

# **DOUGLAS PRESTON, P.E.**

**101 Rosebud Lane, Georgetown, TX 78633, Phone: 254.493.8860**

Nov. 20, 2008

JELD-WEN Windows & Doors  
P.O. Box 1329  
Klamath Falls, OR 97601

Re: Equivalency of Standards Document

To Whom It May Concern:

I have reviewed the detailed analysis in the attached document authored by A. William Lingnell, P.E. which constitutes a comparison of the two standards ASTM E1300-02 and E1300-04. I have also reviewed the referenced standards and find the minor changes made to the 2004 version of the standard will have no bearing on the glass strength relative to the 2002 version of the standard as referenced in the anchoring instructions for fenestration products. I find the two versions of the standard to be equivalent as it applies to the certification testing performed for windows and doors.

I, Douglas Preston, PE have issued this letter for JELD-WEN Windows & Doors. In no way do I or will I acquire financial interest in JELD-WEN as a company or in sales/distribution of any JELD-WEN products. Additionally, I do not have or will not acquire financial interest from the approval process of any JELD-WEN products.

If there any further questions or requests, feel free to contact me at your leisure.

Sincerely,



*Douglas S. Preston*  
*11.20.08*

Douglas S. Preston, PE  
FL PE License No. 53291

**LINGNELL CONSULTING SERVICES**  
**A. WILLIAM LINGNELL, P. E.**  
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**lingnell@swbell.net**  
**October 5, 2008**

**Mr. Steve Strawn**  
**Product Compliance Policy Manager**  
**JELD-WEN, INC.**  
**External Affairs Department**

**Re: ASTM E 1300 “Standard Practice for Determining Load Resistance of Glass in Buildings**  
**Review of 2002 and 2004**

**Hello Steve,**

**Per your request I have examined the two standards ASTM E 1300 – 02 and ASTM E 1300 – 04<sup>e1</sup> with the purpose of demonstrating equivalency between the two versions of the E 1300 standard. Each item that has be changed or added to the standard from the 02 version to the 04 is identified below with a comment regarding the change.**

**ASTM E 1300 – 02**

**ASTM E 1300 – 04<sup>e1</sup>**

**Section 2. Referenced Documents**

**2.1 ASTM Standards**

**2.1 ASTM Standards**

**D 4065 Practice for Plastics: Dynamic Mechanical Properties, Determination and Report of Procedure**

**Comment: Additional reference standard added for use in new Appendix X10, pg 58 of E 1300 –04<sup>e1</sup>**

**TABLE 1.**

**TABLE 1.**

**The Glass Type Factors (GTF) for long duration loads are 0.6, 1.6, and 3.6 for AN, HS, and FT glass respectively.**

**The Glass Type Factors (GTF) long duration loads are 0.5, 1.3, and 3.0 for AN, HS, and FT glass respectively.**

**Comment:** The Glass Type Factors (GTF) for long term load were adjusted back by 0.83 to be in line with the 3-second load duration not the 60 – second duration. Basically an update that was not incorporated when the original standard changed from 60 second to 3 second duration for the short term load condition. See page 2 of both standards.

**TABLE 3.**

The Glass Type Factors (GTF) for Insulating Glass Units for long duration loads are 0.54, 1.5, and 3.4 for AN glass with AN, HS, and FT glass respectively.....

**TABLE 3.**

The Glass Type Factors (GTF) for Insulating Glass Units for long duration loads are 0.45, 1.25, and 3.0 for AN glass with AN, HS, and FT glass respectively...

**Comment:** The Glass Type Factors (GTF) for long term load were adjusted back by 0.83 to be in line with the 3-second load duration not the 60 – second duration. Basically an update that was not incorporated when the original standard changed from 60 second to 3 second duration for the short term load condition. This is similar to what was done to TABLE 1 only for insulating glass. See page 2 of both standards.

Section 3.2.3.2 thickness designation for laminated glass  
Item (c) does not exist

Section 3.2.3.2 thickness designation for laminated glass  
Item (c) Exception: The construction of two 6 mm (1/4 in.) glass plies plus a 0.76 mm (0.030 in.) interlayer shall be defined as 12 mm (1/2 in.).

