

R W Building Consultants, Inc.

Consulting and Engineering Services for the Building Industry

P.O. Box 230 Valrico, FL 33595 Phone 813.659.9197 Facsimile 813.754.9989

Florida Board of Professional Engineers Certificate of Authorization No. 9813

Report No. EQ-E84-00-04

Date: May 22, 2008

Evaluation of Equivalence of ASTM E84-00 to ASTM E84-04

ASTM E84-00

Conditioning:

Condition specimens to a constant weight at the temperature and humidity stated below:

73.4±5°F

50±5%RH

Test Specimen:

20-1/4" ±3/4" x 24'±1/2", butted against vent end of chamber.

Continuous length or joined end-to-end.

Truly representative of the materials for which results are desired.

Upstream end of chamber shall have a 14" ±1/8" length of 16 gauge steel sheet placed on the specimen mounting ledge in front of and under the leading edge of the specimen.

Test Atmosphere:

73.4±5°F

50±5%RH

Procedure:

1. Establish draft reading of 0.055 to 0.100 in. of water column
2. Arithmetic average air velocity within the furnace, at 73.4±5°F, shall be 240±5 FPM.
3. Place the specimen in the chamber and place the removable top in position over the specimen.
4. With draft operating, keep the specimen in place for 120±15 seconds prior to applying test flame.
5. Ignite gas (natural or methane) burner adjusted to 5,000 Btu/Min.
6. Record flame front travel distance versus time at 30 second intervals or each 2' of flame front travel.
7. Record smoke density photocell at 15 second intervals

ASTM E84-04

Conditioning:

Condition specimens to a constant weight at the temperature and humidity stated below:

73.4±5°F

50±5%RH

Test Specimen:

20" to 24" wide x 24'±1/2" long, butted against vent end of chamber.

Continuous length or joined end-to-end.

Truly representative of the materials for which results are desired.

Upstream end of chamber shall have a 14" ±1/8" length of 16 gauge steel sheet placed on the specimen mounting ledge in front of and under the leading edge of the specimen.

Test Atmosphere:

73.4±5°F

50±5%RH

Procedure:

1. Establish draft reading of 0.055 to 0.100 in. of water column
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6. Record flame front travel distance versus time at 30 second intervals or each 2' of flame front travel.
7. Record smoke density photocell at 15 second intervals

ASTM E84-00 Continued

Procedure continued:

8. Plot flame spread distance, temperature and change in smoke density photocell readings separately.
9. Flame spread distance = observed distance minus 4.5 feet.

Flame spread index(FSI) calculation:

1. Determine the total area (A_T) under the flame spread distance-time graph.
2. When $A_T \leq 97.5$ ft-min., $FSI = 0.515 A_T$.
3. When $A_T > 97.5$ ft-min, $FSI = 4900/(195 - A_T)$.

Smoke developed index calculation:

1. Determine the total area (A_T) under the smoke density - time graph for the specimen.
2. Determine the total area ($A_{Red-Oak}$) under the smoke density - time graph for the Red-Oak.
3. Smoke developed index = $(A_T / A_{Red-Oak})$ times 100, then rounded to nearest multiple of 5.

ASTM E84-04 Continued

Procedure continued:

8. Plot flame spread distance, temperature and change in smoke density photocell readings separately.
9. Flame spread distance = observed distance minus 4.5 feet.

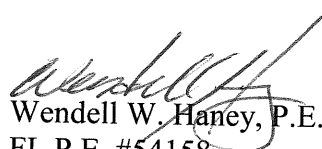
Flame spread index(FSI) calculation:

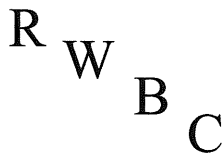
1. Determine the total area (A_T) under the flame spread distance-time graph.
2. When $A_T \leq 97.5$ ft-min., $FSI = 0.515 A_T$.
3. When $A_T > 97.5$ ft-min, $FSI = 4900/(195 - A_T)$.

Smoke developed index calculation:

1. Determine the total area (A_T) under the smoke density - time graph for the specimen.
2. Determine the total area ($A_{Red-Oak}$) under the smoke density - time graph for the Red-Oak.
3. Smoke developed index = $(A_T / A_{Red-Oak})$ times 100, then rounded to nearest multiple of 5.

Accordingly, other than minor revisions and clarifications of the specimen size, ASTM E84-00 is equivalent to ASTM E84-04 referenced in the 2007 FBC and therefore meets the intent of the code.


Wendell W. Haney, P.E.
FL P.E. #54158
5-22-00



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Product Evaluation Report

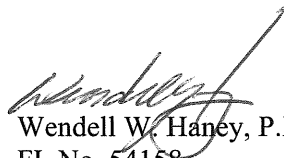
Report No.: FL-8841.1 R1
Date: May 22, 2008
Product Category: Exterior Doors
Product sub-category: Swinging Exterior Door Assemblies
Product Name: "Construction Series"
6'8" Steel Door
Inswing / Outswing
"Impact"
Manufacturer: Therma Tru Corporation
118 Industrial Dr.
Edgerton, OH 43517
Phone 419.298.1740

Scope: This is a Product Evaluation report issued by R W Building Consultants, Inc. and Wendell W. Haney, P.E. (System ID # 1993) for Therma Tru Corporation based on Rule Chapter No. 9B-72.070, Method 1d of the State of Florida Product Approval, Department of Community Affairs-Florida Building Commission.

