



Designation: C 1136 – 03

Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation¹

This standard is issued under the fixed designation C 1136; 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.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This specification covers vapor retarders for thermal insulation, specifically, flexible materials with permeance of 0.10 perm or lower and surface burning characteristics of 25 flame spread/50 smoke or lower. These materials are intended for use at surface temperatures of -20 to 150°F (-29 to 66°C). It does not cover mastics or barrier coatings applied in liquid form, nor materials intended for use as weather barriers.

1.2 This specification provides physical requirements for vapor retarders. Practice C 755 should provide assistance in solving problems related to moisture vapor transmission through thermal insulation materials.

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

1.4 The following precautionary caveat pertains to the test methods portion only, Section 10, 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 168 Terminology Relating to Thermal Insulation²
- C 755 Practice for Selection of Vapor Retarders for Thermal Insulation²
- C 1258 Test Method for Elevated Temperature and Humidity Resistance of Vapor Retarders for Insulation²
- C 1263 Test Method for Thermal Integrity of Flexible Water Vapor Retarders²
- C 1338 Test Method for Determining Fungi Resistance of Insulation Materials and Facings²

D 828 Test Method for Tensile Properties of Paper and Paperboard Using Constant-Rate-of-Elongation Apparatus³

D 882 Test Methods for Tensile Properties of Thin Plastic Sheeting⁴

D 1204 Test Method for Linear Dimensional Changes of Nonrigid Thermoplastic Sheeting or Film at Elevated Temperature⁵

E 84 Test Method for Surface Burning Characteristics of Building Materials⁶

E 96 Test Methods for Water Vapor Transmission of Materials²

2.2 TAPPI Standards:

T461 Flame Resistance of Treated Paper and Paperboard

T803 Puncture Test of Containerboard

3. Terminology

3.1 **Definitions**—Definitions in Terminology C 168 apply to terms used in this specification.

4. Classification

4.1 Classification of vapor retarders is based on vapor retardance and strength properties, as listed in Table 1.

5. Materials and Manufacture

5.1 Vapor retarders may be constructed of any number of various films, foils, cloths, papers, and reinforcements, alone or in combination, to achieve required performance.

6. Physical Properties

6.1 Maximum permeance for a specific type vapor retarder shall be as shown in Table 1 when tested in accordance with 10.1.

6.2 All vapor retarders shall demonstrate a flame spread of 25 or less and smoke developed of 50 or less when testing the

¹ This specification 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.

Current edition approved May 10, 2003. Published June 2003. Originally approved in 1990. Last previous edition approved 2002 as C 1136 – 02.

² Annual Book of ASTM Standards, Vol 04.06.

³ Annual Book of ASTM Standards, Vol 15.09.

⁴ Annual Book of ASTM Standards, Vol 08.01.

⁵ Annual Book of ASTM Standards, Vol 08.03.

⁶ Annual Book of ASTM Standards, Vol 04.07.