



Standard Test Method for Door Systems Subject to Airblast Loadings¹

This standard is issued under the fixed designation F2927; 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 identifies the standard procedures that shall be followed when utilizing either a shock tube or a controlled open-air explosion to evaluate the blast capacity of a door system. This test method is designed for all types of swinging doors, including single and double doors construction. This method is used to test complete door assemblies. A door assembly includes the door panel(s), latching hardware, hinges, post mullion (if applicable), frame and frame connection to a rigid reaction structure. The door panel(s) may also contain one or more integral vision lites (glazing systems). The glazing system may include, but not be limited to those fabricated from monolithic glass, laminated glass, plastic, glass-clad plastics, glass/plastic glazing materials, and filmed-backed glass. The results gathered from this method can be used for door installations in non-rigid wall openings. The test method may be adapted to horizontal sliding and vertical-lift doors.

1.2 The scaled range or standoff of the charge shall be 1 m (3 ft, 3 in.) or greater from the specimen in order to reduce or eliminate any punching effect the blast may have on the specimen. A charge-in-contact blast test is not covered by this method.

1.3 This test method and the resulting data are valid for the door size tested and smaller doors of identical construction. Acceptance criteria are divided into five Door Response Damage Categories (Categories I, II, III, IV and V). Refer to section 7.1 and Table 1 for a description of each category.

1.4 A door assembly may also contain ancillary hardware such as pulls, closers, kickplates, coordinators, gaskets, etc. Although these hardware components may not influence blast resistance performance, the specifier may wish to verify that these items do not dislodge from the door or frame during a test and become a flying debris hazard.

1.5 For doors equipped with a vision lite, the door shall be evaluated using the Door Response Damage Categories introduced in section 1.3 and defined in Table 1 and the glazing and

glazing system of the vision lite shall also be evaluated using a *No Break, No Hazard, Minimal Hazard, Very Low Hazard, Low Hazard and High Hazard* rating system. Refer to section 7.5 and Table 2 for glazing hazard definitions.

1.6 This method is intended to test the blast capacity of a door assembly from a shock wave. It does not attempt to address all testing required of door assemblies. These tests may include, but are not limited to, charge-in-contact blast resistance, forced entry resistance, bullet resistance, fire resistance, sound attenuation, and gas or water leakage. These types of tests are not covered by this test method.

1.7 This test method does not verify the blast performance of the wall that a tested door will be placed in.

1.8 The values stated in SI units (International System of Units) are to be regarded as the standard. The values given in parentheses are provided for information only.

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:²

E699 Practice for Evaluation of Agencies Involved in Testing, Quality Assurance, and Evaluating of Building Components

F1642 Test Method for Glazing and Glazing Systems Subject to Airblast Loadings

2.2 Other Standards:³

ISO/IEC International Standard 17025 General Requirements for the Competence of Testing and Calibration Laboratories

3. Terminology

3.1 Definitions:

¹ This test method 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.

Current edition approved Oct. 1, 2012. Published November 2012. DOI: 10.1520/F2927-12.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.