



Standard Test Method for Structural Performance of Glass in Exterior Windows, Curtain Walls, and Doors Under the Influence of Uniform Static Loads by Destructive Methods¹

This standard is issued under the fixed designation E 997; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This test method is a procedure to determine if the probability of breakage of glass specimens tested is significantly greater than, significantly less than, or not significantly different than the specified probability of breakage when exposed to a specified 60-s duration equivalent design load. It is not intended to be a design standard for determining the load resistance of glass. Practice E 1300 shall be used for this purpose.

1.2 This test method describes apparatus and procedures to select and apply a 60-s duration proof load to glass specimens, to determine the number of glass specimens to be tested, and to evaluate statistically the probability of breakage. This test method may be conducted using the standard test frame specified herein or a test frame of the user's design.

1.3 Proper use of this test method requires a knowledge of the principles of pressure measurement and an understanding of recommended glazing practices.

1.4 The values stated in inch-pound units are to be regarded as standard.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* Specific precautionary statements are given in Section 7.

2. Referenced Documents

2.1 ASTM Standards:

E 1300 Practice for Determining the Load Resistance of Glass in Buildings²

¹ This test method is under the jurisdiction of ASTM Committee E06 on Performance of Buildings and is the direct responsibility of Subcommittee E06.51 on Component Performance of Windows, Curtain Walls, and Doors.

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² *Annual Book of ASTM Standards*, Vol 04.11

3. Terminology

3.1 Definitions:

3.2 *coefficient of variation, n*—ratio of the standard deviation of the breakage load to the mean breakage load.

3.3 *equivalent design load, n*—the specified uniform design load converted to a 60-s duration (see 4.2).

3.4 *glass specimen, n*—the glass to be tested, for example, a single pane, an insulating glass unit, laminated glass, etc. (does not include test frame).

3.5 *glass specimen breakage, n*—the fracture or cracking of any glass component of a glass specimen.

3.6 *negative load, n*—an outward-acting load that results in the indoor side of a glass specimen being the high-pressure side.

3.7 *positive load, n*—an inward-acting load that results in the outdoor side of a glass specimen being the high-pressure side.

3.8 *probability of breakage, n*—the probability that a glass specimen will break when tested at a given load. General industry practice is to express the probability of breakage as lites per 1000 lites.

3.9 *proof load, n*—a magnitude of uniform load at which glass specimens shall be tested.

3.10 *proof load factor, a, n*—the constant which, when multiplied by the equivalent design load, determines the proof load.

3.11 *specifying authority, n*—professional(s) responsible for determining and furnishing information required to perform the test.

4. Summary of Test Method

4.1 This test method consists of individually glazing glass specimens in a test frame that is mounted into or against one face of a test chamber and supplying air to, or exhausting air from, the test chamber so that each glass specimen is exposed to a 60-s duration proof load. Load-time records shall be kept for each glass specimen. Each glass specimen break shall be recorded.

