



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

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## 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 SI units are to be regarded as the standard. The inch-pound units given in parentheses are for information only.

## 2. Referenced Documents

### 2.1 ASTM Standards:

D 146 Test Methods for Sampling and Testing Bitumen-Saturated Felts and Woven Fabrics for Roofing and Waterproofing<sup>2</sup>

D 5167 Practice for Melting Hot-Applied Joint and Crack Sealant and Filler for Evaluation<sup>3</sup>

E 96 Test Method for Water Vapor Transmission of Materials<sup>4</sup>

## 3. Classification

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

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 bituminous 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 bituminous 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 bituminous 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 E 96 water method.

5.1.2 Pliability shall be determined in accordance with Test Method D 146, except that the test temperature of the test specimen shall be  $-18^{\circ}\text{C}$  after 24 h and  $180^{\circ}$  bend over a 6-mm ( $1/4$ -in.) 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 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 4.5 kg (10 lb) or 3.8 L (1 gal) 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

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 04.04.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 04.03.

<sup>4</sup> *Annual Book of ASTM Standards*, Vol 04.06.

**TABLE 1 Physical Requirements for Membrane**

|   |                   |  |
|---|-------------------|--|
| Permeability  | Test Method E 96  | 5.7 NG/PaSm <sup>2</sup><br>(perms. 0.1) (max) |
| Pliability<br>(180° bend over a<br>6-mm (¼-in.) mandrel<br>at –18°C for 24 h) | Test Method D 146 | No Breaks                                      |

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 4.5 kg (10 lb) or 3.8 L (1 gal) 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 D 5167. 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 se-

lected at random from each 10 000 m<sup>2</sup> (12 000 square yards) 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 20-L (5-gal) 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 25-kg (55-lb) 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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