

Report No. ETC 01-741-10703.0  
 DC Notification Number ETC 01019  
 Date: August 7, 2001  
 ETC Certification # 99-0416.01  
 Test Start Date: May 16, 2001  
 Test End Date: May 17, 2001

**Test Requested By:** THERMA-TRU CORP  
 1687 Woodlands Drive  
 Maumee, Ohio 43537  
 Toll Free 800.537.8827  
 Phone 219.868.5811  
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**Tests Conducted:** PA 202 (with no deviations)

<b><u>Design Pressures</u></b> -	Specimens 1, 2 & 3 (PA 202)	Out-swing	+ 67.0 psf.	- 67.0 psf.
	Specimen 4 (PA 202)	In-swing	+ 67.0 psf.	- 67.0 psf.

**Section 1 - DESCRIPTION OF SERIES:**

**Model Designation** - "Fiber Classic" Series Opaque Fiberglass Swing Door

**Overall Size:**

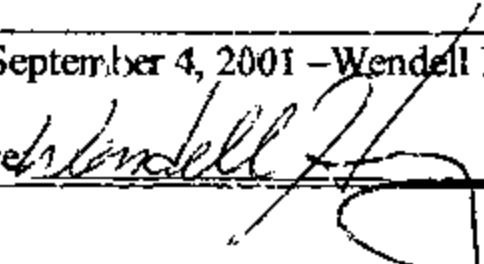
Specimens 1, 2 & 3 Out-swing Bumper Threshold - 37.5 in. W x 96.5 in. H x 4.5625 in. D  
 Specimens 4 In-swing Self-adjusting Threshold - 37.5 in. W x 98.0 in. H x 4.5625 in. D

**Configuration:** All Specimens (X)

**No. & Size of Doors:**

All Specimens 1 active leaf - 36.0 in. wide x 95.25 in. high x 1.68 in. thick

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**Section 2 - MATERIAL CHARACTERISTICS:****Frame and Door Material:** Finger jointed pine jambs and steel panels.**Frame Construction -**

The head jambs and side jambs are finger jointed pine measuring 4.565 in. x 1.17 in.. The head jamb and side jambs are mortised, butted and joined using (3) 0.5 in. crown x 2 in. 16 ga. wire staples at each end. The following thresholds were tested, specimens 1, 2 & 3 - Therma-Tru Aluminum Out-swing Bump measuring 4.615 in. x .837 in. and attached to the jamb with (2) 0.5 in. crown x 2.5 in. 16 ga. wire staples at each end. Specimens 1, 2 and 3 were affixed with an add-on high dam sill that increased the height of the original bump threshold to 1.875 in. at the inner most plane of the frame system (The high dam threshold was made from a piece of pine and added to the standard bump threshold to increase the height). Specimen 4 used a Therma-Tru self-adjusting In-swing saddle threshold (Alum/Wood/Vinyl) measuring 5.75 in. x 1.548 in. and attached to the jamb with (2) 0.5 in. crown x 2.5 in. 16 ga. wire staples at each end. The hinge jamb was mortised to receive (4) Therma-Tru 4.0 in. x 4.0 in. self-locating hinges located at 6.125 in., 31.625 in., 57.125 in. and 82.625 in. from the top of the door jamb.

**Panel Construction -**

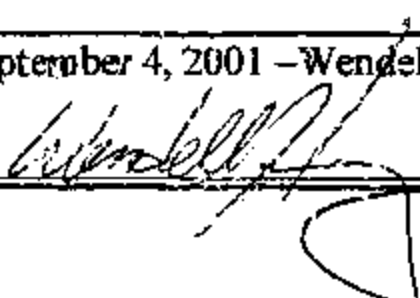
The door panel skins are constructed from 0.110 in. thick sheet molding compound (SMC). The interior cavity of each door is filled with 1.9 lbs. density BASF polyurethane foam. The face sheets are adhesively bonded to the wood stiles and rails. The latch stile measures 3.85 in. wide x 1.46 in. deep laminated lumber with a 0.336 in. wide x 1.185 in. deep pine cap and the hinge stile measures 1.2175 in. wide x 1.46 in. deep finger jointed pine. The top rail measures 0.92 in. thick x 1.46 in. deep wood composite and the bottom rail measures 1.09 in. thick x 1.46 in. wide wood composite. The bottom rail is kerfed to receive a door sweep (the sweep is used on in-swing models only). The hinge stile was mortised at 5.25 in., 30.75 in., 56.25 in. and 81.75 in. from the top of the door panel to receive (4) Therma-Tru 4.0 in. x 4.0 in. butt type hinges. The 4.186 in. latch stile utilized no additional reinforcement for the lock hardware.

