



Standard Practice for Determining Load Resistance of Glass in Buildings¹

This standard is issued under the fixed designation E 1300; 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 practice describes procedures to determine the load resistance of specified glass types, including combinations of glass types used in a sealed insulating glass unit, exposed to a uniform lateral load of short or long duration, for a specified probability of breakage.

1.2 This practice applies to vertical and sloped glazing in buildings for which the specified design loads consist of wind load, snow load and self-weight with a total combined magnitude less than or equal to 10 kPa (210 psf). This practice shall not apply to other applications including, but not limited to, balustrades, glass floor panels, aquariums, structural glass members and glass shelves.

1.3 This practice applies only to monolithic, laminated, or insulating glass constructions of rectangular shape with continuous lateral support along one, two, three or four edges. This practice assumes that (1) the supported glass edges for two, three and four sided support conditions are simply supported and free to slip in plane (2) glass supported on two sides acts as a simply supported beam, and (3) glass supported on one side acts as a cantilever.

1.4 This practice does not apply to any form of wired, patterned, etched, sandblasted, drilled, notched or grooved glass with surface and edge treatments that alter the glass strength.

1.5 This practice addresses only the determination of the resistance of glass to uniform lateral loads. The final thickness and type of glass selected also depends upon a variety of other factors (see 5.3).

1.6 Charts in this practice provide a means to determine approximate maximum lateral glass deflection. Appendix X1 and Appendix X2 provide additional procedures to determine maximum lateral deflection for glass simply supported on four sides. Appendix X3 presents a procedure to compute approximate probability of breakage for annealed monolithic glass lites simply supported on four sides.

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

only. For conversion of quantities in various systems of measurements to SI units refer to SI 10.

1.8 Appendix X4 lists the key variables used in calculating the mandatory type factors in Tables 1-3 and comments on their conservative values.

1.9 *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.*

2. Referenced Documents

2.1 ASTM Standards:

C 1036 Specification for Flat Glass²

C 1048 Specification for Heat-Treated Flat Glass-Kind HS, Kind FT Coated and Uncoated Glass²

C 1172 Specification for Laminated Architectural Flat Glass²

E 631 Terminology of Building Constructions³

SI 10 Practice for Use of the International System of Units (SI) (the Modernized Metric System)⁴

3. Terminology

3.1 Definitions:

3.1.1 Refer to Terminology E 631 for additional terms used in this practice.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *aspect ratio (AR), n*—for glass simply supported on four sides, the ratio of the long dimension of the glass to the short dimension of the glass is always equal to or greater than 1.0. For glass simply supported on three sides, the ratio of the length of one of the supported edges perpendicular to the free edge, to the length of the free edge, is equal to or greater than 0.5.

3.2.2 *glass breakage, n*—the fracture of any lite or ply in monolithic, laminated, or insulating glass.

3.2.3 Glass Thickness:

3.2.3.1 *thickness designation for monolithic glass, n*—a term that defines a designated thickness for monolithic glass as specified in Table 4 and Specification C 1036.

¹ This practice 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.

Current edition approved April 10, 2003. Published June 2003. Originally approved in 1989. Last previous edition approved in 2002 as E 1300 – 02.

² *Annual Book of ASTM Standards*, Vol 15.02.

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

⁴ *Annual Book of ASTM Standards*, Vol 14.02.