

PERFORMANCE TESTS IN ACCORDANCE WITH
AAMA/WDMA/CSA 101/I.S.2/A440-08 & A440S1-09



Report No.:

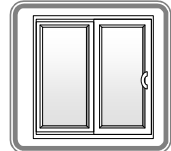
AI-04159-D1 (Reissue-56)

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 OX Series Patio Door



Primary product designator:

Class LC-PG35-SD Size tested 2440 x 2440 (96 x 96)

Optional secondary designator:

Positive Design pressure (DP) = 1680 Pa (35.0 psf)
Negative design pressure (DP) = -1680 Pa (-35.0 psf)
Water penetration resistance test pressure = 290 Pa (6.00 psf)
Canadian air infiltration / exfiltration level = A3 Level

Test completion date: 12/13/2013

Report date: 06/20/2014

Revision date: -

Reissue date: 01/27/2017

Number of pages: 8

CAN/CGSB 82.1-M89 ratings: A3 / B3 / C1 / E3 / F1

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 & A440S1-09**

1.0 INTRODUCTION

Air-Ins Inc. laboratory was retained by "**PH Tech Inc.**" to test a door according to the performance levels in the AAMA/WDMA/CSA 101/I.S.2/A440-08 & A440S1-09 Standards. 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, OX of AAMA/WDMA/CSA 101/I.S. 2/A440-08.
- Number of sashes: (1) operable sash and (1) fixed sash.

Model: S-7500 OX Series Patio Door

Assembly drawings: S-7500 PVC Frame Patio Door OX/XO (TS, OS). (Outside glazing bead welded sashes)

Drawings reviewed: - Part nos.: 701, 703, 710, 723, 5775, 7000, 7002, 7004, 7026,

Performance Evaluation: S-7500 OX Series Sliding Door



7042, 7523, 7541, 7587, 8842, 8933, 8940, 9597, 9598, 9599, 9732, 9734, 9790, 9808, 9150 and 9991

- Drawing nos.:
- 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(s) of sample reception: 12/05/2013

Date(s) of testing: 12/12/2013 and 12/13/2013

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: (20) at sill and head, and (20) each jamb, aligned in two rows, 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
- Sill dust cover: Part no. 723
- Fixed sash support: Part no. 701
- Jambs: Part no. 7004
- Head: Part no. 7002

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- Sash rolling rail: Part no. 9790
- Dust plug base: Part no. 703 (head), 710-BLM66 (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. 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. 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: 2440 mm (96.06") W x 2440 mm (96.06") H

Sash:

- 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. 5775
- Wheel shim: Part no. 7541
- Sash covering cap: Part no. 7523
- Reinforcement: Part no. 9598 (lock stile) and 9599 (meeting stiles)

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- 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 coextrusion fin before laying the sealed unit.
- Drainage: Drawing: 2.1.7. Glazing, cutting of horizontal glazing bead no. 5771
- Overall dimensions: Active sash: 1223 mm (48.15") W x 2330 mm (91.73") H. Fixed sash: 1223 mm (48.15") W x 2330 mm (91.73") H

Hardware:

- Handle: (1) 9748 (Fasco)
- Keeper and lock: (1) 9149 (Fasco) with #8 x 2" screws
- Rollers: (2) Part no. 9732 (PH Tech)
- Weep hole plug: (1) Part no. 9734
- Weep hole cover: (1) Part no. 9808
- Sash bumper: (1) Part no. 8940 (P.H Tech)

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

- Type: Double glazed sealed unit
- Total thickness: 25 mm (1.00")
- Glass thickness: Ext: 4.0 mm (0.16") .Int: 4.0 mm (0.16")
- Air space gap width: 17 mm (0.67")
- Type of glass: Ext: C-T / Int: C-T
- Type of spacer: *Super Spacer*
- Type of filling gas: Argon
- Glass retention: Glazing stop
- Glazing seals: Interior face: Sealant at sash perimeter. Exterior face: Glazing stop. Part no. 5775
- Setting blocks: (2) blocks at stiles, (2) blocks at upper rail and (2) blocks at lower rails, part no. 8933
- Day light opening: Fixed sash: 1055 mm (41.54") W x 2165 mm (85.24") H
Active sash: 1057 mm (41.61") W x 2167 mm (85.31") H

Performance Evaluation: S-7500 OX Series Sliding Door



Screen:

- Quantity: (1) Silensia screens.
- Frame material: Extruded aluminum
- Mesh material: Fiberglass
- Anchoring method: (4) roller
- Auxiliary parts:
 - (4) Sliding devices
 - (1) Recessed plastic handle
 - (1) Pile brush, t-slot retention
- Overall dimensions: 1202 mm (47.32") W x 2355 mm (92.72") 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 TB03-GCC. Latest calibration of this test bench and related equipment dates to January 2014.