**Sash Construction -** NA**Glazing:** NA**Glazing Method:** NA**Daylight Opening:** NA**Weather-stripping:**

All Specimens	Latch Jamb 1 pc Therma-Tru long reach foam compression weather-strip. Head Jamb 1 pc Therma-Tru long reach foam compression weather-strip. Hinge Jamb 1 pc Therma-Tru short reach foam compression weather-strip. Corner pad seals 2 - 1 at each side jamb at threshold
Specimens 1, 2 & 3	At threshold 1 row Therma-Tru long reach foam compression weather-strip
Specimen 4 -	Therma-Tru vinyl fixed door bottom sweep.

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**Section 2 - MATERIAL CHARACTERISTICS Cont.:****Hardware:**

## All Specimens

- (1) Kwikset 700 Series Latchbolt (ANSI Grade II) at 60.0 in. from top of panel  
(The strikeplate was attached to the latch jamb with (2) #8 x 2.5 in. PFH WS.)
- (1) Kwikset 700 Deadbolt (ANSI Grade II) at 48.0 in. from top of panel  
(The strikeplate was attached to the latch jamb with (2) #8 x 2.5 in. PFH WS.)
- (4) Therma-Tru 4 in. butt type hinges  
(The hinge was fastened to the door panel with (4) #10 x 0.75 in. PFH WS and fastened to the jamb with (3) #10 x 0.75 in. PFH WS and (1) # 10 x 2.0 in. PFH WS.)

**Weepholes:** None**Muntins:** None**Reinforcement:** None**SEALANT:** Latex caulking as needed to seal unit into rough opening.**ADDITIONAL DESCRIPTION:**

All specimens were installed in a wood test buck.

**Section 3 - INSTALLATION:****Screws and Method of Attachment:**

Specimens 1, 2, 3 &amp; 4 used the following screw types and numbers to secure the frame system into the test buck.

Out-swing Specimens nos. 1, 2 & 3 14 - # 8 x 2.5 in. Flat Head Phillips wood screws.

- (2) from the left side of the test specimen on the head jamb the screws are located at 6.0 in. and 31.5 in.
- (6) from the top down on the left side of the test specimen the screws are located at 6.0 in., 23.0 in., 40.0 in., 57.0 in., 74.0 in. and 90.5 in.
- (6) from the top down on the right side of the test specimen the screws are located at 6.0 in., 23.0 in., 40.0 in., 57.0 in., 74.0 in. and 90.5 in.

In-swing Specimen no. 4 14 - # 8 x 2.5 in. Flat Head Phillips wood screws.

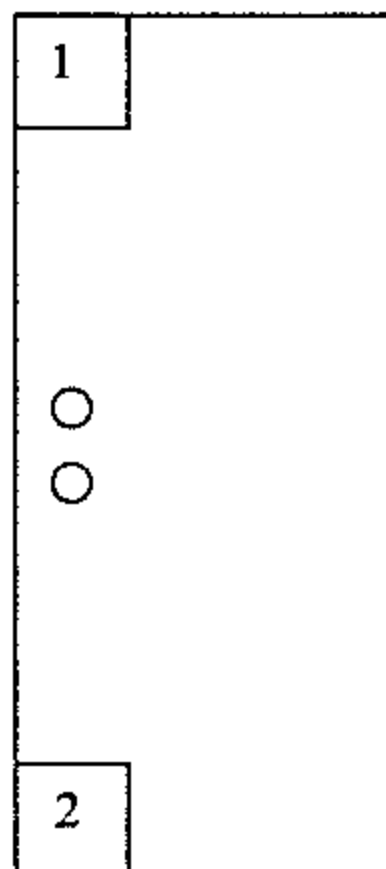
- (2) from the left side of the test specimen on the head jamb the screws are located at 6.0 in. and 31.5 in.
- (6) from the top down on the left side of the test specimen the screws are located at 6.0 in., 23.25 in., 40.5 in., 57.75 in., 75.0 in. and 92.0 in.
- (6) from the top down on the right side of the test specimen the screws are located at 6.0 in., 23.25 in., 40.5 in., 57.75 in., 75.0 in. and 92.0 in.

