



Designation: F2248 – 03

## Standard Practice for Specifying an Equivalent 3-Second Duration Design Loading for Blast Resistant Glazing Fabricated with Laminated Glass<sup>1</sup>

This standard is issued under the fixed designation F2248; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### INTRODUCTION

Historical records show that fragments from glazing that has failed as the result of intentional or accidental explosions present a serious threat of personal injury. Glazing failure also allows blast pressure to enter the interior of buildings thus resulting in additional threat of personal injury and facility damage. This standard practice provides a means for designers to determine equivalent 3-second duration design loadings with which they can size blast resistant glazing comprised of laminated glass or insulating glass fabricated with laminated glass, or both. Blast resistant glazing systems of this genre can reduce the number and size of glass fragments in an explosion as well as reducing greatly or eliminating blast pressure that enters buildings when an explosion occurs.

### 1. Scope

1.1 This practice sets forth a method to specify an equivalent 3-second design loading suitable to use with Practice **E1300** to select the thickness and type of blast resistant glazing fabricated with laminated glass to glaze a fenestration.

1.2 This practice applies to blast resistant glazing fabricated using laminated glass only, including single laminated glass and insulating glass fabricated with laminated glass.

1.3 This practice assumes that blast resistant glazing shall be adhered to its supporting frame using structural silicone sealant or adhesive glazing tape. The width of the structural silicone sealant bead shall be at least equal to but not larger than two times the thickness designation of the glass to which it adheres. The width of glazing tape shall be at least equal to two times but not more than four times the thickness designation of the glass to which it adheres.

1.4 This practice assumes the framing members shall restrict deflections of edges of blast resistant glazing they support to  $L/160$  under the equivalent 3-second duration design loading as determined herein, where  $L$  denotes the length of the supported edge.

1.5 This practice assumes the framing system supporting the blast resistant glazing shall attach mechanically to the structural framing system with fasteners that will resist forces generated by a uniform load acting on the blast resistant

glazing that has a magnitude at least 2.0 times the magnitude of the 3-second equivalent design load as determined herein.

1.6 The equivalent 3-second design load as determined herein shall not apply to the design of monolithic glazing, plastic glazing, or security film applied to existing glazing configurations in an attempt to achieve blast resistance.

1.7 The values stated in SI units are to be regarded as the standard. Values given in parentheses are for information only. For conversion of quantities in various systems of measurements to SI units refer to ANSI IEEE/SI 10.

1.8 *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:*<sup>2</sup>

**C1036** Specification for Flat Glass

**C1048** Specification for Heat-Treated Flat Glass—Kind HS, Kind FT Coated and Uncoated Glass

**C1172** Specification for Laminated Architectural Flat Glass

**C1422** Specification for Chemically Strengthened Flat Glass

<sup>1</sup> This practice is under the jurisdiction of ASTM Committee **F12** on Security Systems and Equipment and is the direct responsibility of Subcommittee **F12.10** on Systems Products and Services.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.