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An American National Standard

Standard Specification for an Air Retarder (AR) Material or System for Low-Rise Framed Building Walls[1]

This standard is issued under the fixed designation E 1677; 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 specification covers minimum performances and specification criteria for an air retarder (AR) material or system for framed walls of low-rise buildings. The intended users are purchasers of the AR, specifiers of the AR and regulatory groups. The provisions contained in this specification are intended to allow the user to design the wall performance criteria and increase AR specifications to accommodate a particular climate location, function, or design of the intended building. Air retarder performance and specification minimums were selected with the service life of the building wall in mind.

1.2 This specification focuses on ARs for opaque walls. Other areas of the exterior envelope, such as roofs, floors, and interfaces between these areas are not included in this specification.

1.3 This specification does not address air leakage into the wall cavity, that is, windwashing. No standardized test has been developed that adequately identifies all of the influencing factors and measures the impact of this effect on the wall's thermal performance.

1.4 The specifications in this standard are not intended to be utilized for energy load calculations and are not based on an expected level of energy consumption.

1.5 The values stated in inch-pound units are to be regarded as the standard. The values in parentheses are for information only and are closely approximated.

1.6 The following safety hazards caveat pertains only to the test method portion, Annex A1, of this specification. *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:*

C 755 Practice for Selection of Vapor Retarders for Thermal Insulation[2]

E 96 Test Methods for Water Vapor Transmission of Materials[2]

E 241 Practices for Increasing Durability of Building Constructions Against Water-Induced Damage[3]

E 283 Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across Specimen[3]

E 330 Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Differences[3]

E 331 Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference[3]

E 1424 Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure and Temperature Differences Across the Specimen[3]

2.2 *ASHRAE Standard:*

ASHRAE 62 Acceptable Indoor Air Quality[4]

3. Terminology

3.1 *Definitions:*

3.1.1 *air exfiltration*—air leakage out of the building driven by negative pressure.

3.1.1.1 *negative pressure*—air pressure on the outdoor side of a building envelope lower than on the indoor side.

3.1.2 *air infiltration*—air leakage into the building driven by positive pressure.

3.1.2.1 *positive pressure*—air pressure on the outdoor side of a building envelope higher than on the indoor side.

3.1.3 *air leakage*—the movement/flow of air through the building envelope, which is driven by either or both positive (infiltration) and negative (exfiltration) pressure differences across the envelope.

[1] This specification is under the jurisdiction of ASTM Committee E06 on Performance of Buildings and is the direct responsibility of Subcommittee E06.41 on Air Leakage and Ventilation.

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[2] *Annual Book of ASTM Standards*, Vol 04.06.

[3] *Annual Book of ASTM Standards*, Vol 04.11.

[4] Available from American Society for Heating, Refrigerating, and Air Conditioning Engineers, Inc., 1791 Tullie Crete, N. E., Atlanta, GA 30329.

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