (Fasco) (mortise 1 point) or (1) 9249 (Fasco) (mortise 2 point) with screws #8 x 4"
- Rollers: (2) Parts no. 9732 (PH Tech)
- Weep hole plug: (1) 9734 (PH Tech)
- Weep hole cover: (1) 9808 (PH Tech)
- Sash bumper: (1) Part no. 8940 (P.H Tech)
- Cap for lock: (2) parts no. 9950 (P.H. Tech)

**Glazing: (Legend: C= Clear, Tt= Tinted, LE= Low-E, S= Surface #, A= Annealed, T= Tempered)**

- Type: Double glazed sealed unit with laminated glass
- Total thickness: 25 mm (1.00")
- Glass thickness: Ext: 3 mm (0.12")  
Int: 3 mm (0.12") – 0.8 mm (0.030") PVB – 3 mm (0.12")
- Type of glass: Ext: C-T / Int: C-A
- Type of spacer: Triseal 5/8" Super Spacer
- Type of filling gas: Air
- Glass retention: Glazing stop

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- Glazing seals: Exterior face: Sealant at sash perimeter. Interior face: None
- Setting blocks: (2) blocks at stiles and (2) blocks at lower rails, part no. 8933.

**Screen:**

- Frame material: Extruded aluminum
- Mesh material: Fiberglass
- Anchoring method: (4) roller
- Auxiliary parts:
  - (4) Sliding devices
  - (1) Recessed plastic handle
  - (1) Fly stopper
- Overall dimensions: 881 mm (34.69") W x 1994 mm (78.50") H

**3.0 ALTERATION(S)**

Alteration(s) performed in the laboratory on tested specimen to meet the reported performances:  
None

**4.0 TEST BENCH INFORMATION**

Information regarding the Test Bench and related instrumentation used for testing:

Testing was performed on Air-Ins Inc. test bench identified as TB01-PC. Latest calibration of this test bench and related equipment dates to 07/09/2012.



**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: 5px;">R</div> CLASS SPECIFICATIONS	TEST RESULTS	GRADE OR COMMENT
<b>Operating Force Test</b>	Force to initiate motion < 135 N (30 lbf) Force to maintain motion < 90N (20 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)	Measured to initiate = 105 N (24 lbf) Measured to maintain = 38 N (9lbf) Measured to latch = 82 N (19lbf)	<b>Passed</b>
<b>Air Leakage Resistance Test</b>	$Q_{inf} \leq 1.5 \text{ l/s-m}^2 @ 75 \text{ Pa}$ $(\leq 0.3 \text{ cfm/ft}^2 @ 1.57 \text{ psf})$ AAMA/WDMA/CSA 101/1.S.2/A440-08 par. 5.3.2.1 & ASTM-E283-04	Surface: 3.74 m <sup>2</sup> (40.30 ft <sup>2</sup> ) $Q_{inf} = 0.21 \text{ l/s-m}^2 @ 75 \text{ Pa}$ $(0.04 \text{ cfm/ft}^2 @ 1.57 \text{ psf})$	<b>Passed</b>
	<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	$Q_{inf} = 0.21 \text{ l/s-m}^2 @ 75 \text{ Pa}$ $(0.04 \text{ cfm/ft}^2 @ 1.57 \text{ psf})$ $Q_{exf} = 0.49 \text{ l/s-m}^2 @ 75 \text{ Pa}$ $(0.10 \text{ cfm/ft}^2 @ 1.57 \text{ psf})$ $Q_{avg} = 0.35 \text{ l/s-m}^2 @ 75 \text{ Pa}$ $(0.07 \text{ cfm/ft}^2 @ 1.57 \text{ psf})$	<b>A3 level</b>
<b>Water Resistance Test</b>	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)	No water infiltration under a pressure differential of 440 Pa (9.00 psf) with and without screen	<b>60</b>
<b>Uniform Load Deflection Test</b>	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)	Net deflection measured on the meeting stile: 7.68 mm @ -720 Pa (0.30 " @ -15.00 psf) 7.73 mm @ +720 Pa (0.30 " @ +15.00 psf) 32.28 mm @ -2880 Pa (1.27 " @ -60.00 psf) 29.82 mm @ +2880 Pa (1.17 " @ +60.00 psf) Allowed: Not applicable for this performance class	<b>Reported only</b>
<b>Uniform Load Structural Test</b>	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. AAMA/WDMA/CSA 101/1.S.2/A440-08 par. 5.3.4.3 & ASTM-E330-02 (2010)	Permanent deformation measured on the meeting stile: 0.40 mm @ -1080 Pa (0.02 " @ -22.5 psf) 0.31 mm @ +1080 Pa (0.01 " @ +22.50 psf) 2.96 mm @ -4320 Pa (0.12 " @ -90.00 psf) 1.46 mm @ +4320 Pa (0.06 " @ +90.00 psf) Allowed $\leq 7.62 \text{ mm (0.30")}$	<b>60</b>

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<b>Forced- Entry Resistance Test</b>	<p>All sliding doors shall be tested according to ASTM F842-07 minimum performance level 10. AAMA/WDMA/CSA 101/I.S.2/A440-08 par. 5.3.5</p>	<p><b>1 point Mortise lock/keeper:</b> (with 2 #8 x 4" screws on keeper) Grade 20 of ASTM F842-07 T<sub>1</sub>=5 min., L<sub>1</sub>=2224 N (500 lbf), L<sub>2</sub>=890 N (200 lbf), L<sub>3</sub>=222 N (50 lbf), L<sub>4</sub>=222 N (50 lbf) + panel weight</p>	<b>Passed</b>
		<p><b>2 point Mortise lock/keeper:</b> (with 2 #8 x 4" screws on keeper) Grade 30 of ASTM F842-07 T<sub>1</sub>=10 min., L<sub>1</sub>=3559 N (800 lbf), L<sub>2</sub>=1779 N (400 lbf), L<sub>3</sub>=445 N (100lbf), L<sub>4</sub>=222 N (50lbf) + panel weight</p>	<b>Passed</b>

**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: 5px;">R</div> CLASS SPECIFICATIONS	TEST RESULTS	GRADE OR COMMENT
<b>Welded Corner Test</b>	<p>When loaded to failure, the break shall not extend along the entire weld line. AAMA/WDMA/CSA 101/I.S.2/A440-08 par. 5.3.6.2</p>	<p>For each corner detail (sash only) the breakage does not extend along the entire weld line.</p>	<b>Passed</b>
<b>Deglazing Test</b>	<p>Deglazing &lt; 90% of original glazing bite. The load for vertical sash members is 320 N (70 lbf) and 230 N (50 lbf) for all other rails. AAMA/WDMA/CSA 101/I.S.2/A440-08 par. 5.3.6.3</p>	<p>Allowed: 15.4 mm (0.61")/ 90 % Measured: 0.5 mm (0.02")/ 0.5 % for stiles Measured: 0.1 mm (0.00") / 0 % for rails</p>	<b>Passed</b>

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## **6.0 CONCLUSION**

Based on the tests results, the door 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**

<b>Rev. #</b>	<b>Date</b>	<b>Page(s)</b>	<b>Revision(s)</b>
1	10/20/2011	Front page	Add CAN/CGSB 82.1-M89 ratings
2	02/16/2012	2	Test specimen installation revised to reflect the proper installation method evaluated.
3	12/20/2012	Front, 1, 2, 3, 4, 5 & 6	Test results and glass description revised to reflect an additional glazing option.