



Standard Practice for Application of Self-Adhering Modified Bituminous Waterproofing¹

This standard is issued under the fixed designation D 6135; 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 practice covers the minimum installation recommendations for self-adhering modified bitumen sheets used in waterproofing.

1.2 For the purpose of this application practice, the substrate is assumed to be structurally sound, sloped to drain, able to accept the weight of the membrane and other system materials, and meets the local building code requirements. Similarly, all components of the waterproofing system are assumed to comply with any federal, state, and local environmental regulations, which may be in affect at the time of installation. Additional plies of membrane, expansion joints, insulation and drainage layers are beyond the scope of this practice.

1.3 *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

B 29 Specifications for Refined Lead

D 1079 Terminology Relating to Roofing, Waterproofing, and Bituminous Materials

D 5295 Guide for Preparation of Concrete Surfaces for Adhered (Bonded) Membrane Waterproofing Systems

D 5898 Guide for Standard Details for Adhered Sheet Waterproofing

D 5957 Guide for Flood Testing Horizontal Waterproofing Installations

2.2 *Other Standard:*

FM Global Approval Standard 4470³

3. Terminology

3.1 *Definitions:* The terms used in this practice are defined in accordance with Terminology **D 1079**.

4. Significance and Use

4.1 This practice outlines general procedures and precautions for the application of self-adhering modified bitumen waterproofing systems used in new installations.

4.2 This practice is not all-inclusive and is intended only to supplement detailed instructions from designers.

5. Delivery of Materials

5.1 Deliver materials in system supplier's unopened containers and packages.

5.2 All materials or material packaging must be marked clearly in a weather-resistant manner with type, stock, lot number, and other pertinent information as required by purchaser.

6. Storage and Handling

6.1 Store boxed sheet materials in a horizontal position; store unboxed sheet materials in a vertical position, elevated off the ground, and under protective waterproof coverings to prevent contamination of the sheet surfaces.

6.2 Store primer, surface conditioner, and mastic in tightly closed original containers at temperatures within the range recommended by the system supplier. Protect primer, surface conditioner, and mastic from moisture and potential sources of ignition.

¹ This practice is under the jurisdiction of ASTM Committee D08 on Roofing and Waterproofing and is the direct responsibility of Subcommittee D08.22 on Waterproofing and Damproofing Systems.

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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.

³ Available from FM Global, 1301 Atwood Ave., P.O. Box 7500, Johnston, RI 02919.

6.3 Bring the sheets to the job site in good condition, and handle materials so as not to damage them.

7. Environmental Conditions

7.1 Consult system supplier for any special application procedures when ambient temperatures are expected to be below 4.4°C (40°F).

8. Materials

8.1 *Modified Bitumen Prefabricated Sheet*—Self-adhering modified bitumen sheet used in waterproofing.

8.2 *Primer and Surface Conditioner*—Material, to prepare the substrate to accept the membrane.

8.3 *Liquid Membrane*—Material for inside corner fillets, reinforcements, and terminations.

8.4 *Mastic*—Material for sealing patches and terminations.

8.5 *Protection Board*—Material to protect the membrane from damage after installation.

8.6 *Mechanical Affixments*—The mechanical fasteners and stress distribution bar or strips specified for use in the system must meet the corrosion guidelines outlined in **FM Global Standard 4470**.

9. Substrate Preparation

9.1 Contaminants, such as dirt, debris, loose materials, moisture, or surface irregularities, which would interfere with satisfactory installation of the system, shall be removed. See Guide **D 5295** for surface preparation.

9.2 Apply primer or surface conditioner at the system supplier's recommended coverage rate. Allow primer or conditioner to dry. Minimum drying time is 1 h.

9.3 Areas must be covered with membrane on the same day as the primer or conditioner is applied, or they must be reprimed or reconditioned.

9.4 Areas that become contaminated by dust, dirt, or other types of materials that would interfere with satisfactory installation or performance of the system shall be removed prior to the installation of the membrane. The area then shall be reprimed or reconditioned.

10. Sheet Installation

10.1 When required by the contract documents, provide a plan showing sizes, layout, and orientation of sheets. Plans also must indicate drainage and location of drains and all other appurtenances. When required by the contract documents, provide shop drawings of internal and external corners, penetrations, and terminations. See Guide **D 5898** for typical flashing details.

10.2 Do not damage sheets.

10.3 *Membrane Application:*

10.3.1 *Low Slope:*

10.3.1.1 Apply sheets from the low point to the high point so that laps shed water. Lap all edge seams a minimum of 2.5 in. Lap all end seams a minimum of 6 in. Stagger all end laps a minimum of 12 in. Roll the entire membrane firmly and completely as soon as possible. Roller shall be a minimum of 30 in. in width and shall weigh a minimum of 75 lbs. Cushion roller with a resilient material, such as 0.5 in. foam or carpet.