5.0 RESULTS OF PERFORMANCE TESTS

5.1 TEST SPECIMEN PRIMARY TESTING

TEST	LC	CLASS SPECIFICATIONS	TEST RESULTS	GRADE OR COMMENT
Operating Force Test		Force to initiate motion < 135 N (30 lbf) Force to maintain motion < 90 N (20 lbf) Force to latch < 100 N (22.5 lbf) AAMA/WDMA/CSA 101/I.S.2/A440-08 par. 5.3.1.1 & ASTM-E2068-00 (2008)	Measured to initiate = 100 N (22 lbf) Measured to maintain = 38 N (9 lbf) Measured to latch = 82 N (19 lbf)	Passed
Air Leakage Resistance Test		$Q_{inf} \leq 1.5 \text{ l/s-m}^2 @ 75 \text{ Pa}$ ($\leq 0.3 \text{ cfm/ft}^2 @ 1.57 \text{ psf}$) AAMA/WDMA/CSA 101/I.S.2/A440-08 par. 5.3.2.1 & ASTM-E283-04	Surface: 5.95 m ² (64.08 ft ²) $Q_{inf} = 0.29 \text{ l/s-m}^2 @ 75 \text{ Pa}$ (0.06 cfm/ft ² @ 1.57 psf)	Passed
		<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/I.S.2/A440-08 par. 5.3.2.2 & ASTM-E283-04	$Q_{inf} = 0.29 \text{ l/s-m}^2 @ 75 \text{ Pa}$ (0.06 cfm/ft ² @ 1.57 psf) $Q_{\text{exf}} = 0.41 \text{ l/s-m}^2 @ 75 \text{ Pa}$ (0.08 cfm/ft ² @ 1.57 psf) $Q_{\text{avg}} = 0.35 \text{ l/s-m}^2 @ 75 \text{ Pa}$ (0.07 cfm/ft ² @ 1.57 psf)	A3 level
Water Resistance Test		No water infiltration under a minimum pressure differential of 180 Pa (3.75 psf) AAMA/WDMA/CSA 101/I.S.2/A440-08 par. 5.3.3.2 & ASTM-E547-00 (2009)	No water infiltration under the minimum test pressure for the Class.	Passed
			No water infiltration under a maximum (optional) test pressure differential of:	290 Pa (6.00 psf)
Uniform Load Deflection Test		Member deflection at a minimum design pressure (DP) of 1200 Pa (25.00 psf) and at optional DP performance levels. AAMA/WDMA/CSA 101/I.S.2/A440-08 par. 5.3.4.2 & ASTM-E330-02 (2010)	Net deflection measured on the meeting stile: 25.07 mm @ -1200 Pa (0.99 " @ -25.00 psf) 28.94 mm @ +1200 Pa (1.14 " @ +25.00 psf) 39.29 mm @ -1680 Pa (1.55 " @ -35.00 psf) 37.56 mm @ +1680 Pa (1.48 " @ +35.00 psf) Allowed: Not applicable for this performance class	Reported only
Uniform Load Structural Test		Permanent deformation is limited to $\leq 0.4\%$ (L) at a minimum structural test pressure (STP) of 1800 Pa (37.50 psf) and at optional STP levels. AAMA/WDMA/CSA 101/I.S.2/A440-08 par. 5.3.4.3 & ASTM-E330-02 (2010)	Permanent deformation measured on the meeting stile: 1.80 mm @ -1800 Pa (0.07 " @ -37.50 psf) 1.90 mm @ +1800 Pa (0.07 " @ +37.50 psf) 3.86 mm @ -2520 Pa (0.15 " @ -52.50 psf) 2.95 mm @ +2520 Pa (0.12 " @ +52.50 psf) Allowed $\leq 8.98 \text{ mm}$ (0.35 ")	STP 35
Forced-Entry Resistance Test		All sliding doors shall be tested according to ASTM F842-04 minimum performance level 10. AAMA/WDMA/CSA 101/I.S.2/A440-08 par. 5.3.5	Grade 10 of ASTM F842-04 $T_1=5 \text{ min.}$, $L_1=1334 \text{ N}$ (300 lbf), $L_2=778 \text{ N}$ (175 lbf), $L_3=133 \text{ N}$ (30 lbf), $L_4=222 \text{ N}$ (50 lbf) + panel weight	Passed

Performance Evaluation: S-7500 OX Series Sliding Door



5.2 TEST SPECIMEN AUXILIARY TESTING

TEST	<div style="border: 1px solid black; padding: 5px; display: inline-block; margin-right: 10px;">LC</div> CLASS SPECIFICATIONS	TEST RESULTS	COMMENT
Welded Corner Test	When loaded to failure, the break shall not extend along the entire weld line. <i>AAMA/WDMA/CSA 101/I.S.2/A440-08 par. 5.3.6.2</i>	For each corner detail (sashes) the breakage does not extend along the entire weld line.	Passed
Deglazing Test	Deglazing < 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. <i>AAMA/WDMA/CSA 101/I.S.2/A440-08 par. 5.3.6.3 & ASTM E987-88 (2009)</i>	Allowed: 15.7 mm (0.07") / 90 % Measured: 1.5 mm (0.07") / 8.5 % for stiles Measured: 1.0 mm (0.07") / 6 % for rails	Passed



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 & A440S1-09 Standards regarding performance testing (articles 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)