



Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Cyclic Air Pressure Differential¹

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1. Scope

1.1 This test method describes the determination of the structural performance of exterior windows, curtain walls, and doors under cyclic air pressure differential, using a test chamber. This test method is applicable to all curtain wall assemblies, including, but not limited to, metal, glass, masonry, and stone components.

1.2 This test method is intended only for evaluating the structural performance associated with the specified test specimen, and not the structural performance of adjacent construction.

1.3 Procedure A shall be used for life cycle test loads.

1.4 Procedure B shall be used for wind event test loads.

1.5 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.6 *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 hazard statements are given in Section 7.*

2. Referenced Documents ²

2.1 ASTM Standards:

E 330 Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference³

E 631 Terminology of Building Constructions³

E 997 Standard Test Method for Structural Performance of Glass in Exterior Windows, Curtain Walls, and Doors Under the Influence of Uniform Static Loads by Destructive Method³

E 998 Standard Test Method for Structural Performance of

Glass in Windows, Curtain Walls, and Doors Under the Influence of Uniform Static Loads by Nondestructive Method³

E 1886 Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials³

E 1996 Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Wind Borne Debris in Hurricanes³

2.2 ASCE Standard:⁴

ASCE 7 (formerly ANSI A58.1) Minimum Design Loads for Buildings and Other Structures

3. Terminology

3.1 *Definitions*—Definitions are in accordance with Terminology E 631, unless otherwise indicated.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *design wind load, n*—the uniform static air pressure difference, inward or outward, for which the specimen would be designed under service load conditions using conventional wind engineering specifications and concepts, expressed in pascals (or pounds-force per square foot). This pressure is determined by either analytical or wind-tunnel procedures (such as are specified in ASCE 7).

3.2.2 *one cycle, n*—beginning at a specified air pressure differential, the application of positive (negative) pressure to achieve another specified air pressure differential and returning to the initial specified air pressure differential.

3.2.3 *permanent deformation, n*—displacement or change in dimension of the specimen after the applied load has been removed and the specimen has relaxed for the specified period of time.

3.2.4 *positive (negative) cyclic test load, n*—the specified differential in static air pressure, creating an inward (outward) loading, for which the specimen is to be tested under repeated conditions, expressed in pascals (or pounds-force per square foot).

3.2.5 *positive (negative) maximum test load, n*—the specified differential in static air pressure, creating an inward

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 Additional information on curtain wall assemblies can be obtained from the American Architectural Manufacturers' Association, 1827 Walden Office Square, Suite 104, Schaumburg, IL 60173.

³ *Annual Book of ASTM Standards*, Vol 04.11.

⁴ Available from the American Society of Civil Engineers, 1801 Alexander Bell Drive, Reston, VA 20191.