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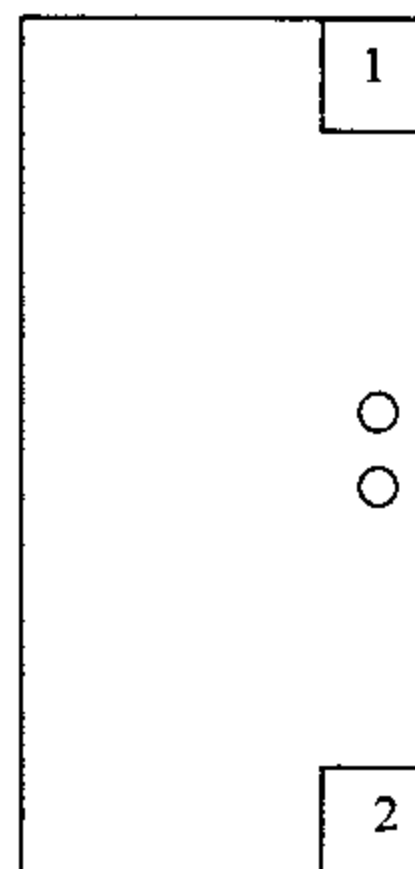
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**Section 4 - SEQUENCE OF TESTS PERFORMED:****Test Sequence: PA 202**

1. Air Infiltration
2. ½ Test Pressure Positive
3. Design Pressure Positive
4. ½ Test Pressure Negative
5. Design Pressure Negative
6. Water Infiltration Positive Direction
7. Full Test Pressure Positive
8. Full Test Pressure Negative
9. Forced Entry

**Deflection Gauges set at X's**

**X**  
**Out-swing**



**X**  
**In-swing**

Deflection was measured with two (2) Aerospace 2.0 in. dial indicators: location # 1-SN 213293 and location #2-SN 213848.

Air Infiltration Tests were conducted in accordance with DCBCCD PA 202-94

Water Infiltration Tests were conducted in accordance with DCBCCD PA 202-94

Static Tests were conducted in accordance with DCBCCD PA 202-94

Forced Entry Tests were conducted in accordance with DCBCCD PA202-94

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**Test Results:****Specimen 1: Out-swing (X)****AIR INFILTRATION**

Air at 1.57 psf	Actual	Allowable
	0.05 CFM/SQ FT	0.34 CFM/SQ FT

**WATER INFILTRATION**

Water @ 8.25 psf (15% of 55.0 psf) for 15 min. No water penetration over sill.

(Achieved with standard aluminum out-swing bump threshold.)

Water @ 10.05 psf (15% of 67.0 psf) for 15 min. No water penetration over sill.

(Achieved with add-on riser to the standard aluminum out-swing bump threshold. This test was conducted at the conclusion of the 8.25 psf test.)

Note: The water tests were conducted after the required half and design loads and before full test loads.

**STATIC AIR PRESSURE****Design Loads + 67.0 psf, - 67.0 psf. (Out-swing)**

Range of test	time	actual load	deflection	perm. set
Positive loads	(seconds)	psf		
1/2 Test	30	50.25		
Design	30	67.00		
Test	30	100.50	Door T (1) 0.242 in. Door B (2) 0.217 in.	0.039 in. 0.046 in.

Range of test	time	actual load	deflection	perm. set
Negative loads	(seconds)	psf		
1/2 Test	30	50.25		
Design	30	67.00		
Test	30	100.50	Door T (1) 1.857 in. Door B (2) 2.106 in.	0.100 in. 0.140 in.

(1) Loc 1 - Max. allowable perm. set at completion of test load (0.4% of span)  $.004 \times 95.25 \text{ in.} = 0.381 \text{ in.}$

(2) Loc 2 - Max. allowable perm. set at completion of test load (0.4% of span)  $.004 \times 95.25 \text{ in.} = 0.381 \text{ in.}$

**FORCED ENTRY**

	<u>Size</u>	<u>Time</u>	<u>Result</u>
Active Panel	36.0 in. W x 95.25.in. H	30 seconds	(Door remained locked & shut and was operable at the completion of the test.)

