



Standard Test Method for Evaluating Fenestration Components and Assemblies for Resistance to Impact Energies¹

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1. Scope

1.1 This test method is intended to evaluate the resistance of fenestration components, fenestration assemblies, and impact protection systems to specified impact energies.

1.2 Window, glazed door, and skylight assemblies covered by this test method also include individual components, such as the glazing in-fill.

1.3 *This standard does no 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:

E 631 Terminology of Building Constructions²

E 1886 Test Method for Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials²

F 476 Test Methods for Security of Swinging Door Assemblies³

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *assembly support fixture, n*—the assembly or structure that supports the test specimen.

3.1.2 *component (fenestration), n*—an individual product that combines with other components to make up a complete fenestration assembly.

3.1.3 *fenestration assembly, n*—a glazed aperture in a building composed of a group of parts or components that may include glass or plastic panels or lites, opaque panels, framing, mullions, muntins and dividers, screens and shading devices, for example, windows or glazed doors, or both.

3.1.4 *glazed panel, n*—glazing installed in a framing system.

3.1.5 *impact energy, n*—impact energy is expressed as vertical drop height of the pendulum, times its weight, for a particular impact event.

3.1.6 *impact energy (cumulative), n*—the sum of impact energies from each of the respective impact events for the entire applied impact sequence, derived from intentionally impacting the test specimen more than once; the total impact energy either applied to meet a test protocol or observed during an impact sequence and associated with a particular level of damage.

3.1.7 *impact protection system, n*—moveable (or permanent) construction that may be applied, attached or locked over a fenestration assembly to protect the assembly from impact, for example, shutters.

3.1.8 *impact ram, n*—the device that (when released) delivers the impact energy to the test specimen. The impact ram includes the impact nose.

3.1.9 *instrumented impact testing, n*—additional apparatus attached to the impact ram to provide for the load versus deformation responses of fenestration components and assemblies under various impact conditions.

3.1.10 *plastic glazing sheet material, n*—an organic plastic sheet specifically developed for glazing.

3.1.11 *required impact energy, n*—the potential energy level specified for a single impact event to be applied in the test as required by the specifying authority.

3.1.12 *required impact sequence, n*—the number of impact events and the required impact energy for each event to be applied to a specimen in the test and the order in which the events are to be applied as required by the specifying authority.

3.1.13 *required cumulative energy, n*—the sum of the impact energy times the number of each such impact events for the entire required impact sequence to be applied to a specimen in the test as required by the specifying authority.

3.1.14 *test specimen, n*—the fenestration assembly, impact protection system or glazing in-fill, which is subject to the impact energies delivered by the impact ram.

¹ This test method is under the jurisdiction of ASTM Committee E-06 on Performance of Buildings and is the direct responsibility of Subcommittee E06.51 on

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² Annual Book of ASTM Standards, Vol 04.11.

³ Annual Book of ASTM Standards, Vol 15.07.