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.

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Standard Practice for Sampling and Analysis of Modified Bitumen Roof Systems[1]

This standard is issued under the fixed designation D7636/D7636M; 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 is for removing specimens from existing modified bitumen roof membranes for visual assessment and evaluation for abnormalities in the membrane. The roof membrane consists of one or more plies/sheet materials in which at least one ply is a modified bitumen (MB) sheet, and which is installed with one or more of the following methods: hot asphalt, heat welding (open flame torching or heated air), cold adhesive, or self-adhesive. The roof membrane may consist of one or more plies of the following:

1.1.1 SBS (styrene-butadiene-styrene), APP (attactic polypropylene), or other polymer, modified bitumen sheet materials.

1.1.2 An exposed modified bitumen sheet material, that is, a modified cap sheet, covering multiple layers of built-up roofing (BUR) plies.

1.1.3 Any adhesive or bitumen component used to install the roof membrane.

1.2 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.3 *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:*[2]

D1079 Terminology Relating to Roofing and Waterproofing

3. Terminology

3.1 *Definitions*—For definitions of terms used in this practice, refer to Terminology D1079.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *hybrid membrane system, n*—MB/BUR roof membrane consisting of a modified bitumen cap sheet with one or more layers of underlying BUR.

3.2.2 *ply or sheet material, n*—a single layer of the modified bitumen roof membrane.

4. Sampling

4.1 Unless otherwise specified, for each abnormal roof area take at least one specimen from the area that exhibits an abnormality plus one "control" specimen. The control specimen should have no obvious abnormalities and should be taken in close proximity to the sampled problem area.

4.2 Additional specimens in which abnormalities are exhibited in the membrane may be taken to determine the extent of the affected area.

5. Test Specimen

5.1 As a minimum, the roof membrane specimens should be taken down to the top surface of the membrane substrate. Sampling down to the level of the roof deck may be necessary to better determine the cause and extent of any abnormality.

5.2 The recommended minimum specimen size is 305 by 305 mm [12 by 12 in.] or 100 by 1120 mm [4 by 44 in.], depending on the nature of the potential membrane problem. If the membrane is a hybrid BUR/MB, the 100 by 1120 mm [4 by 44 in.] specimen size, cutting across the width of the cap sheet, is recommended.

5.2.1 The specimen size and shape may be adjusted, once initial sampling has occurred, to adequately assess the nature of any problem.

6. Significance and Use

6.1 This practice is for removing specimens from existing modified bitumen roof membranes for visual assessment and evaluation for abnormalities in the membrane.

6.2 This practice is not intended for roofs under construction.

[1] This practice is under the jurisdiction of ASTM Committee D08 on Roofing and Waterproofing and is the direct responsibility of Subcommittee D08.20 on Roofing Membrane 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.

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7. Procedure

7.1 Photograph the roof and the sampling process. (When video imaging is used, still images shall also be included.) Photos/images should include:

7.1.1 Photos that show appropriate detail of the area to be tested and of the sampling process, including but not limited to, various angles of the building, the buildings surroundings, overall roof area, and other building components that could appear in any way be associated with the abnormalities that are present.

7.1.2 Close up photos as well as general overview photos of the area to be sampled, and of sampling process. Take layer-by-layer photos if the membrane delaminates during sampling.

7.2 Specimens should be marked, photographed, and recorded in such a way that they are easily referenced if sent out for further evaluation.

7.3 Remove the membrane specimen from the roof assembly taking care during the extraction process so as not to adversely affect the in-situ condition of membrane, that is, does not crimp or otherwise damage the integrity of the membrane.

7.4 Visually inspect each specimen for abnormalities. Abnormalities of the roof membrane on the surface, in the cross-section of the sheet materials, in the interply, or between the bottom ply and the top of the membrane substrate may include, but are not limited to:

7.4.1 Voids of any size: interply, in the cross-section of the sheet materials, and/or membrane to substrate.

7.4.2 Inadequate adhesion; interply and/or membrane to substrate.

7.4.3 Blisters of any shape or size.

7.4.4 Mole runs.

7.4.5 Wrinkling.

7.4.6 Shrinkage.

7.4.7 Loss, or excessive wear, of surfacing.

7.4.8 Number of plies against that specified, if known.

7.5 If specimens are removed from the roof to be transported to another site, protect each from physical damage such as bending or breakage of the sheet materials or coating layers during removal and transportation. Protect from moisture, excessive heat, and loss of material.

7.5.1 Specimens should be individually packaged and then placed and sealed in an appropriate wrapping or container to preserve the condition of the specimen as much as possible.

7.6 Repairs to sampled areas should be made with like, compatible materials, and in accordance with the membrane manufacturer's recommendations whenever the manufacturer can be identified.

8. Report

8.1 The report should include the following:

8.1.1 If the sample is taken down to the deck, describe the deck, any vapor retarder/secondary roof membrane, insulation, and adhesive layers over which the modified bitumen membrane has been applied (as much as can be visually determined in the field).

8.1.2 The number, and type and description of plies, and any interlayer adhesives (as much as can be visually determined in the field).

8.1.3 Any abnormalities in the system, for example, those listed in Section 7. The report shall include a detailed description of any abnormalities in the specimen as prescribed in Section 7. Include accompanying field and laboratory photography with the description of the abnormalities.

8.1.4 Comments on the presence of any moisture or voids between plies observed.

8.1.5 Location of each specimen on a roof plan.

9. Keywords

9.1 APP; heat welding cold adhesive; hot asphalt; interply; modified bitumen; plies; SBS; self-adhesive

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