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**Test Results:                      Cont.**

**Specimen 2:                      Out-swing (X)**

**AIR INFILTRATION**

Air at 1.57 psf	Actual	Allowable
	0.02 CFM/SQ FT	0.34 CFM/SQ FT

**WATER INFILTRATION**

Water @ 8.25 psf (15% of 55.0 psf) for 15 min.      No water penetration over sill.  
(Achieved with standard aluminum out-swing bump threshold.)

Water @ 10.05 psf (15% of 67.0 psf) for 15 min.      No water penetration over sill.  
(Achieved with add-on riser to the standard aluminum out-swing bump threshold. This test was conducted at the conclusion of the 8.25 psf test.)

Note: The water tests were conducted after the required half and design loads and before full test loads.

**STATIC AIR PRESSURE**

**Design Loads      + 67.0 psf, - 67.0 psf. (Out-swing)**

Range of test	time	actual load	deflection	perm. set
Positive loads	(seconds)	psf		
1/2 Test	30	50.25		
Design	30	67.00		
Test	30	100.50	Door T (1) 0.211 in. Door B (2) 0.256 in.	0.044 in. 0.051 in.

Range of test	time	actual load	deflection	perm. set
Negative loads	(seconds)	psf		
1/2 Test	30	50.25		
Design	30	67.00		
Test	30	100.50	Door T (1) 2.500 in. Door B (2) 1.080 in.	0.147 in. 0.150 in.

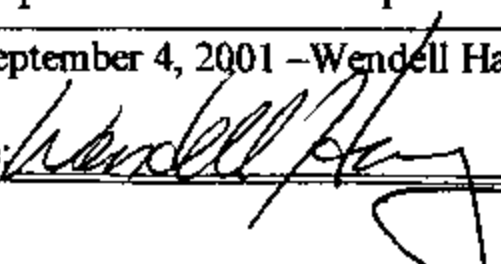
(1) Loc 1 - Max. allowable perm. set at completion of test load (0.4% of span) .004 x 95.25 in.= 0.381 in.

(2) Loc 2 - Max. allowable perm. set at completion of test load (0.4% of span) .004 x 95.25 in.= 0.381 in.

**FORCED ENTRY**

	<u>Size</u>	<u>Time</u>	<u>Result</u>
Active Panel	36.0 in. W x 95.25.in. H	30 seconds	(Door remained locked & shut and was operable at the completion of the test.)

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**Test Results:                      Cont.**

**Specimen 3:                      Out-swing (X)**

**AIR INFILTRATION**

Air at 1.57 psf	Actual	Allowable
	0.01 CFM/SQ FT	0.34 CFM/SQ FT

**WATER INFILTRATION**

Water @ 8.25 psf (15% of 55.0 psf) for 15 min.      No water penetration over sill.  
(Achieved with standard aluminum out-swing bump threshold.)

Water @ 10.05 psf (15% of 67.0 psf) for 15 min.      No water penetration over sill.  
(Achieved with add-on riser to the standard aluminum out-swing bump threshold. This test was conducted at the conclusion of the 8.25 psf test.)

Note: The water tests were conducted after the required half and design loads and before full test loads.

**STATIC AIR PRESSURE**

**Design Loads      + 70.0 psf, - 70.0 psf. (Out-swing)**

Range of test	time	actual load	deflection	perm. set
Positive loads	(seconds)	psf		
1/2 Test	30	50.25		
Design	30	67.00		
Test	30	100.50	Door T (1) 0.220 in. Door B (2) 0.219 in.	0.019 in. 0.038 in.

Range of test	time	actual load	deflection	perm. set
Negative loads	(seconds)	psf		
1/2 Test	30	50.25		
Design	30	67.00		
Test	30	100.50	Door T (1) 1.900 in. Door B (2) 1.775 in.	0.100 in. 0.125 in.

- (1) Loc 1 - Max. allowable perm. set at completion of test load (0.4% of span) .004 x 95.25 in.= 0.381 in.
- (2) Loc 2 - Max. allowable perm. set at completion of test load (0.4% of span) .004 x 95.25 in.= 0.381 in.