**Comment:** This definition was added to identify a common industry product used as 12 mm (1/2 in.) laminated glass

Section X10. Method for Establishing Equivalency of Non-PVB Polymer Interlayers  
Section does not exist

Section X10. Method for Establishing Equivalency of Non-PVB Polymer Interlayers  
This section added –see page 58 of E 1300 –04<sup>e1</sup>

**Comment:** This section was added to the appendix of the E 1300 –04<sup>e1</sup> standard for specifying when the non-factored load resistance charts for polyvinyl butyral (PVB) laminated glass may be used for laminated glass made with plastic interlayers other than PVB.

The E - 1300 - 04<sup>e1</sup> version of the standard is basically the same as the E 1300 – 02 with regard to glass strength regarding uniform load resistance of glass to short term loads such as wind loads. The request of the window manufacturers is that the reference to the ASTM E 1300 – 02 standard referred to in their certified window reports be recognized as an equivalent to the ASTM 1300 - 04<sup>e1</sup> standard. I would concur with this request as valid in that the minor changes made to the 2004 standard will not have any bearing on the glass strength relative to the reference to the 2002 standard. That is, the standards for 2002 and 2004 are basically the same for short term uniform load resistance as referenced for the window certification tests. The additional information contained in the appendix X10 was added as nonmandatory language to allow other plastic interlayers in laminated glass construction to use the laminated glass charts providing an equivalency criteria is met.

For your information I am a practicing professional engineer and specialize in glass engineering for glass used in building construction including glass for commercial and residential windows. I use the standard constantly in my engineering work for the analysis of load resistance for glass used in buildings and subjected to uniform loads. I am also an active member of the ASTM committee E 06.51.13, Glass Strength that oversees and maintains the ASTM E 1300 standard and have attended all the main meetings and special working group meetings for the past 15 years. I have been involved with the standard since the beginning back in the early 1980's and as well as the first publication in 1989. The E - 1300 - 04<sup>e1</sup> version of the standard is basically the same as the E 1300 – 02 with regard to glass strength regarding uniform load resistance of glass to short term loads such as wind loads.

I have attached copies of the two standards for your reference as well as background information on *Lingnell Consulting Services*. Please let me know if you have any questions or need any additional information.

Best Regards,

*A. William Lingnell*

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**FLORIDA BUILDING COMMISSION**  
**Structural Technical Advisory Committee**

**MINUTES**

**Monday, October 13, 2008**

**8:00 A.M. –**

**Embassy Suites  
3705 Spectrum Blvd,  
Tampa, Florida 33612  
Tel: 1-813-977-7066**

**Meeting Objective:**

1. Called to Order-reviewed/approved agenda and minutes.

There was a quorum. Do Kim, Chairman, Paul Kidwell, Craig Parrino, Charles Everly, C.W. Macomber, George Wiggins, Rusty Carroll, Jack Glenn, Dan Lavrich, Jaime Gascon were present.

2. Reviewed and discussed proposed code changes to the 2007 Florida Building Code and provided recommendation for consideration.
3. Review and provide recommendations to the Commission on the request for declaratory statements:

**DCA08-DEC-194** by Dan Arlington, Plans Examiner, St. Johns County Building Department

**ACTION: Tabled/Deferred to the December Meeting**

**DCA08-DEC-205** by Neil Melick, CBO, Department Director, City of West Palm Beach

**ACTION:**

**QUESTION 1:** Is it the intent of Section 301.13 of the *Florida Building Code, Mechanical* that appliances be designed to resist wind pressures even if the permit applicant is unable to find an appliance manufacturer who will provide supporting wind resistance documentation?

**ANSWER:** Yes.

**QUESTION 2:** Does the phrase “appliances...shall be designed” in Section 301.13 mean that it is the responsibility of the appliance manufacturer to design their outdoor appliances to resist wind pressures since the manufacturer is the designer of the appliance?

