



Designation: ~~E1425-91 (Reapproved 1999)~~ Designation: E 1425 - 07

~~Standard Practice for Determining the Acoustical Performance of Exterior Windows and Doors~~ Standard Practice for Determining the Acoustical Performance of Windows, Doors, Skylight, and Glazed Wall Systems¹

This standard is issued under the fixed designation E 1425; 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 establishes requirements for testing and rating acoustical performance of exterior windows and doors, regardless of their method or materials of manufacture.~~

~~1.1.1 Air leakage and operating force are integral elements of acoustical performance of exterior windows and doors; therefore this practice requires concurrent testing of air leakage and operating force in addition to acoustical tests.~~

~~1.2 This practice establishes the test methodology and specimen criteria and classification rating system for purposes of determining the acoustical performance levels of exterior windows and doors only, and not through openings between such assemblies and adjacent construction.~~

~~1.3 Excluded from the scope of this practice are roof windows, skylights, sloped glazing systems, or any interior window or door assembly.~~

~~1.4 The values stated in inch/pound units are to be regarded as standard. The values given in parentheses (SI units) are provided for information only.~~

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1.1 This practice establishes requirements for testing and rating acoustical performance of window, door, skylight, and glazed wall systems, regardless of their method or materials of manufacture.

1.1.1 Operating force, latching force, and air leakage are integral elements of the acoustical performance of window, door, skylight, and glazed wall systems. This practice requires (when applicable) the concurrent testing of operating force, latching force, and air leakage, in addition to the sound transmission loss test.

1.2 This practice establishes the test methodology, specimen criteria, and classification rating system for purposes of determining the acoustical performance levels of window, door, skylight, and glazed wall systems only, and not through openings between such assemblies and adjacent construction.

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

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

C 634 Terminology Relating to Building and Environmental Acoustics

E 90 Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements

E 283 Test Method for Determining ~~the~~ Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen

E 413 Classification for Rating Sound Insulation

~~E 631 Terminology of Building Constructions³~~

¹ This practice is under the jurisdiction of ASTM Committee E-6 on Performance of Buildings and is the direct responsibility of Subcommittee E06.51 on Component Performance of Windows, Curtain Walls, and Doors.

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² This practice is under the jurisdiction of ASTM Committee E06 on Performance of Buildings and is the direct responsibility of Subcommittee E06.51 on Performance of Windows, Doors, Skylights and Curtain Walls.

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³ 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*, Vol 04.06, volume information, refer to the standard's Document Summary page on the ASTM website.

~~E1017 Specification for Generic Performance Requirements for Exterior Residential Window Assemblies³ Terminology of Building Constructions~~

~~E 1332 Classification for Determination of Outdoor-Indoor Transmission Class² Classification for Determination of Outdoor-Indoor Transmission Class~~

~~E 2068 Test Method for Determination of Operating Force of Sliding Windows and Doors~~

~~2.2 Other Standards:~~

~~ANSI/BHMA A156.2 Bored and Preassembled Locks and Latches—28 CFR Part 36 ADA Standards for Accessible Design³~~

~~AAMA/WDMA/CSA 101/I.S.2/A440 Standard Specification for Windows, Doors, and Unit Skylights^{4,5}~~

~~AAMA 501 Methods of Tests for Exterior Walls⁴~~

~~NFRC 100 Procedure for Determining Fenestration Product U Factors⁶~~

~~ISO 140 Acoustics—Measurement of sound insulation in buildings and of building elements⁷~~

3. Terminology

3.1 *Definitions*—For definitions of terms used in this practice, refer to Terminologies C 634 and E 631, unless otherwise indicated.

4. Significance and Use

4.1 *Air Leakage Relative to Sound Transmission*—Certain frequencies are more susceptible to sound transmission through cavities or discontinuities in the test specimen; therefore, the air leakage of the test specimen is reported to allow the approving authority information relative to air tightness.

NOTE 1—The AAMA/WDMA/CSA 101/I.S.2/A440 document provides air leakage acceptance criteria for these products based on their performance class. Acoustical products could require a lower air leakage rate than what is required in this standard in order to achieve the desired acoustical performance.

~~4.2 *Operating Force Relative to Sound Transmission* —The use of specific sealing components to achieve a given sound rating could affect operating force of the vertical or horizontal sliding sash or panels of the assembly; therefore, operating force is reported to allow the approving authority information relative to sash or panel operating forces.—The use of specific sealing components to achieve a given sound rating could affect operating force of the vertical or horizontal sliding sash or panels of the assembly; therefore, operating force is reported to allow the approving authority information relative to sash or panel operating forces.~~

NOTE 2—The opening force in 28 CFR Part 36 ADA for interior hinged doors and sliding doors is limited to 22.2 N (5 lbf). The AAMA/WDMA/CSA 101/I.S.2/A440 document provides operating force acceptance criteria for products based on their performance class.

~~4.3 *Latching force Relative to Sound Transmission*—Latching force can affect the compression of seals and the amount of damping applied to the system that in turn affects the air leakage and the acoustical performance. The use of specific sealing components and latching/locking hardware can affect the force required to close and latch the door under test. The latching force is reported to allow the approving authority information relative to sash or panel latching conditions.~~

NOTE 3—The AAMA/WDMA/CSA 101/I.S.2/A440 document states that the latching force shall not exceed 65 N (15 lbf).

5. Test Specimen

5.1 Assemblies to be tested in accordance with this practice shall be representative of those produced by the manufacturer or fabricator. Test specimens shall be sealed, painted or otherwise finished or prepared only as they would normally be prepared for actual installation and use. Test specimens shall be mounted for testing as specified by each applicable test method.

5.1.1 Test specimens shall not be modified with supplementary adhesives, sealants, tapes, or clamping devices not normally a part of the product.

~~5.2 *Test specimen sizes:*~~

~~5.2.1 *Window*—Specimen submitted for testing shall be no less than 20 ft² (1.86 m²) nor more than 24 ft² (2.23 m²) with neither dimension less than 42 in. (1067 mm):~~

~~5.2.2 *Door:*~~

~~5.2.2.1 *Single door*—Specimen submitted for testing shall be no less than 19 ft² (1.77 m²) nor more than 22 ft² (2.04 m²), with neither dimension being less than 36 in. (914 mm):~~

~~5.2.2.2 *Double doors*—Specimen submitted for testing shall be no less than 38 ft² (3.53 m²), nor more than 44 ft² (4.09 m²).~~

³ Annual Book of ASTM Standards, Vol 04.11.

³ Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, <http://www.dodssp.daps.mil>.

⁴ Available from American National Standards Institute, 11 West 42nd Street, 13th Floor, New York, NY 10036.

⁴ Available from the American Architectural Manufacturers Association (AAMA), 1827 Walden Office Square, Suite 550, Schaumburg, Illinois 60173-4268.

⁵ Available from Canadian Standards Association (CSA), 5060 Spectrum Way, Mississauga, ON L4W 5N6, Canada, <http://www.csa.ca>.

⁶ Available from the National Fenestration Rating Council (NFRC), 6305 Ivy Lane, Suite 140 Greenbelt, MD 20770.

⁷ Available from International Organization for Standardization (ISO), 1 rue de Varembe, Case postale 56, CH-1211, Geneva 20, Switzerland, <http://www.iso.ch>.