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Standard Specification for Atactic Polypropylene (APP) Modified Bituminous Base Sheet Materials Using Glass Fiber Reinforcements¹

This standard is issued under the fixed designation D6509/D6509M; 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 prefabricated modified bituminous sheet materials with glass fiber reinforcement, which use atactic polypropylene (APP) as the primary modifier and which are intended for use as a base sheet in the fabrication of multiple ply roofing and waterproofing membranes.

1.2 This is a material specification only. Issues regarding the suitability of specific roof constructions or application techniques are beyond the scope of this specification.

1.3 The specified tests and property limits used to characterize the sheet materials covered by this specification are intended to establish minimum properties. In-place roof system design criteria, such as fire resistance, field strength, impact/puncture resistance, material compatibility, uplift resistance, the need for field applied coatings, and others, are factors beyond the scope of this material specification.

1.4 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.5 The following precautionary statement pertains only to the test method portion, Section 8, 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:*²

[D1079 Terminology Relating to Roofing and Waterproofing](#)

[D5147 Test Methods for Sampling and Testing Modified Bituminous Sheet Material](#)

[D5636 Test Method for Low Temperature Unrolling of Felt or Sheet Roofing and Waterproofing Materials](#)

3. Terminology

3.1 *Definitions*—For definitions of terms used in this specification, refer to Terminology [D1079](#).

4. Materials and Manufacture

4.1 In the manufacturing process, the reinforcement is impregnated and coated on both sides in an APP-modified bituminous coating. The APP-modified bituminous coating shall be permitted to be compounded with a mineral stabilizer.

4.2 The base sheet shall be permitted to be surfaced with mineral matter to prevent sticking in the roll. The reverse side shall be permitted to be covered with a thin polyolefin film or with other surfacing that will not interfere with adhesion or bonding of the sheet during application.

5. Physical Properties

5.1 The sheet shall conform to the minimum physical properties described in [Table 1](#).

¹ This specification is under the jurisdiction of ASTM Committee [D08](#) and is the direct responsibility of Subcommittee [D08.04](#) on [Felts and Fabrics](#). [Felts, Fabrics and Bituminous Sheet Materials](#).

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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.

TABLE 1 Physical Properties of Atactic Polypropylene (APP)-Modified Bituminous Base Sheet Materials Using Glass Fiber Reinforcements

NOTE 1—The properties in this table are “as manufactured” unless otherwise noted.

Property	
Peak load at $-18 \pm 2^\circ\text{C}$ ($0 \pm 3.6^\circ\text{F}$) MD and XMD, kN/m, (lbf/in.), min	12.2 (70)
Elongation at $-18 \pm 2^\circ\text{C}$ ($0 \pm 3.6^\circ\text{F}$) MD and XMD, at peak load, % min	1
Peak load at $23 \pm 2^\circ\text{C}$ ($73.4 \pm 3.6^\circ\text{F}$) MD and XMD, before and after heat conditioning, kN/m (lbf/in.), min	8.8 (50)
Elongation at $23 \pm 2^\circ\text{C}$ ($73.4 \pm 3.6^\circ\text{F}$) MD and XMD, before and after heat conditioning, at peak load, % min	2
Tear strength at $23 \pm 3^\circ\text{C}$ ($73.4 \pm 3.6^\circ\text{F}$), N (lbf), min	311 (70)
Low temperature, flexibility, before and after heat conditioning, $^\circ\text{C}$ ($^\circ\text{F}$), max	0 (+32)
Dimensional stability, % change max	0.2
Compound stability, $^\circ\text{C}$ ($^\circ\text{F}$) min	110 (230)
Water absorption, % max	3.2
Moisture content, % max	1
Low temperature unrolling, $^\circ\text{C}$ ($^\circ\text{F}$), max	5 (41)

TABLE 1 Physical Properties of Atactic Polypropylene (APP)-Modified Bituminous Base Sheet Materials Using Glass Fiber Reinforcements

NOTE 1—The properties in this table are “as manufactured” unless otherwise noted.

Property	
Peak load at $-18 \pm 2^\circ\text{C}$ [$0 \pm 3.6^\circ\text{F}$] MD and XMD, kN/m, [lbf/in.] min	12.2 [70]
Elongation at $-18 \pm 2^\circ\text{C}$ [$0 \pm 3.6^\circ\text{F}$] MD and XMD, at peak load, % min	1
Peak load at $23 \pm 2^\circ\text{C}$ [$73.4 \pm 3.6^\circ\text{F}$] MD and XMD, before and after heat conditioning, kN/m [lbf/in.], min	8.8 [50]
Elongation at $23 \pm 2^\circ\text{C}$ [$73.4 \pm 3.6^\circ\text{F}$] MD and XMD, before and after heat conditioning, at peak load, % min	2
Tear strength at $23 \pm 3^\circ\text{C}$ [$73.4 \pm 3.6^\circ\text{F}$], N [lbf], min	311 [70]
Low temperature, flexibility, before and after heat conditioning, $^\circ\text{C}$ [$^\circ\text{F}$], max	0 [+32]
Dimensional stability, % change max	0.2
Compound stability, $^\circ\text{C}$ [$^\circ\text{F}$] min	110 [230]
Water absorption, % max	3.2
Moisture content, % max	1