**ANSWER:** Yes. This is not just a Florida requirement, it is also required by the 2003 *International Mechanical Code*. Without such data, the option is to enclose the equipment in a mechanical room designed to withstand wind loads described by the *Florida Building Code, Building*, for that location.

**QUESTION 3:** Is it the intent of Section 301.13 of the *Florida Building Code, Mechanical* that ALL mechanical appliances and equipment, including package units, condensing units and fans that are

exposed to wind be designed and installed to resist wind pressures in accordance with section 1609 of the *Florida Building Code, Building*?

**ANSWER:** Yes

**QUESTION 4:** If the answers to the above are in the affirmative, is there a different standard to be applied to mechanical appliances, equipment and their supports due to the use of the word “resist” in Section 301.13 of the *Florida Building Code, Mechanical* rather than the use of the word “withstand” as stated in Section 1609.1 of the *Florida Building Code, Building*?

**ANSWER:** No, the intent of the language “resist” and “withstand” is the same.

**QUESTION 5:** If the answers to questions 1 through 3 are in the affirmative and the answer to question 4 is in the negative, would then the proposed installation be in violation of Section 301.13 of the *Florida Building Code, Mechanical, 2004 Edition*?

**ANSWER:** Yes, the installation would be in violation of Section 301.13 of the 2004 *FBC-Mechanical*.

**QUESTION 6:** If the answer to question 5 above is in the affirmative, then what recourse/options do I have as a Code Official? Do I have the authority to withhold the Certificate of Occupancy?

**ANSWER:** Section 110 of the *Florida Building Code* gives the building official the authority to withhold or revoke the Certificate of Occupancy for violation of the provisions of the code.

**DCA08-DEC-236** by W Vincent of Construction Specialties, Inc.

**ACTION:**

**QUESTION 1:** Are there any impact requirements outside the High Velocity Hurricane Zone when no ductwork is attached to the louver?

**ANSWER:** No. Since the louver is not protecting an intake or exhaust ventilation ducts, the impact requirement of Section 1609.1.2.1 does not apply.

**QUESTION 2: Are impact resistant louvers required above 30 ft?**

**ANSWER:** Louvers are not required to be impact resistant when installed above 30 feet of grade.

**QUESTION 3: Are louvers subject to cyclic loading after impact test as well as the static test mentioned in 1609.1.2.2.1?**

**ANSWER:** Louvers are not subject to cyclic loading test after impact. However, they are subject to the static test of Section 1609.1.2.2.1

**DCA08-DEC-237** by W Vincent of Construction Specialties, Inc.

**ACTION:**

**QUESTION 1:** Do all louvers installed in buildings that are not in the wind borne debris region or the high velocity hurricane zones, where impact resistance is mandated require Florida approval numbers or can they be custom engineered by rational design without testing? See (DCA04-DEC-219 below)

**ANSWER:** All louvers are subject to review and approval by the local authority having jurisdiction. However, the State Approval may be obtained as an alternative to local approval. In order for a standard louver to demonstrate compliance with the Code, it must be tested to the applicable standards specified by the Code (Rational analysis *cannot* be used in lieu of testing).

**QUESTION 2:** If the answer to the above is that they must have a Florida approval number, is DCA04-DEC-219 void?

**ANSWER:** See Answer to Question 1

**QUESTION 3:** If DCA04-DEC-219 is valid, must local building officials accept the louver installation if the calculations are stamped by a Florida registered engineer?

**ANSWER:** DCA04-DEC-219 is specific to “custom one-of-a-kind” louvers. Custom one-of-a-kind louvers are outside the scope of Rule 9B-72, and therefore, subject to review and approval by the authority having jurisdiction.

**DCA08-DEC-238** by W Vincent of Construction Specialties, Inc.

#### **Hospitals and nursing homes-**

**QUESTION 1:** Does this mean that the only large missile impact test to be used is from a 9 pound 2x4 traveling at 50 feet per second plus the cyclic wind pressure testing?

