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Standard Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using Polyester Reinforcements¹

This standard is issued under the fixed designation D 6222; 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 (€) indicates an editorial change since the last revision or reapproval.

^{€1} NOTE—~~Tables 1 and 2 were corrected editorially in February 2002.~~

~~Editorial changes were made throughout in July 2005.~~

^{€2} NOTE—~~Section 3 and subsection 9.2 were editorially corrected in March 2008.~~

1. Scope

1.1 This specification covers prefabricated modified bituminous sheet materials reinforced with polyester fabric, with or without granules, that use atactic polypropylene (APP) as the primary modifier and are intended for use in the fabrication of multiple ply roofing and waterproofing membranes.

1.2 This specification is intended as 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 SI units are to be regarded as the standard. The inch-pound units given in parentheses are for information only.

1.5 The following precautionary statement pertains only to the test method portion, Section 9, 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

~~D 1079 Terminology Relating to Roofing, Waterproofing, and Bituminous Materials~~ Terminology Relating to Roofing and Waterproofing

D 5147 Test Methods for Sampling and Testing Modified Bituminous Sheet Material

D 5636 Test Method for Low Temperature Unrolling of Felt or Sheet Roofing and Waterproofing Materials

3. Terminology

3.1 Definitions:

3.1.1 For definitions of terms used in this specification, refer to Terminology D 1079.

~~3.2 Definitions of Terms Specific to This Standard:~~

~~3.2.1 elongation at 5% of maximum load—the elongation measured on the load-elongation curve at which point the load has dropped to 5% of its maximum value.~~

4. Classification

4.1 Type I and II modified bituminous sheet materials reinforced with polyester fabric, are covered by this specification (see Table 1).

4.2 The following grades are used to describe the material surfacing:

¹ This specification is under the jurisdiction of ASTM Committee D08 on ~~Roofing, Waterproofing, Roofing and Bituminous Materials~~ Waterproofing and is the direct responsibility of Subcommittee D08.04 on Felts and Fabrics.

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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* Vol 04.04, volume information, refer to the standard's Document Summary page on the ASTM website.

TABLE 1 Physical Properties of APP Modified Bituminous Sheet Materials Using Polyester Reinforcements^A

Property	Type I	Type II
Maximum 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.), minimum	8.8 (50)	14 (80)
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.), minimum	8.8 (50)	14 (80)
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 maximum load, % minimum	23	40
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, % minimum	23	40
Maximum load at $-18 \pm 2^\circ\text{C}$ ($0 \pm 3.6^\circ\text{F}$), MD and XMD, kN/m (lbf/in.), minimum	10.5 (60)†	15.8 (90)
Peak load at $-18 \pm 2^\circ\text{C}$ ($0 \pm 3.6^\circ\text{F}$) MD and XMD, kN/m (lbf/in.), minimum	10.5 (60)	15.8 (90)
Elongation at $-18 \pm 2^\circ\text{C}$ ($0 \pm 3.6^\circ\text{F}$), MD and XMD, at maximum load, % minimum	40	45
Elongation at $-18 \pm 2^\circ\text{C}$ ($0 \pm 3.6^\circ\text{F}$), MD and XMD, at peak load, % minimum	10	15
Elongation at 5% of maximum load at $23 \pm 2^\circ\text{C}$ ($73.4 \pm 3.6^\circ\text{F}$), MD and XMD, % minimum	30	50
Ultimate elongation at $23 \pm 2^\circ\text{C}$ ($73.4 \pm 3.6^\circ\text{F}$), MD and XMD, % minimum	30	50
Tear strength at $23 \pm 2^\circ\text{C}$ ($73.4 \pm 3.6^\circ\text{F}$) lbf (N), minimum	311 (70)	356 (80)
Low temperature flexibility, before and after heat conditioning, °C (°F), maximum	+ 0 (32)	+ 0 (32)
Dimensional stability, % change, maximum	1	1
High temperature stability, °C (°F) minimum	110 (230)	110 (230)
Compound stability, °C (°F) minimum	110 (230)	110 (230)
Granule embedment, Grade G only, maximum loss, grams	2	2
Water absorption, % maximum	3.2	3.2
Moisture content, % maximum	1	1
Low temperature unrolling, °C (°F), maximum	5 (41)	5 (41)

^AThe properties of this table are “as manufactured” unless otherwise noted.

4.2.1 *Grade G*—Granule surfacing.

4.2.2 *Grade S*—Smooth surfacing.

5. Materials and Manufacture

5.1 In the process of manufacture, the reinforcement is saturated with APP modified asphalt and is impregnated and coated on both sides with an APP modified bituminous coating. The APP modified bituminous coating shall be permitted to be compounded with a mineral stabilizer.

5.2 *Grade G* materials are surfaced on the weather side with mineral granules, except for any selvage. To prevent sticking in the roll, the reverse side and any selvage shall be permitted to be covered with a fine mineral surfacing or any other surfacing that will not interfere with adhesion or bonding of the lap during application.