



Specifying modified bitumen sheet products

Options and choices complicate modified bitumen product selection

by Mark S. Graham

Currently, there are more than 900 polymer-modified bitumen sheet products available in the U.S. market for use in low-slope membrane roof systems. There are 26 ASTM International standard types and grades for these products. As a result, comparing and properly specifying polymer-modified bitumen sheet products can be challenging.

ASTM International standards

ASTM D5147, “Standard Test Methods for Sampling and Testing Modified Bituminous Sheet Material,” provides an industry-consensus method for sampling and testing polymer-modified bitumen sheet products. The standard includes test methods for overall material and coating thicknesses, load strain properties, tear strength, moisture content, water absorption, dimensional stability, low-temperature flexibility, granule embedment, compound stability and low-temperature unrolling.

The various tests included in the standard are used as the basis for testing the physical properties provided in ASTM International’s



material standards for polymer-modified bitumen sheet products. ASTM International has separate product standards for polymer-modified bitumen sheet products based on specific polymer modifier and reinforcement type.

For SBS polymer-modified bitumen sheets products, the following product standards apply:

- ASTM D6162, “Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements”

- ASTM D6163, “Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements”
- ASTM D6164, “Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements”

Within ASTM D6162 and ASTM D6163, Type I, Type II and Type III classifications differentiate among physical property characteristics. ASTM D6164 only has Type I and Type II classifications. In addition to these type classifications, each standard further differentiates between mineral granule surfacing, designated as Grade G, and smooth-surfaced sheets, designated as Grade S.

Also, for foil-surfaced, SBS polymer-modified bitumen sheet products, ASTM

D6298, “Standard Specification for Fiberglass Reinforced Styrene-Butadiene-Styrene (SBS) Modified Bituminous Sheets with a Factory Applied Metal Surface,” applies. ASTM D6298 does not contain type or grade classifications.

For APP polymer-modified bitumen sheets products, the following product standards apply:

- ASTM D6222, “Standard Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using Polyester Reinforcements”
- ASTM D6223, “Standard Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements”

Within these standards, Type I and Type II classifications differentiate among physical property characteristics. Mineral granule-surfaced sheets are further designated as Grade G, and smooth-surfaced sheets are designated as Grade S.

Also, ASTM D6509, “Standard Specification of Atactic Polypropylene (APP) Modified Bituminous Base Sheet Materials Using Glass Fiber Reinforcements,” applies to smooth-surfaced, fiberglass-reinforced, APP polymer-modified bitumen base sheets.

In addition to complying with the minimum physical property requirements, manufacturers must provide specific product marking on their packaging. Unless otherwise agreed upon by the material supplier and purchaser, each product’s packaging must be marked with the manufacturer’s name; product brand name; ASTM International designation, including type and grade, if applicable; net coverage area; and, if not evident by the product’s brand name, bitumen modifier type.

For example, a mineral granule-surfaced, SBS polymer-modified bitumen sheet product with fiberglass reinforcement having relatively high peak load and tear strength physical property values is designated as ASTM D6163, Type III, Grade G.

A limited review of manufacturers’ product literature and package markings shows many

polymer-modified bitumen sheet product manufacturers are providing incomplete ASTM International designations. This is of particular concern because polymer-modified bitumen sheet products’ compliances with applicable ASTM International standards is a requirement of most building codes, including the *International Building Code*,[®] 2018 Edition. In general, it appears manufacturers of premium products are doing better at providing the proper product markings than manufacturers of commodity products.

NRCA’s recommendations

Polymer-modified bitumen membrane sheet products can be compared, and NRCA recommends they be specified based on their ASTM International designations, including type and grade classifications, if applicable.

Furthermore, NRCA recommends manufacturers of polymer-modified bitumen sheet products provide in their product literature and package markings the appropriate ASTM International designations, including type and grade classifications, if applicable, to better facilitate product comparison and compliance with building code requirements.

When comparing polymer-modified bitumen sheet products, direct comparison can best be made between products having the same ASTM International designation and type and grade classification. Products with differing ASTM International designations are manufactured differently and, as a result, will have differing physical properties. Products with the same designation but of differing type classifications also will have differing physical property values.

Additional information regarding polymer-modified bitumen sheet products is provided in *The NRCA Roofing Manual: Membrane Roof Systems—2019*. 🌱🌿🍃

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