



Designation: C1258 – 21a

Standard Test Method for Elevated Temperature and Humidity Resistance of Vapor Retarders for Insulation¹

This standard is issued under the fixed designation C1258; 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 covers the determination of the resistance of flexible low permeance vapor retarders for thermal insulation as classified in Specification C1136 to elevated temperature and humidity. Water vapor permeance measurement and visual inspection after exposure at elevated temperature and humidity are used to assess vapor retarder response.

1.2 Typical vapor retarders evaluated in this test method are intended for indoor use and include foil-scrim-kraft laminates, metallized polyester-scrim-kraft laminates, treated fabrics, treated papers, films, foils, or combinations of these materials that comprise a vapor retarder material. This test method is not intended for assessment of the liquid-applied coatings, sealants, or mastics commonly used with insulation products.

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

C168 Terminology Relating to Thermal Insulation

¹ This test method is under the jurisdiction of ASTM Committee C16 on Thermal Insulation and is the direct responsibility of Subcommittee C16.33 on Insulation Finishes and Moisture.

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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.

C1136 Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation
E96/E96M Test Methods for Water Vapor Transmission of Materials

3. Terminology

3.1 Terminology C168 shall be considered as applying to the terms used in this specification.

4. Summary of Test Method

4.1 The vapor retarders are exposed to elevated temperature and humidity at 120°F (49°C) and 95 % relative humidity for a period of 28 days, then visually inspected for corrosion (if applicable), delamination, and other degradation. Water vapor permeance in accordance with Test Methods E96/E96M is measured after elevated temperature and humidity exposure.

5. Significance and Use

5.1 On systems operating at sub-ambient temperature, humid ambient conditions cause a vapor driving force toward the insulation. If not retarded, the driven moisture vapor is detrimental to the insulation's thermal resistance. A vapor retarder must resist degradation in order maintain its resistance to vapor passage. Degradation in this test method is induced by elevated temperature and humidity conditions.

6. Apparatus

6.1 *Environmental Chamber*, capable of maintaining an average of 120 ± 2°F (49 ± 1°C) and 95 ± 2 % relative humidity, using distilled or deionized water as the humidity source. The chamber shall be of the air-circulating variety.

6.2 *Lighted Box*, with five opaque sides and one transparent glass or plastic viewing side, illuminated with an incandescent lightbulb. The viewing area shall be slightly smaller than the vapor retarder specimen so that holes or degradation caused by the testing conditions are readily visible.

6.3 *Darkroom*.

6.4 *Cotton Gloves*.

6.5 *Frame/holder of non-reacting material*.

6.6 *Support of non-reacting material from which to suspend specimens*.