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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 D6222/D6222M; 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 reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

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.

NOTE 1—Many modified bituminous sheets are currently marketed with polyester mat reinforced with glass yarns to improve processing in the manufacture of the finished modified bitumen product and to reduce distortions that may be introduced during production. These glass yarns are typically a small percentage of the reinforcement and do not contribute to the physical properties of the finished product so much as to make these products be classified by Specification ~~D6223/D6223M~~.

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 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 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

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

[D5147/D5147M Test Methods for Sampling and Testing Modified Bituminous Sheet Material](#)

[D5636/D5636M Test Method for Low Temperature Unrolling of Felt or Sheet Roofing and Waterproofing Materials](#)

[D6223/D6223M Specification for Atactic Polypropylene \(APP\) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements](#)

3. Terminology

3.1 *Definitions*:

3.1.1 For definitions of terms used in this specification, refer to Terminology [D1079](#).

4. Classification

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

¹ This specification is under the jurisdiction of ASTM Committee [D08](#) on Roofing and Waterproofing and is the direct responsibility of Subcommittee [D08.04](#) on 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 APP Modified Bituminous Sheet Materials Using Polyester Reinforcements^A**

| Property | Type I | Type II |
|--|-----------|-----------|
| Peak load at 23 ± 2°C [73.4 ± 3.6°F] MD and XMD, before and after heat conditioning, kN/m [lbf/in.], minimum | 8.8 [50] | 14 [80] |
| Peak load at 23 ± 2°C [73.4 ± 3.6°F] MD and XMD, before and after heat conditioning, min, kN/m [lbf/in.] | 8.8 [50] | 14 [80] |
| Elongation at 23 ± 2°C [73.4 ± 3.6°F] MD and XMD, before and after heat conditioning, at peak load, % minimum | 23 | 40 |
| Elongation at 23 ± 2°C [73.4 ± 3.6°F] MD and XMD, before and after heat conditioning, at peak load, min, % | 23 | 40 |
| Peak load at -18 ± 2°C [0 ± 3.6°F] MD and XMD, kN/m [lbf/in.], minimum | 10.5 [60] | 15.8 [90] |
| Peak load at -18 ± 2°C [0 ± 3.6°F] MD and XMD, min, kN/m [lbf/in.] | 10.5 [60] | 15.8 [90] |
| Elongation at -18 ± 2°C [0 ± 3.6°F] MD and XMD, at peak load, % minimum | 10 | 15 |
| Elongation at -18 ± 2°C [0 ± 3.6°F] MD and XMD, at peak load, min, % | 10 | 15 |
| Ultimate elongation at 23 ± 2°C [73.4 ± 3.6°F], MD and XMD, % minimum | 30 | 50 |
| Ultimate elongation at 23 ± 2°C [73.4 ± 3.6°F], MD and XMD, min, % | 30 | 50 |
| Tear strength at 23 ± 2°C [73.4 ± 3.6°F] N [lbf], minimum | 311 [70] | 356 [80] |
| Tear strength at 23 ± 2°C [73.4 ± 3.6°F], min, N [lbf] | 311 [70] | 356 [80] |
| Low temperature flexibility, before and after heat conditioning, °C [°F], maximum | +0 [32] | +0 [32] |
| Low temperature flexibility, before and after heat conditioning, max, °C [°F] | 0 [32] | 0 [32] |
| Dimensional stability, % change, maximum | 4 | 4 |
| Dimensional stability, max, % | 1 | 1 |
| Compound stability, °C [°F] minimum | 110 [230] | 110 [230] |
| Compound stability, min, °C [°F] | 110 [230] | 110 [230] |
| Granule embedment, Grade G only, maximum loss, grams | 2 | 2 |
| Water absorption, % maximum | 3.2 | 3.2 |
| Water absorption, max, % | 3.2 | 3.2 |
| Moisture content, % maximum | 4 | 4 |
| Moisture content, max, % | 1 | 1 |
| Low temperature unrolling, °C [°F], maximum | 5 [41] | 5 [41] |
| Low temperature unrolling, max, °C [°F] | 5 [41] | 5 [41] |

^A The properties of this table are "as manufactured" unless otherwise noted.

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