



Designation: D6153 – 23

# Standard Specification for Materials for Bridge Deck Waterproofing Membrane Systems<sup>1</sup>

This standard is issued under the fixed designation D6153; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This specification covers deck waterproofing membrane systems designed for use on bridge decks which will receive an asphaltic concrete overlay.

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.3 The text of this standard references notes and footnotes which provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the standard.

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

## 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

[D146/D146M Test Methods for Sampling and Testing Bitumen-Saturated Felts and Woven Fabrics for Roofing and Waterproofing](#)

[D5167 Practice for Melting of Hot-Applied Joint and Crack Sealant and Filler for Evaluation](#)

[E96/E96M Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials](#)

## 3. Classification

3.1 Bridge deck waterproofing membrane systems covered in this specification include three types:

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee D04 on Road and Paving Materials and is the direct responsibility of Subcommittee D04.32 on Bridges and Structures.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

3.1.1 *Type I*—Cold applied elastomeric.

3.1.2 *Type II*—Hot applied elastomeric.

3.1.3 *Type III*—Preformed sheet membrane.

## 4. General Requirements

4.1 Type I covers cold liquid-applied chemically curing membrane materials that may be applied to a bridge deck to prevent the passage of water from the asphalt surface course to or through the bridge deck. A membrane protection course, as specified by the membrane manufacturer, is required.

4.2 Type II covers hot applied elastomeric membrane systems that prevent the passage of water from the asphalt surface course to or through the bridge deck. A membrane protection course, as specified by the membrane manufacturer, is required.

4.3 Type III covers preformed sheet membrane systems which prevent the passage of water from the asphalt surface course to or through the bridge deck.

## 5. Physical Properties

5.1 *Type I, II, and III:*

5.1.1 Permeability shall be determined in accordance with Test Method [E96/E96M](#) water method.

5.1.2 Pliability shall be determined in accordance with Test Method [D146/D146M](#), except that the test temperature of the test specimen shall be 0 °F (–18 °C) after 24 h and 180° bend over a ¼ in. (6 mm) mandrel.

## 6. Performance Requirements

6.1 Bridge deck protective membrane materials shall be proposed as systems that shall specify each of the installation components within the system and state the rates of applications, and so forth, where applicable. Materials which are combined in accordance with the system proposal shall meet the requirements stated in performance (applications) specification. Membrane, when tested at the manufacturer's recommended rate of application, shall meet the minimum requirements as stated in [Table 1](#).

## 7. Sampling

7.1 *Type I*—The purchaser shall have the right to sample and test the material at any point prior to being incorporated into

**TABLE 1 Physical Requirements for Membrane**

Permeability	Test Method <b>E96/E96M</b>	5.7 NG/PaSm <sup>2</sup> (perms. 0.1) (max)
Pliability (180° bend over a ¼ in. (6 mm) mandrel at 0 °F (–18 °C) for 24 h)	Test Method <b>D146/ D146M</b>	No Breaks

the work, to ensure that the material conforms to the specified requirements. If sampled at the point of manufacture, it shall be the responsibility of the manufacturer to determine that the samples taken are representative of the batches or lots proposed for shipment. Samples for testing shall consist of not less than a total sample of 10 lb (4.5 kg) or 1 gal (3.8 L) of liquid sealant from each batch or lot submitted for sampling. A batch or lot shall be considered as all finished material that was manufactured simultaneously or continuously as a unit prior to packaging. Samples shall be obtained by taking approximately equal portions from three containers selected at random. Each of the three containers' samples shall be resealed and marked for identification, and have application instructions including material safety data sheets in each container.

7.2 *Type II*—The purchaser shall have the right to sample and test the material at any point prior to its being incorporated into the work, to ensure that the material conforms to the specified requirements. If sampled at the point of manufacture, it shall be the responsibility of the manufacturer to determine that the samples taken are representative of the batches or lots proposed for shipment. Samples for testing shall consist of not less than a total sample of 10 lb (4.5 kg) or 1 gal (3.8 L) of sealant from each batch or lot submitted for sampling. A batch or lot shall be considered as all finished material that was manufactured simultaneously or continuously as a unit prior to packaging. Samples shall be obtained by taking three units selected at random. Samples and heating shall be in accordance with Practice **D5167**. Each of the three units sampled shall be

resealed and marked for identification, and have application instructions including material safety data sheets in each container.

7.3 *Type III*—A sample, including a seam, sufficient in size to determine compliance with this specification shall be selected at random from each 12 000 yd<sup>2</sup> (10 000 m<sup>2</sup>) of fabricated material to provide three test specimens. For smaller orders, a suitable smaller lot size shall be selected for the random sampling. Each batch or lot of material shall also be visually examined for dimensions, appearance, and workmanship. Each test specimen shall be packaged with application instructions and a material safety data sheet.

## 8. Packaging and Package Marking

8.1 *Type I*—The liquid membrane shall be packaged in 5 gal (20 L) sealed containers, or as otherwise specified by the user. Each container shall be clearly marked with the name and address of the manufacturer, the trade name of the liquid membrane material, specification designation, the manufacturer's batch or lot number, and application instructions, unless otherwise specified in the contract or purchase order.

8.2 *Type II*—The material shall be packaged at a maximum weight of 55 lb (25 kg) containers, or as otherwise specified by the user. Each container shall be clearly marked with the name and address of the manufacturer, the trade name of the membrane material, specification designation, the manufacturer's batch or lot number, and application instructions, including recommended application temperature and safe heating temperature, unless otherwise specified in the contract or purchase order.

8.3 *Type III*—The material shall be rolled on a substantial core and packaged in a standard commercial manner. Shipping containers shall be clearly marked with the name and address of the manufacturer, the trade name of the material, specification designation, the manufacturer's batch or lot number, and application instructions, including quantity in the package in square feet.

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