RW Building Consultants and Wendell W. Haney, P.E. do not have nor will acquire financial interest in the company manufacturing or distributing the product or in any other entity involved in the approval process of the product named herein.

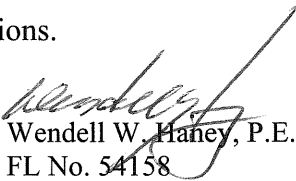
This product has been evaluated for use in locations adhering to the Florida Building Code (2007 Edition)

See Drawing No. FL-8841.1 prepared by R W Building Consultants, Inc. and signed and sealed by Wendell W. Haney, P.E. (FL # 54158) for specific use parameters.


Wendell W. Haney, P.E.
FL No. 54158
May 22, 2008

Limitations

1. This product has been evaluated and is in compliance with the 2007 Florida Building Code (FBC) structural requirements including the "High Velocity Hurricane Zone" (HVHZ).
2. Product anchors shall be as listed and spaced as shown on details. Anchor embedment to base material shall be beyond wall dressing or stucco.
3. When used in the "HVHZ" this product complies with section 1626 of the Florida Building Code and does not require an impact resistant covering.
4. When used in areas outside of the "HVHZ" requiring wind borne debris protection this product complies with Section 1609.1.2 of the 2007 FBC and does not require an impact resistant covering. This product meets missile level "D" and includes Wind Zone 4 as defined in ASTM E1996.
5. For 2x stud framing construction, anchoring of these units shall be the same as that shown for 2x buck masonry construction.
6. Site conditions that deviate from the details of drawing FL-8841.1 require further engineering analysis by a licensed engineer or registered architect.
7. Outswing configurations using coastal outswing item #39 meet water infiltration requirements for "HVHZ".
8. Inswing configurations and outswing configurations using item #31 do not meet the water infiltration requirements for the "HVHZ" shall be installed only in non-habitable areas or at habitable locations protected by an overhang or canopy such that the angle between the edge of canopy or overhang to sill is less than 45 degrees."
9. See drawing FL-8841.1 for size and design pressure limitations.


Wendell W. Haney, P.E.
FL No. 54158
May 22, 2008

Supporting Documents

A Drawing

1. Drawing No. FL-8841.1 prepared by R W Building Consultants, Inc. (Florida Board of Professional Engineers Certificate of Authorization No. 9813), signed and sealed by Wendell W. Haney, P.E.

B Tests

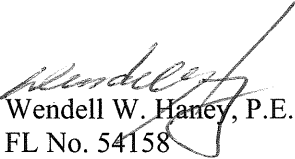
1. Materials (Polyurethane foam core) testing per ASTM E84-00a (ASTM E84-00 is equivalent to ASTM E84-04 referenced in the 2007 FBC as evidenced by the comparison evaluation report EQ-E84-00-04 signed and sealed by Wendell W. Haney, P.E.) as performed by Omega Point Laboratories and reported in test report 15427-107362, signed by William E. Fitch, P.E.
2. Materials (Polyurethane foam core) testing per ASTM D1929-96(2000)e1 as performed by Architectural Testing, Inc. and reported in test report ATI 67508.01-106-18, signed by Joseph A. Reed, P.E.
3. Testing per TAS 201-94, 202-94 & TAS 203-94 as performed by Testing Evaluation Laboratories, Inc. and reported in test report TEL 06-0717-1, signed by Wendell W. Haney, P.E.
4. Testing per TAS 201-94, 202-94 & TAS 203-94 as performed by ETC Laboratories and reported in test report ETC 01-741-11004.0, signed by Joseph L. Dolden, P.E.
5. Testing per TAS 201-94, 202-94 & TAS 203-94 as performed by ETC Laboratories and reported in test report ETC 01-741-10622.0, signed by Joseph L. Dolden, P.E.

C Calculations

1. Product anchoring for tested specimens is in accordance with manufacturer's published recommendations as substantiated by tested specimens reported in test report TEL 06-0717-1, ETC 01-741-11004.0 and ETC 01-741-10622.0. Additional product anchor analysis for loading conditions prepared, signed and sealed by Wendell W. Haney, P.E.
2. Buck anchor analysis for loading conditions prepared, signed and sealed by Wendell W. Haney, P.E.

D Other

1. Certificate of Participation issued by National Accreditation and Management Institute, certifying that Therma Tru Corporation is manufacturing products within a quality assurance program that complies with ISO/IEC 17020 and Guide 53.


Wendell W. Haney, P.E.
FL No. 54158
May 22, 2008