10.3.1.2 Seal all T-joints with mastic or liquid membrane at the end of each workday.

10.3.1.3 Seal all laps within 12 in. of corner details, drains, and protrusions with mastic or liquid membrane. Use liquid membrane in areas subject to ponding water. Do not cover mastic with membrane, except where mastic is used as a daily cutoff seal.

10.3.1.4 Seal penetrations with liquid membrane at a minimum thickness of 90 mils prior to covering with sheet.

10.3.1.5 Flashing sheet shall lap onto the field membrane a minimum of 2.5 in. The flashing membrane shall extend vertically a minimum of 8 in. above the finished wear surface or grade. Terminate the top of the flashing sheet with appropriate fasteners, spaced 6 in. maximum on center. Seal junction of flashing, fasteners, and substrate with liquid membrane or mastic. Cover termination and exposed membrane base flashing with a counterflashing.

10.3.2 *Vertical:*

10.3.2.1 Apply sheets vertically in lengths up to 8 ft. Lap all edge seams minimum 2.5 in. On higher walls install sheets in two or more lifts with the upper sheet overlapping the lower sheet by at least 6 in. Membrane also may be installed horizontally in shingle fashion. Seal or terminate the upper lift by the end of each day.

10.3.2.2 Roll all membrane with a hand roller to adhere membrane to substrate.

10.3.2.3 Terminate membrane a minimum of 12 in. above grade level with appropriate fasteners spaced 6 in. maximum on center. Press membrane firmly to the substrate. Seal termination with mastic or liquid membrane. Cover termination and exposed membrane base flashing with a counterflashing.

10.3.2.4 Where vertical membrane meets horizontal substrate extend vertical membrane onto horizontal minimum 6 in.

10.3.2.5 Terminate membrane at base of wall only if the bottom elevation of the interior floor slab is a minimum of 12 in. above the footing. Seal termination with liquid membrane or mastic.

10.3.2.6 Terminate membrane on top of the footing if vertical waterproofing ties into the mud slab waterproofing or if the bottom elevation of interior floor slab is less than 12 in. above the footing. Extend the membrane a minimum of 12 in. onto the mud slab waterproofing and terminate with mastic or liquid membrane. Seal all laps within 12 in. of a corner with liquid membrane.

10.4 *Corners:*

10.4.1 *Inside Corners (Treatment Prior to Installing Sheets):*

10.4.1.1 At intersection of horizontal and vertical planes, treat the inside corner by either installing a ¾ in. fillet (cant) of liquid membrane and extend the liquid membrane a minimum of 6 in. in each direction from the corner, or by installing a ¾ in. fillet (cant) of liquid membrane or latex-modified cement mortar or epoxy mortar. If mortar is used, allow to cure. Install a 12 in. wide strip of membrane, horizontally, over the fillet.

10.4.1.2 Cover corner reinforcement (liquid membrane or 12 in. wide strip of membrane) with field sheet.

10.4.2 *Outside Corners and Inside Vertical*—Install 12 in. wide strip of membrane centered on the corner. Apply full sheet of membrane over treated corner during installation.

10.5 *Joint Treatment*—Properly seal all joints with water-stop, joint filler, and sealant. Prestrip all cracks over 1/16 in. in width and all construction and control joints with 8 in. wide strip of membrane.

10.6 *Penetrations and Drains:*

10.6.1 Apply sheet to within 1 in. of the base of the penetration. Apply liquid membrane, a minimum of 90 mils thick, around the penetration. Liquid membrane should extend onto the membrane 3 in. and up the penetration to 8 in. above the completed overlay. Cover exposed liquid membrane with a counterflashing.

10.6.2 At drains, apply a collar of membrane which extends 6 in. beyond the drain opening. Apply full coverage of membrane over the collar piece. Cut membrane flush to the inside wall of the drain. Place a bead of mastic between the membrane and the drain body. At drains, installed through sleeves, a minimum 2.5 lb. lead collar is recommended as additional reinforcement (see Specification **B 29**).

10.7 *Inspection and Repair:*

10.7.1 Inspect membrane before covering and make any repairs immediately. Patch tears, punctures, seams, or any other deficiencies with membrane. Membrane patch shall extend 6 in. in all directions beyond defect. Seal all edges of the patch with mastic or liquid membrane.

10.7.2 Flood test all horizontal applications in accordance with Guide **D 5957**. Mark any leaks and repair after membrane has dried. Before flood testing, a structural engineer shall verify that the structure will withstand the dead load of the water. On well-sloped decks segment the flood test to prevent water build up around drains. The flood test should be started within 24 h of notification that section is complete.

10.8 *Protection:*

10.8.1 Protect horizontal and vertical membrane from damage after installation with protection course or drainage mat. Install as recommended by the system supplier.

10.8.2 Install protection course or drainage mat within 24 h after completion of inspection and flood test (horizontal only).

11. Keywords

11.1 modified bituminous; self-adhered; waterproofing

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