**FORCED ENTRY**

<u>Size</u>	<u>Time</u>	<u>Result</u>
Active Panel      36.0 in. W x 95.25.in. H	30 seconds	(Door remained locked & shut and was operable at the completion of the test.)

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**Test Results:                      Cont.**

**Specimen 4:                      In-swing (X)**

**AIR INFILTRATION**

Air at 1.57 psf	Actual	Allowable
	0.18 CFM/SQ FT	0.34 CFM/SQ FT

**WATER INFILTRATION**

Water @ 2.86 psf for 15 min.      No water penetration over sill.  
(Achieved with standard self adjusting aluminum in-swing threshold and door sweep.)

Note: The water test was conducted after the required half and design loads and before full test loads.

**STATIC AIR PRESSURE**

**Design Loads      + 67.0 psf, - 67.0 psf. (In-swing)**

Range of test	time	actual load	deflection	perm. set
Positive loads	(seconds)	psf		
1/2 Test	30	50.25		
Design	30	67.00		
Test	30	100.50	Door T (1) 2.165 in. Door B (2) 1.890 in.	0.129 in. 0.156 in.

Range of test	time	actual load	deflection	perm. set
Negative loads	(seconds)	psf		
1/2 Test	30	50.25		
Design	30	67.00		
Test	30	100.50	Door T (1) 0.223 in. Door B (2) 0.217 in.	0.027 in. 0.035 in.

(1) Loc 1 - Max. allowable perm. set at completion of test load (0.4% of span) .004 x 95.25 in.= 0.381 in.

(2) Loc 2 - Max. allowable perm. set at completion of test load (0.4% of span) .004 x 95.25 in.= 0.381 in.

**FORCED ENTRY**

<u>Size</u>	<u>Time</u>	<u>Result</u>
Active Panel      36.0 in. W x 95.25.in. H	30 seconds	(Door remained locked & shut and was operable at the completion of the test.)

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**Section 5 - DRAWINGS TO BE SUBMITTED:**

1. L2097 sheets 1 through 10 of 10
2. Laboratory Anchoring sketches

**Comment:** Nominal 2 mil polyethylene film was used to seal against air leakage during structural loads. The film was used in a manner that did not influence the test results.

**Observers:**

Steve Kepler – Project Scientist, THERMA-TRU Corp.  
Rick Wright – Consultant, R.W. Building Consultants, Inc.

**Dade County Witness:**

Not present

**All Tests Witnessed by:**

Wendell Haney, P.E.  
Arthur Murray, ETC Laboratories  
Bill Yanda, ETC Laboratories

cc: THERMA-TRU CORP. (3)  
Rick Wright (3)  
File (1)

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**Conditions, Terms, and General Notes Regarding These Tests**

The product tested has been compared to the detailed drawings, bill of materials and fabrication information supplied by the client so named herein. Our analysis, which includes dimensional and component description comparisons, indicate the tested product and engineering information supplied by the client "Are Equivalent". The report and representative samples will be retained for four years from the date of initial test.

These test results were obtained by employing all requirements of the designated test methods with no deviations. The test results and specimen supplied for testing are in compliance with the referenced specifications.

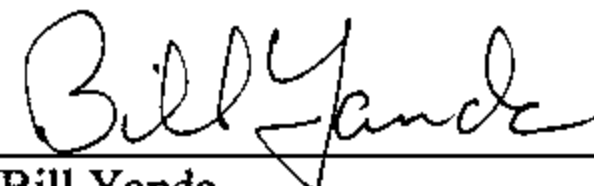
The test results are specific to the product tested by this laboratory and of the sample supplied by the client named herein, and they relate to no other product either manufactured by the client, a Fabricator of the client or of installed field performance.

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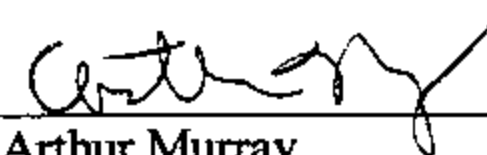
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**For ETC Laboratories**

Bill Yanda  
Test Technician



Arthur Murray  
Laboratory Manager  
Wind Engineering Laboratory

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