



Designation: E987 – 88 (Reapproved 2009)

Standard Test Methods for Deglazing Force of Fenestration Products¹

This standard is issued under the fixed designation E987; 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 These test methods measure the resistance of elements of fenestration products such as operating (or removable) window sashes, storm sashes, and sliding glass door panels (hereafter referred to as sash members) to forces tending to deglaze the construction.

1.2 These test methods utilize concentrated loads applied to the interior side of a sash member in a manner simulating normal opening and closing forces. Removable sashes are loaded to simulate handling for removal and cleaning.

1.3 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.4 *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

E631 *Terminology of Building Constructions*

3. Terminology

3.1 *Definitions*—For definitions of terms used in these test methods, refer to Terminology E631.

3.2 *Descriptions of Terms Specific to This Standard:*

3.2.1 *bite*—the distance from the edge of the glazing material to the sight line.

3.2.2 *deglazing*—the movement of a sash member from its original position in relation to the glazing material. Deglazing is expressed as a percentage of the original (before testing) glazing “bite.”

¹ These test methods are under the jurisdiction of ASTM Committee E06 on Performance of Buildings and are the direct responsibility of Subcommittee E06.51 on Performance of Windows, Doors, Skylights and Curtain Walls.

Current edition approved Nov. 1, 2009. Published January 2010. Originally approved in 1964. Last previous edition approved in 2001 as E987 – 88 (2001). DOI: 10.1520/E0987-88R09.

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.

3.2.3 *deglazing force*—the force required to obtain the deglazing measured.

4. Significance and Use

4.1 Under normal usage, deglazing loads are generally applied parallel to the plane of the glazing material and eccentric to the sash element when it is opened, closed, or lifted out of the frame. When operating hardware is present, torsional forces may be increased. Opening and closing forces are normally applied from the interior side only. Sliding glass door panels are activated from both sides.

4.2 The ability of fenestration products to resist deglazing forces may vary with a number of factors. These factors should be considered when selecting test specimens or when interpreting test results. Bedding compounds in newly assembled sashes may not reach full strength until they have been allowed to cure for several days or weeks. Some sash materials are subject to shrinkage at low temperatures and increased elasticity at high temperatures. Therefore, a sash containing these materials may exhibit a range of deglazing resistance due to varying temperature conditions. Normal manufacturing tolerances and clearances in sash members and glazing materials may also affect deglazing resistance. Further, although fenestration products are designed to operate within certain force limits, improper installation, wear, and abuse may increase the forces necessary for sash operation.

4.3 When determining which members of a given sash shall be tested for deglazing resistance, consideration must be given to the manner in which the sash may be operated when normally installed. Handles and lift devices are usually located on the sash for the convenience of the operator and therefore dictate the normal direction of operation.

4.4 Test Method A presents a technique for actual measurement of the deglazing forces of an individual sash member.

4.5 Test Method B presents a technique for measuring the deglazing force of two opposite members. This test method is intended for quality control measurements.

5. Apparatus

5.1 *Hydraulic or Pneumatic Ram*, or an equivalent capable of producing at least a 100-lbf (445-N) force when connected to a hydraulic pump or compressed air supply, or an equivalent of suitable capacity. The ram piston extension can be fitted to