**ANSWER:** Yes, however the cyclic wind pressure test is *not* required for louvers.

**QUESTION 2:** If the space behind the structure is designed as an open structure, is impact protection required?

**ANSWER:** Yes, because the space is always required to be designed as enclosed.

**QUESTION 3:** Is there ever a requirement for the 2x4 to impact at 80 feet per second?

**ANSWER:** This question is too broad.

**QUESTION 4:** Does the large missile test only apply to louvers below 30 feet?

**ANSWER:** Yes, however the test applies to louvers including those at 30 feet.

#### **Schools-**

The questions below are related to schools that are Enhanced Hurricane Protection Areas (EHPA):

**Schools that are designated as Enhanced Hurricane Protection Areas (2007 Florida building code 423.25.4.1 are subject to the impact tests provided for in SBCI SSTD 12.**

**QUESTION 1:** Does this mean that the only large missile impact test to be used is from a 9 pound 2 X 4 traveling at 50 feet per second plus the cyclic wind pressure testing?

**ANSWER:** Missile impact test specification must be performed in accordance to SSTD 12; however the cyclic wind pressure test is *not* required for louvers.

**QUESTION 2.** If the space behind the structure is designed as an open structure is impact protection required?

**ANSWER:** Yes, because the space is always required to be designed as enclosed.

**QUESTION 3:** Is there ever a requirement for the 2 X 4 to impact at 80 feet per second?

**ANSWER:** This question is too broad.

**QUESTION 4:** Does the standard apply only to louvers below 30 feet?

**ANSWER:** No, the standards applies to louvers at any height.

**DCA08-DEC-239** by W Vincent of Construction Specialties, Inc.

**ACTION:**

**QUESTION 1:** Must all louvers installed in high velocity hurricane zone (Miami-Dade and Broward Counties) have a Dade County NOA or is a Florida Approval number sufficient?

**ANSWER:** All products used in HVHZ must be in compliance with the Code requirements that are specific to the HVHZ. Demonstration of compliance with the Code can be either by obtaining local approval or state approval.

**QUESTION 2:** Section 1626.1.g exempts all louvers in a high velocity hurricane zone from impact testing as long as they properly consider ASCE 7 in the design of the building. Does this mean that if the room or duct is designed as an open structure (internal pressure coefficients are zero) that there are no impact requirements for the louver?

**ANSWER:** Yes, there are no impact requirements provided the structure properly considers ASCE 7 in the design.

**QUESTION 3:** If louvers are installed in high velocity hurricane zone are subject to large missile impact, is the only impact to be from a 9 pound 2 x 4 traveling at 50 feet per second no matter what the building occupancy?

**ANSWER:** This question is too broad.

**DCA08-DEC-255** by Joseph R. Hetzel of Door & Access Systems Manufacturers Association International (DASMA)

**ACTION:**

**QUESTION:**

Is “garage door product code” considered equivalent to “garage door model/series number”?

**ANSWER:** No, The Florida Building Code is very specific in language and only a garage door “model/series” can be used on the label.

#### 4. Discussion on height of roll-up shutters.

The committee discussed a request from the Product Approval POC on whether there is height limitation to overall size of roll-up shutters subject to approval under the state product approval system. The POC reviewed the request and provided the following clarification: “One cannot assume that larger height of roll-up shutters other than tested will perform as the tested size. Engineering is required to substantiate the increase in height beyond the tested size. **Note:** Under the High Velocity Hurricane Zone because of the deflection limit required by the code, roll-up shutters approved by Miami-Dade Code Compliance Office are not allowed to exceed three times the tested height.



**5. Discussion of standard equivalency:**

ANSI/DASMA 108-2002 to ANSI/DASMA 108-2005 (Joe Hetzel)

**Withdrawn by Joe Hetzel**

ASTM E 1300-02 to ASTM E 1300-04C (Dick Wilhelm)

The committee reviewed the analysis provided by the petitioner and provided the following recommendation: “The Committee recommends recognizing equivalency of ASTM E 1300-02 to ASTM E 1300-04C with limitations as applied to laminated glass as identified in the engineering report.”

**6. Adjourn.**

**Note:** This document is available to any person requiring materials in alternate format upon request. Contact the Department of Community Affairs, 2555 Shumard Oak Boulevard , Tallahassee , Florida , 32399-2100 or call 850-487-1824