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Standard Guide for Application of Aluminum-Pigmented Asphalt Roof Coatings[1]

This standard is issued under the fixed designation D 3805; 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 application methods for Specification D 2824 Aluminum-Pigmented Asphalt Roof Coatings, Non-Fibered (Type I), Asbestos Fibered (Type II), and Fibered without Asbestos (Type III), for application on asphalt built-up roof membranes, modified bitumen roof membranes, bituminous base flashings, concrete surfaces, metal surfaces, emulsion coatings, and solvent-based coatings. This guide does not apply to the selection of a specific aluminum-pigmented asphalt roof coating type for use on specific projects.

1.2 The values stated in inch-pound units are to be regarded as 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.* Specific precautionary statements are given in Section 4.

2. Referenced Documents

2.1 *ASTM Standards:*

D 1079 Terminology Relating to Roofing, Waterproofing, and Bituminous Materials[2]

D 2824 Specification for Aluminum-Pigmented Asphalt Roof Coatings, Non-Fibered, Asbestos Fibered, and Fibered Without Asbestos[2]

D 4263 Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method[3]

2.2 *Other Documents:*

Asphalt Roofing Manufacturers Association/Roof Coatings Manufacturers Association, Guidelines for Evaluating and Preparing Modified Bitumen Roofing for the Application of Surface Coatings[4]

3. Significance and Use

3.1 Asphalt-based, solvent-type, fibered or nonfibered, aluminum-pigmented roof coatings are used as a protective coating for solar reflection to prolong the life of roofing materials or where decorative qualities are desired.

3.2 Suitable application of aluminum-pigmented asphalt roof coatings is an important factor in achieving a successful long-term coating. Suitable application is, in part, dependent upon appropriate specifications to guide the work. This guide can be useful in facilitating development of an appropriate specification for surface preparation and application of the roof coating.

3.3 Designers/specifiers of coatings may use this guide in preparing the application portion of their specification. Contractors working directly for the building owner, may also use this guide.

3.4 This guide is not all-inclusive. Manufacturer's application instructions should be consulted and geographical "area practices" considered. Consult membrane manufacturer and coating manufacturer for acceptability of procedures and products.

4. Storage

4.1 The container should be tightly sealed to prevent solvent evaporation and to keep out moisture. The coatings should not be stored at temperatures above 120°F (50°C).

NOTE 1—**Caution:** When re-sealing a container, exercise caution to avoid trapping or incorporating water into the container. Water can react with aluminum pigment producing hydrogen gas, a potential explosion hazard.

5. Equipment for Application of Coating

5.1 *Brush*—A three-knot or four-knot roofer's brush or other suitable brush.

5.2 *Roller*—A medium nap roller cover, suitable for use with asphalt-based, solvent-type coatings.

5.3 *Spray*—Equipment capable of spraying coating in a controlled manner to achieve desired application rate.

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[1] This guide is under the jurisdiction of ASTM Committee D-8 on Roofing, Waterproofing, and Bituminous Materials and is the direct responsibility of Subcommittee D08.05 on Solvent-Bearing Bituminous Compounds for Roofing and Waterproofing.

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[2] *Annual Book of ASTM Standards*, Vol 04.04.

[3] *Annual Book of ASTM Standards*, Vol 06.02.

[4] Available from Roof Coatings Manufacturers Association (RCMA), Center Park, Suite 404, 4041 Powder Mill Road, Calverton, MD 20705.

6. Mixing of Coating

6.1 The aluminum pigment and filler settle out during storage. Thorough mixing of coating is necessary to redisperse these components prior to use. Mechanically mix the coating until homogeneous. Periodic mixing of the coating during application may be needed. Coating should not be thinned or heated.

7. Weather Considerations

7.1 Coating applications should not proceed during periods of inclement weather. Do not begin application when precipitation is anticipated within 24 h after application.

7.2 Apply materials when ambient temperatures are 50°F (10°C) and warmer, but not in excess of 104°F (40°C).

8. Surface Considerations

8.1 Coatings should be applied to sound surfaces that are dry and clean to promote adhesion. Debris, dirt, grease, oil, and other materials that could impede coating adhesion shall be removed. It is recommended that coatings be applied as soon as practical after surface preparation.

