



Designation: D6153 – 97(Reapproved 2007)

Standard Specification for Materials for Bridge Deck Waterproofing Membrane Systems¹

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 (ϵ) 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 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*:²

D146 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 Water Vapor Transmission of Materials

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 **E96/E96M** water method.

5.1.2 Pliability shall be determined in accordance with Test Method **D146**, except that the test temperature of the test specimen shall be -18°C after 24 h and 180° 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 packaging. Samples shall be obtained by taking approximately

¹ 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.

Current edition approved Dec. 1, 2007. Published January 2008. Originally approved in 1997. Last previous edition approved in 2003 as D6153 – 97 (2003). DOI: 10.1520/D6153-97R07.

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 Requirements for Membrane

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

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 **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 10 000 m² (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.

ASTM International takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.

This standard is copyrighted by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or service@astm.org (e-mail); or through the ASTM website (www.astm.org). Permission rights to photocopy the standard may also be secured from the ASTM website (www.astm.org/COPYRIGHT/).