Designation: D7120/D7120M – 10

Standard Guide for Evaluation and Preparation of Roof Membranes for Coating Application[1]

This standard is issued under the fixed designation D7120/D7120M; 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 guide covers the procedures for evaluating and preparing non-aggregate surfaced membranes for the application of a coating. It does not address design, construction, or installation issues regarding the roof assembly or the roof membrane. It is not an application guide for roof coatings.

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 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. Terminology

2.1 *Definitions:*

2.1.1 *adequate drainage, n*—the drainage condition in which consideration has been made for all loading deflections of the deck, and additional roof slope has been provided to ensure drainage of the roof area within 48 h of rainfall.

2.1.2 *contaminant, n*—any substance which will adversely effect the adhesion of a coating.

2.2 *Contaminant List:*

2.2.1 *air/water-borne surface contaminant, n*—any of several types of external source contaminants that accumulate on top surface of a roof. Surface contaminants come from one of the following sources: (*1*) particulate and liquid emissions from building interior operations, (*2*) airborne vegetable and mineral particles, and (*3*) oils, greases, and chemicals from industrial and food service operations.

2.2.2 *chemical barrier, n*—a barrier formed by reactive materials either acid, alkali, or solvent, which inhibits the adhesion of surface coatings.

2.2.3 *exudate, n*—a glossy film that forms on the surface of an atactic polypropylene (APP) membrane. Exudates inhibit coating adhesion and they can bleed through and stain the coating surface.

2.2.4 *loose mineral granules, n*—see *mineral granules*, disattached mineral granules.

2.2.5 *moisture, n*—surfaces to be coated must be clean and dry.

2.2.6 *organic barrier, n*—see *organic* , any of several biological growths, usually algae or fungus, which act as a barrier between an APP roof membrane and a coating.

2.2.7 *release and/or anti-block agent, n*—see *parting agent*, any of several mineral or waxy materials which are typically applied to an APP sheet during the manufacturing process to prevent the sheet from sticking to itself while in the roll.

2.2.8 *surface oxidate, n*—a barrier film, which forms on the surface of an unprotected smooth APP sheet during weathering.

3. Significance and Use

3.1 This guide outlines the general procedures necessary to evaluate and prepare a roof membrane for the application of a liquid surface coating.

3.2 This guide is not all inclusive; this guide is intended to supplement detailed instructions from manufacturers and safety requirements required by law.

4. General Surface Conditions

4.1 Lack of adequate drainage will have an adverse effect on roof components and will lead to premature failure of liquid applied coatings.

4.2 It is important to determine the area(s) affected by adverse surface conditions. Specific surface preparation options can be determined after the membrane has been evaluated and subsequent adhesion tests performed.

4.3 Multiple surface preparation techniques may be required to prepare the surface of an APP modified bitumen to receive a coating.

[1] This guide 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.

Current edition approved July 1, 2010. Published July 2010. DOI: 10.1520/D7120_D7120M-10.

5. Roof Surface Evaluation

5.1 The roof membrane surface evaluation shall be conducted prior to the application of a surface coating. Surface evaluation will assist in determining the type of preparation required to achieve adhesion between the coating and the APP modified bitumen material.

5.1.1 Remove anything that will inhibit the adhesion of the coating.

5.1.2 Perform a "cloth tape evaluation" to determine the presence and type of contaminants on the roof surface according to the following procedure. On large surfaces, evaluate several locations.

5.1.3 Avoid making evaluations on windy days or when moisture is present in any form.

5.1.4 Clean the roof surface, as necessary, by the method appropriate methods in Section 6.

5.1.4.1 *White Cloth Evaluation:*

5.1.4.2 *Material*—White wool felt, velvet, or velveteen.

5.1.4.3 *Procedure*—Wrap the fabric around the index fingertip and then make a 50 to 75-mm [2 to 3-in.] stroke with medium pressure on the surface being evaluated. Determine the presence or absence of contamination using this evaluation technique. If no contamination is present, proceed with the coating operation.

NOTE 1—Medium pressure can be quantified by placing the finger on a balance or scale, and pressing downward until 3 to 5-lb pressure is obtained.

5.2 *Mineral Surfacing:*

5.2.1 To evaluate a granule surface membrane use the following cloth tape evaluation technique:

5.2.2 *Cloth Tape Evaluation:*

5.2.3 *Material*—Cloth tape, 50 mm [2 in.] wide, or as agreed upon between the purchaser and seller, to evaluate the granule surface. Duct tape has proven particularly effective.

5.2.3.1 *Procedure*—Apply a 150 mm [6 in.] long piece of 50 mm [2 in.] wide cloth tape to the granule surface of the roof membrane being rated. Rub ten times with the index fingertip using with medium pressure (see Note 1) on the tape to remove all bubbles. Remove the tape from the surface and examine it for contamination. If the tape gathers loose granules, or other contaminants, further surface preparation is necessary. See 6.2.

5.3 *Ponding Water:*

5.3.1 Ponding water conditions can cause contamination which is difficult to remove from the membrane. There is usually a high concentration of dust, dirt, and debris in areas where water has ponded.

6. Preparation of the Surface

6.1 Remove contaminants prior to coating. The following treatments offer different methods of preparing the membrane surfaces to receive the coating. The roof must be inspected prior to performing any of the following surface preparations. If not properly executed, some of these treatments can damage the membrane.

6.2 *Surface Preparation Techniques:*

6.2.1 *Brooming* the membrane surface removes large objects or particulates.

6.2.2 *Scrubbing* with a 457 to 609 mm [18 to 24 in.] stiff-bristled broom; must be used with water to significantly improve removal of roof contaminants. The surface must then be rinsed with clean water until contaminants have been removed.

6.2.3 *Power Washing*—Loosely bound surface materials must be removed by means of a mechanically driven rotary scrubbing device that employs a water dispersant. The surface must then be rinsed with clean water. Proper operation of the equipment is required to prevent damage to the membrane (that is, exposing the reinforcement or disbonding in the lap or seam area).

6.2.4 *Cleaning by Pressure Washing*—This method of surface preparation is capable of removing lightly adhered surface contaminations including exudates, loosely bound particulate release agents, and aged coating material. Proper operation of the equipment is required to prevent damage to the membrane (that is, exposing the reinforcement or disbonding in the lap or seam areas).

6.3 Application of a primer is not a substitute for proper preparation of a roof membrane surface, the elements of which are enumerated above. The decision to use a primer before applying the coating must not be made without consulting the coating and sheet material manufacturer's requirements for the specific coating and membrane in use.

7. Coating Application Conditions

7.1 The roof surface must be continuously evaluated for contamination during the coating application process. No surfaces shall be coated that display evidence of harmful or deleterious surface conditions.

7.2 Application temperatures are as important as surface preparation. The coating manufacturer's requirements for application temperatures shall be followed for the ambient conditions encountered.

8. Keywords

8.1 adhesion; application; cloth tape evaluation; coating; evaluation; surface conditions; white cloth evaluation