8.2 Priming is not normally required and should only be used if recommended by the coating or membrane manufacturer. Priming is not to be considered a substitute for proper preparation or cleaning of the surface.

8.3 When the coatings are installed on slopes less than ⅛ in./ft (1 %), performance problems can occur. Standing water may dull the aluminum's luster and may cause adhesion failure between the coating and substrate.

8.4 Application on steep slopes, may result in some running of the coating. Consideration should be given to installing the desired coating coverage in multiple coats at lower application rates for the individual coats on steep-slope surfaces.

8.5 When coatings are to be applied over a bituminous surface, solvent-based coating or metal, it is recommended that the surface be allowed to weather prior to the application of the coating. The extent of weathering depends on the local ambient weather conditions and the type of surface to be coated. Sufficient weathering should occur so that asphalt or coated surfaces achieve a relative set and are not prone to excessive softening or flowing. Applications to newly coated surfaces may result in bleed-through, stress cracking, or possibly alligatoring. The length of time necessary for a surface to weather before application of the coating shall be agreed upon by the parties involved (for example, building owner, consultant, contractor, manufacturer). The length of time for weathering shall be stated in design specifications that reference this application guide.

8.6 The previous versions of this guide required that the surface have at least the equivalent of one complete summer of weathering. This guide, although conservative, was generally found to be sufficient to avoid cracks and splits in the aluminum roof coating due to substrate movement. In the absence of any field history, this guide can be followed with reasonable assurance of success.

9. Surface Preparation

9.1 *General*—Debris, dust accumulations, and other loose materials should be removed using brooms, air blowers, or vacuum equipment. Heavily soiled areas may be washed using trisodium phosphate with water and scrubbed with a broom or power washed. Rinse thoroughly with plenty of fresh water to remove cleaning solutions. Allow water to evaporate prior to start of application of coating. Remove materials that could impede coating adhesion.

9.2 *Concrete Surfaces*—The concrete must be cured and dry prior to application. Test Method D 4263 is an example of a test that can be conducted to assess moisture contained in the concrete.

9.3 *Metal Surfaces*—Clean areas of rust and prime the cleaned area with a suitable primer. Exposed fasteners must be securely tightened or replaced.

9.4 *Modified-Bitumen Membranes*—Refer to Asphalt Roofing Manufacturers Association and the Roof Coatings Manufacturers Association, *Guidelines for Evaluating and Preparing Modified Bitumen Roofing for the Application of Surface Coatings* for industry guidelines.

10. Coating Application Methods

10.1 Consult the coating manufacturer and membrane/substrate manufacturer for specific guidelines regarding application methods, equipment, rate of application, and so forth. Unless otherwise recommended by the manufacturer(s), follow these procedures:

10.2 For the lower viscosity nonfibered coating (Type I), the rate of application can be in the range of ½ to 1 gal/100 ft^2 (0.2 to 0.4 L/m^2).

10.3 For the higher viscosity fibered coatings (Type II or Type III), the rate of application for asphalt membranes can be 1 to 3½ gal/100 ft^2 (0.4 to 1.4 L/m^2). The rate of application for metal surfaces should be ½ to 1 gal/100 ft^2 (0.2 to 0.4 L/m^2).

10.4 Multiple coat applications may be used to achieve more even coverage and to improve the aesthetic appearance. The rate of application should be maintained for each individual coat in a multi-coat application. Curing time between coats shall be such that in-place coating is not damaged by the foot traffic necessary to apply the next coat.

10.5 For brush and roller applications, for aesthetic considerations only, finish strokes should be made in relatively the same direction taking into consideration directional changes around penetrations, protrusions, and along perimeters. When multiple coat applications are used, successive applications can be applied perpendicular to the previous coat to achieve more even coverage and to improve aesthetic appearance.

11. Curing Time and Foot Traffic

11.1 Curing time is dependent on ambient weather conditions during the curing cycle. Under warm, sunny conditions, the coating may dry to the touch in 2 to 4 h.

11.2 Avoid walking on the coating until it can take traffic so that it is not damaged.

12. Keywords

12.1 aluminum-pigmented; application; coating; roof coating

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